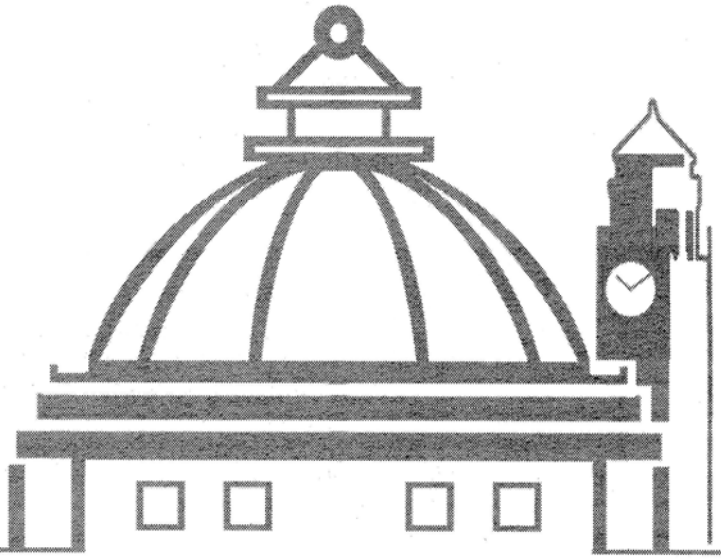

International Publications Awards

Cairo University

Vol. 7 Issue 1 (C)

May 2013

Dear colleagues,

We are pleased to introduce vol. 7(1) issue of the international publications of Cairo University. It is a further step and distinct contribution, reflecting the scientific ability of staff members, which conforms to international quality standards.

The purpose of issuing these publications is mainly to introduce this work to the academic community, demonstrate the different research abilities of Cairo University researchers, and encourage them to increase the quality and quantity of their research.

We would like to assure you that the administration will spare no effort to support and reinforce these goals.

We congratulate all colleagues who were granted the awards for their international publications of the year 2012 and wish them all the best for their future endeavors.

We are also pleased to inform you that this policy will continue to be in effect for the years to come.

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Prof. Gamal Esmat

Vice - President for post-graduate studies and research
Cairo university

Prof. Hossam Kamel

President
Cairo university

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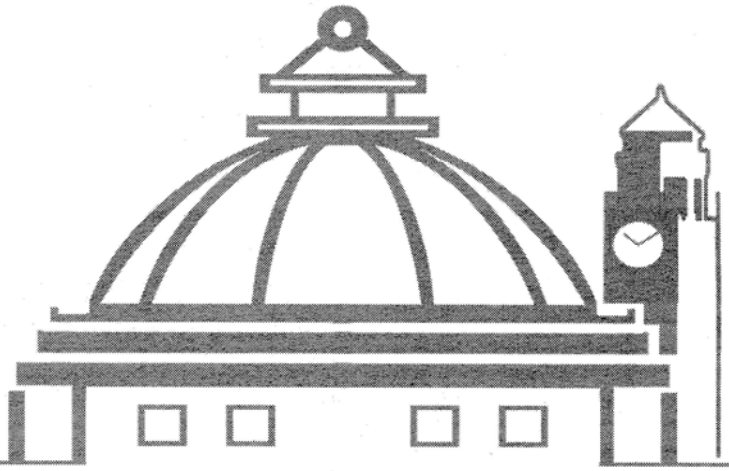

(1)
Engineering Sciences Sector

1-1 Faculty of Computers and Information

1-2 Faculty of Engineering

1-3 Faculty of Regional and Urban Planning

Faculty of Computers and Information

Dept. of Computer Science (CS)

1. A Novel Approach for Measuring Hyperspectral Similarity

M. R. A. Nabawy, M. M. ElNomrossy, M. M. Abdelrahman and G. M. El-Bayoumi

Appl Soft Comput, 116: 685-708 (2012) IF: 2.612

The aerodynamic shape optimisation of a micro air vehicle (MAV) wing is performed to obtainthe basic wing geometrical characteristics which produce the maximum range and endurancerequirements. Multhopp's method based on Prandtl's classical lifting line theory is used for thedetermination of the spanwise load distribution required during the optimisation process. Theobtained lift and drag characteristics are used for the derivation of the range and enduranceequations of an electrically driven micro air vehicle. The optimisation process is based on themodified feasible directions gradient based optimisation algorithm. Results are validated usingwind tunnel measurements showing very good agreement. Results are also compared withsolutions to the Navier-Stokes equations obtained with ANSYS-CFX finite elements usingdifferent turbulence models. These include the k-εand the shear stress transport (SST) modelsas well as the Reynolds stress model.

Keywords: Hyperspectral measures; Support vector machine; Adaptive similarity threshold.

2. Dynamic Task Scheduling Algorithm with Load Balancing for Heterogeneous Computing System

Doaa M. Abdelkader and Fatma Omara

Egyptian Informatics Journal, 13: 135-145 (2012) IF: 2

In parallel computation, the scheduling and mapping tasks is considered the most critical problem which needs High Performance Computing (HPC) to solve it by breaking the problem into subtasks and working on those subtasks at the same time. Parallel computation infrastructure might be homogeneous or heterogeneous. Homogeneous infrastructure could use the same machines power and performance. While heterogeneous infrastructure includes machines differ in its performance and speed of its interconnection. According to Heterogeneous Computing (HC), the application can be consisted of subtasks which have diverse execution requirements. on the other hand, The application' sub tasks are assigned to underline machines and ordered for execution according to its proceeding to grantee efficient use of available resources such that the total execution time is minimized and, in the same time, load balance is satisfied among processors of the underline machine. Many scheduling algorithms have been developed on Heterogeneous machines. The most important algorithms are HEFT, Clustering, and genetic Algorithms. According to the work in this paper, a dynamic task scheduling algorithm called Clustering Based HEFT With Duplication (CBHD) has been developed. The developed CBHD algorithm is considered a hybrid between the HEFT and Clustering algorithms. A comparative study among the developed CBHD, HEFT, and Triplet Cluster algorithms has been done. According to the comparative results, it is found that the developed CBHD algorithm satisfied the same execution time as HEFT algorithm and Triplet Cluster algorithm, in the same time, it achieves the load balancing which considered one of the main performance factors in the dynamic environment.

Keywords: Makespane;Heterogeneous system;Load balance;sleektime.

3. New Federated Collaborative Networked Organization Model (Fcnom)

Morcous M. Yassa, Hesham A. Hassan and Fatma A. Omara

International Journal of Cloud Computing and Services Science, 1: 1-10 (2012)

Formation of Collaborative Networked Organization (CNO) usually comes upon expected business opportunities and needs huge of negotiation during its lifecycle, especially to increase the Dynamic Virtual Organization (DVO) configuration automation. Decision makers need more comprehensive information about CNO system to support their decisions. Unfortunately, there is no single formal modeling, tool, approach or any comprehensive methodology that covers all perspectives. In spite of there are some approaches to model CNO have been existed, these approaches model the CNO either with respect to the technology, or business without considering organizational behavior, federation modeling, and external environments.The aim of this paper is to propose an integrated framework that combines the existed modeling perspectives, as well as, proposes new ones. In addition, it provides clear CNO boundaries. by using this approach, the view of CNO environment becomes clear and unified. In addition, it minimizes the negotiations within CNO components during its life cycle, supports DVO configuration automation, as well as, helps decision making for DVO, and achieves harmonization between CNO partners. The proposed FCNOM utilizes CommonKADS methodology organization model for describing CNO components. Insurance Collaborative Network has been used as an example to proof the proposed FCNOM model.

Keywords: Collaborative networked; Organization; Dynamic Virtual organization; Grid computing; Cloud computing; Commonkads; Federation; Business modeling.

4. Virtual Business Collaboration Conceptual Knowledge Model (Vbckm)

Morcous M. Yassa, Hesham A. Hassan and Fatma A. Omara

International Journal of Cloud Computing and Services Science, 3: 148-154 (2012)

Within the context of virtual business collaboration modeling, manyrecent works have been accepted to consider some essential virtualbusiness collaborative models. Practical dynamic virtual organizationmay be a combination of those models andsome other elementalfeatures with some modifications to meet the business opportunityrequirements. Therefore, some guidelines and rules are needed tohelp in constructing a practical collaborationmodel. This work aimsto determine the essential features that must be considered in order toautomate the creation of dynamic virtual organization. By integrate"Select – and –Modify" approach with "Common KADS" methodology, the work of this paper propose a strategy-driven approach for virtualbusiness collaboration modeling construction. Also, somegenericknowledge-based components have been designed to support thiscreation, which can increase the flexibility of the knowledge basedapproach facilitates future integration. This paper is considered

asintegration and extension to the recent work "NewFederatedCollaborative Networked Organization Model (FCNOM)", which hasproposed an integrated framework that combines the existedcollaborativenetworked organization perspectives, as well as, proposes new.

Keywords: Collaborative networked organization; Dynamic virtual organization; Grid computing cloud computing; Commonkads; Business modeling.

5. Resource Provision for Services Workloads Based on (Rpoa)

Noha El.Attar, Wael Awad and Fatma Omara

International Journal of Computer Science, 9 (3): 553-560 (2012)

Fulfilling the requirements of different applications and services in a real Cloud environment is extremely a big challenge. In this challenge the provision policies have to achieve the availability by allocating the appropriate resource to the customer services without any conflict in resource demands and with determining the right amount of required resources for the execution of ervices.According to the work in this paper, a Resource Provision Optimal Algorithm (RPOA) based on ParticleSwarm ptimization PSO has been introduced and implemented to find the neartimal solution of resource allocation with minimizing both time and ost.

Keywords: Cloud computing; Resources provision;Particle swarm optimization.

6. Visualization for Levels of Animals Diseases by Integrating Olap and Gis

Hesham Ahmed Hassan, Hazem El-Bakry and Hamada Gaber Abd Allah

International Journal of Computer Science and Information Security,(Ijcsis) 10(7): 44-60 (2012)

Animal diseases have constituted a major problem in manydeveloping and developed countries. There are differentlimitations for the existing computer systems to meet therequired information and analytical capabilities for a betterdecision in the Egyptian animal production domain. This paperpresents an proachfor helping policy/decision makers toimprove animal production in Egypt. The paper integrates OnlineAnalytical Processing (OLAP), Geographical InformationSystem (GIS), Spatial Analysis functions and MulticriteriaDecision Analysis (MCDA) capabilities to develop a SpatialDecision Support System (SDSS). The main aim of this study isto generate a composite map for decision makers by using someeffective factors affect animal production in Egypt. Wevisualizeandanalyze different factors such as "Diseases", "Climate", "SoilPollution", "Veterinary care" and "Economical factors" whichaffect the animal production in Egypt. The paper takes inconsideration influence of each factor because importance andinfluence of each factordiffersaccording policy/decision makerspoint of view.

Keywords: Geographical information system (Gis); Multi-criteria decision analysis (Mcda); Onlineanalytical processing(Olap); Spatial analysis; Spatial decision support system (Sdss).

7. Learning Flexible Hyperspectral Features

Abdulrahman Galal and Hesahm Hasan

International Journal of Remote Sensing Applications, 2: 44-48 (2012)

Most researches in the hyperspectral field adjust feature extraction techniques as major dimensionality reduction tools. This is due to the high dimensionality problems. Feature extraction techniques are not limited to such purpose but extended to handle the changing spectral responses. To achieve that, these techniques transform the spectral response into a new domain where features are arranged according to specific criterion. Each technique extracts unique features that are totally different to that others extract. Besides, each technique has advantages and disadvantages regarding handling the highly mixed datasets and the small training sample size. Therefore, utilizing a technique than another may lead to significant information loss. To overcome this problem and derive flexible features, the proposed approach combines the resulting features of each extraction technique in one feature vector and employs a Support Vector Machine (SVM) to classify it. The feature vector consolidates the benefits of each individual technique and neutralizes their disadvantages. Minimum Noise Fraction (MNF), Principle Component Analysis (PCA) and Independent Component Analysis (ICA) have been used in the proposed approach. Experimental results show that the proposed approach overcomes the traditional feature extraction techniques.

Keywords: Hyperspectral classificiation; Feature extraction; Data mining; Learning; Support vector machine.

8. Society in Hand: Toward Community Service Through Social Network

Abeer El-Korany

The International Journal of Computer Applications, 51: 15-22 (2012)

Technology plays a significant role in the development of society. Social Networking Sites (SNS) have not only been used to cover the needs of entertainment, finding friends or family but also have been extended to cover other issues such as social and community services. This paper explores usefulness of using social network in the context of community and social services. by analyzing the linkage patterns among members of social network, communities of similar users are constructed. The proposed system, Society in hand, matches semantic of user's profiles in order to enable social workers, their colleagues, and others to keep connected, informed, and organized in form of community to support charity purposes. Using such a system would increase the effectiveness of charities activities and saves cost and time as well as would increase the participation of volunteers in community services.

Keywords: Social networks; Knowledge sharing; Ontology; Similarity measure.

Dept. of Information System (IS)

9. OnEfficient Processing of Bpmn-Q Queries

Ahmed Awad and Sherif Sakr

Comput Ind, (2012) IF: 1.529

Business processes are central to the operation of both public and private organizations. With the rapidgrowth in the

number of process models developed by different process designers, it becomes crucial forbusiness process designers to be able to look up the repository for models that could handle a similarsituation before developing new ones. Therefore, providing support for querying these business rocessrepositories is a crucial requirement. BPMN-Q is a visual language that has been designed to queryrepositories of business process models.In this paper, we present a novel approach for efficient evaluation of BPMN-Q queries. The approach isbased on indexing process models by the transitive closure of their control flow relation as well as pathindexes. The closure index is precomputed while the path index is incrementally built through processingof queries. These indexes are utilized to achieve an effective filtering process and an efficient verificationcheck for BPMN-Q queries. The results of our experimental evaluation show the effectiveness of ourproposed approach.

Keywords:Business; Process; Repository; Bpmn-Q; Querying; Indexing.

10. An Iterative Approach to Synthesize Business Process Templates from Compliance Rules

Ahmed Awad, Rajeev Gore, Zhe Hou, James Thomsonand Matthias Weidlich

Inform Syst, 37: 714-736 (2012) IF: 1.198

Companies have to adhere to compliance requirements. The compliance analysis of business operations is typically a joint effort of business experts and compliance experts. Those experts need to create a common understanding of business processes to effectively conduct compliance management. In this paper, we present a technique that aims at supporting this process. We argue that process templates generated out of compliance requirements provide a basis for negotiation among business and com- pliance experts. We introduce a semi-automated and iterative approach to the synthesis of such process templates from compliance requirements expressed in Linear Temporal Logic (LTL). We show how generic constraints related to business process execution are incorporated and present criteria that point at underspecification. Further, we outline how such underspecification may be resolved to iteratively build up a complete specifica- tion. For the synthesis, we leverage existing work on process mining and process restructuring. However, our approach is not limited to the control-flow perspective, but also considers direct and indirect data-flow dependencies. Finally, we elaborate on the application of the derived process templates and present an implementation of our approach.

Keywords: Process synthesis; Analysis ofbusiness process compliance; Specification; Process mining.

11. Enhanced Authentication Mechanisms for Desktop Platform and Smart Phones

Dina EL Menshawy, Hoda M. O. Mokhtar and Osman Hegazy

International Journal of Advanced Computer Science andApplications(Ijacsa), 3: 100-106 (2012)

With hundreds of millions using computers and mobile devices all over the globe, these devices have an established position in modern society. Nevertheless, most of these devices use weak authentication techniques with passwords and PINs which can be easily hacked. Thus, stronger identification is needed to ensure data security and privacy. In this paper, we will explain the employment of biometrics to computer and mobile platforms. In addition, the possibility of using keystroke and mouse dynamics for computer authentication is being checked. Finally, we propose an authentication scheme for smart phones that shows positive results.

Keywords: Biometrics; Keystroke; Authentication; Smart Phones; Touch screens.

12. Dynamic K-Means: A Clustering Technique for MovingObject Trajectories

G. Elsayed, Mohamed M. Ahmed, Samy M.H. Sayed and Sayed A.M. Amer

Int. J. Intelligent Information and Database Systems, 45: 707-711 (2012)

K-means clustering algorithm is a famous clustering algorithmapplied in many applications. However, traditional k-means algorithm assumes that the initial number of centroids is known in advance. This dependence on the number of clusters and the initial choice of the centroids affect both the performance and accuracy of the algorithm. To overcome this problem, in this paper, we propose a heuristic that dynamically calculates k based on the movement patterns in the trajectory dataset andoptimally nitializes thek centroids. We basically consider distinct similar moving patterns as an initialization for the number of clusters (k). In addition, we design a scalable tool for mining moving object data through (an architecture composed of) a rich set of cluster's refinement modules that operate on top of the moving object database enabling users to analyze trajectory data from different perspectives. We validate our approaches experimentally on both real and synthetic data and test the performance and accuracy of our techniques.

Keywords: Moving object databases; Mining moving object trajectories; Clustering moving objects; Similarity search in moving objects.

13. Deterministic Replay for Message-Passing Based Concurrent Programs

Mohamed Elwakil and Zijiang Yang

Acm Transactions on Design Automation of Electronic Systems, 17: (2012) IF: 0.811

The Multicore Communications API (MCAPI) is a new message passing API that was released by the Multicore Association. CAPI provides an interface designed for closely distributed embedded systems with multiple cores on a chip and/or chips on a board. Similar to parallel programs in other domains, debugging MCAPI programs is a challenging task due to their non-deterministic behavior. In this paper we present a tool that is capable of deterministically replaying MCAPI programs executions, which provides valuable insight for MCAPI developers in case of failure.

Keywords: Mcapi; Message race; Multicore programs; debugging; Deterministic replay.

Dept. of Information Technology (IT)

14. Hybrid Self Organizing Neurons and EvolutionaryAlgorithms for Global Optimization

Crina Grosan and Aboul Ella Hassanien

Journal of Computational and Theoretical Nanoscience,:1-10 (2012) IF: 0.912

In this work a new algorithm inspired by the self organizing maps combined with evolutionary algorithms is lined up. A neuron in the map is not evolving by itself but it is the result of the application of an evolutionary algorithm during a set of iterations. This idea really helps to increasing the performance of both self organizing maps and evolutionary algorithms while considered individually. The experiments performed in this research envisage test functions having a single criteria but a high number of dimensions. Comparisons with four other well known metaheuristics for optimization (such as differential evolution, particle swarmoptimization, simulated annealing) show the performance and efficiency of the proposed approach.

Keywords: Self organizing maps;Evolutionary algorithms.

15. Breast Cancer Mri Diagnosis Approach using Support Vector Machine andPulse Coupled Neural

Aboul Ella Hassanien and Tai-hoon Kim

Journal of Applied Logic, 10: 277-284 (2012) IF: 0.574

This article introduces a hybrid approach that combines the advantages of fuzzy sets, pulse coupled neural networks (PCNNs), and support vector machine, in conjunction with wavelet-based feature extraction. An application of breast cancer MRI imaging has been chosen and hybridization approach has been applied to see their ability and accuracy to classify the breast cancer images into two outcomes: normal or non-normal. The introduced approach starts with an algorithm based on type-II fuzzy sets to enhance the contrast of the input images. This is followed by performing PCNN-based segmentation algorithm in order to identify the region of interest and to detect the boundary of the breast pattern. Then, wavelet-based features are extracted and normalized. Finally,a support vector machine classifier was employed to evaluate the ability of the lesion descriptors for discrimination of different regions of interest to determine whether they represent cancer or not. To evaluate the performance of presented approach, we present tests on different breast MRI images. The experimental results obtained, show that the overall accuracy offered by the employed machine learning techniques is high compared with other machine learning techniques including decision trees, rough sets, neural networks, and fuzzy artmap.

Keywords: Breast cancer; Fuzzy sets; Pulse coupled neural networks (Pcnns) andsupport vector machine.

16. Rough C-Means and Fuzzy Rough C-Means for Colour Quantisation

Gerald Schaefer, Qinghua Hu, Huiyu Zhou, James F. Peters and Aboul Ella Hassanien

Fundamenta Informaticae, 119: 113-120 (2012) IF: 0.365

Colour quantisation algorithms are essential for displaying true colour images using alimited palette of distinct colours. The choice of a good colour palette is crucial as it directly deter-mines the quality of the resulting image. Colour quantisation can also be seen as a clustering problemwhere the task is to identify those clusters that best represent the colours in an image. In this paperwe propose rough c-means and fuzzy rough c-means clustering algorithms for colour quantization of images. Both approaches utilise the concept of lower and upper approximations of clusters todefine palette colours. While in the rough c-means approach cluster centroids are refined iterativelythrough a linear combination of elements of the lower and upper approximations, the fuzzy roughc-means technique assigns variable membership values to the elements in the boundary region whichin turn are incorporated into the calculation of cluster centres. Experimental results on a standard setof images show that these approaches performs significantly better than other, purpose built colourquantisation algorithms.

Keywords: Colour quantisation; Clustering; Rough C-Means.

17. Wavelet Network-Based Narx and Narmax Models for Nonlinear System Identification

Nivin A. Ghamry

Ciit International Journal of Artificial Intelligent Systems and Machine Learning, 4(2): 70-77 (2012)

Wavelet Networks, combining the properties of the Wavelet decomposition along with the characteristics of neural networks, belong to the approaches which were recently applied for model structure in nonlinear system identification. The basic challenge of such wavelet network-based models is the determination of an optimal set of wavelet coefficients to set up the linear equation system for the identification of the unknown parameters. In this paper the B-spline-wavelet network-based NARX and NARMAX model are applied for the identification of a nonlinear model of an internal combustion engine concerning gas exhaust operation. The nonlinear model is identified using a SIMO system model during the warm-up period of the engine. Significant model term selection is improved by combing theOrthogonal forward Regression selection method with the Bayesian information criterion BIC. Simulations and validations of these models are carried out by Matlab to prove the effectiveness and applicability of the applied method. the results show that the introduction of wavelet networks considerably improves the prediction ability of the model. Standard errors on the estimated model coefficients are also calculated to assess the numerical conditioning of the identification process.

Keywords: Narmax; Nonlinear system; Neural network.

18. Event Detection Based Approach for Soccer VideoSummarization using Machine Learning

Hossam M. Zawbaa, Nashwa El-Bendary, Aboul Ella Hassanien and Tai-hoon Kim

International Journal of Multimedia and Ubiquitous Engineering, (2012)

Many soccer fans prefer to watch a summary of football games as watching a whole soccer match needs a lot of time. Traditionally, soccer videos were analyzed manually, however this costs valuable time. Therefore, it is necessary to have a tool for doing the video analysis and summarization job automatically.utomatic soccer video summarization is about extracting important events from soccer matches in order to produce general summaries for the most important moments in which soccer viewers may be

interested. This paper presents a machine learning (ML) based event detection and summarization system for emphasizing mportant events during soccer matches. The proposed system firstly segments the whole video stream into small video shots, then it classies the resulted shots into different shot-type classes. Afterwards, the system applies two machine learning algorithms, namely; support vector machine (SVM) and artificial neural network (ANN), for emphasizing important segments with logo appearance with addition to detecting the caption region roviding information about the score of the game. Subsequently, the system detects vertical goal posts and goal net. Finally, the most important events during the match are highlighted in the resulted soccer video summary. Experiments onreal soccer videos emonstrate encouragingresultsthe proposed approach greatly reduces workload and enhances the accuracy of summarizing soccer video matches with reference toboth recall and precision performance measurement criteria.

Keywords: Support vector machine (Svm); Articial neural network (Ann); Machine learning (Ml); Soccer video summarization; Hough transform.

19. Heart Sounds Human Identification and Verification Approaches using Vector Quantization and Gaussian Mixture Models

Neveen I. Ghali, Rasha Wahid and Aboul Ella Hassanien

International Journal of Systems Biology and Biomedical Technologies, 1(4): 74-87 (2012)

In this paper the possibility of using the human heart sounds as a human print is investigated. To evaluate the performance and the uniqueness of the proposed approach, tests using a high resolution auscultation digital stethoscope are done for nearly 80 heart sound samples. The verification approach consists of a robust feature extraction with a specified configuration in conjunction with Gaussian mixture modeling. The similarity of two samples is estimated by measuring the difference between their negative log-likelihood similarities of the features. The experimental results obtained show that the overall accuracy offered by the employed Gaussian mixture modeling reach up to 85%. The identification approach consists of a robust feature extraction with a specified configuration in conjunction with LBG-VQ. The experimental results obtained show that the overall accuracy offered by the employed LBG-VQ reach up to 88.7%.

Keywords: Heart sound system; Gaussian mixture modeling.

20. Integrated Features Based on Gray-Level and Hu Moment-Invariants with ant Colony System for Retinal Blood Vessels Segmentation

Ahmed H. Asad, Ahmad Taher Azar and Aboul Ella Hassanien

International Journal of Systems Biology and Biomedical Technologies, 1(4): 60-73 (2012)

Abnormality detection plays an important role in many real-life applications. Retinal vessel segmentation algorithms are the critical components of circulatory blood vessel Analysis systems for detecting the various abnormalities in retinal images. Traditionally, the vascular network is mapped by hand in a time-consuming process that requires both training and skill. Utomating the process allows consistency, and most mportantly, frees up the time that a skilled technician or doctor would normally use for manual screening. Several stud¬ies were carried out on the segmentation of blood vessels in general; however, only a small number of them were associated to retinal blood vessels. In this paper, an approach for segmenting retinal blood vessels is proposed using only ant colony system. Eight features are selected for the developed system; four are based on gray-level and the other features on Hu moment-invariants. The features are directly computed from values of image pixels, so they take about 90 seconds in computation. The performance of the proposed structure is evaluated in terms of accuracy, true positive rate (TPR) and false positive rate (FPR). The results showed that the overall accuracy and sensitivity of the presented approach achieved 90.28% and 74%, respectively.

Keywords: Ant colony system; Retinalblood vessels segmentation.

21. Binarization and Validation in formal Concept Analysis

Mostafa A. Salama and Aboul Ella Hassanien

International Journal of Systems Biology and Biomedical Technologies, 1(4): 16-27 (2012)

Representation and visualization of continuous data using the formal Concept Analysis (FCA) became an important requirement in real-life fields. Application of formal concept analysis (FCA) model on numerical data, a scaling or Discretization / binarization procedures should be applied as preprocessing stage. The Scaling procedure increases the complexity of computation of the FCA, while the binarization process leads to a distortion in the internal structure of the input data set. The proposed approach uses a binarization procedure prior to applying FCA model, and then applies a validation process to the generated lattice to measure or ensure its degree of accuracy. The introduced approach is based on the evaluation of each attribute according to the objects of its extent set. To prove the validity of the introduced approach, the technique is applied on two data sets in the medical field which are the Indian Diabetes and the Breast Cancer data sets. Both data sets show the generation of a valid lattice.

Keywords: Data mining; Formal concept analysis; Visualization.

22. An Fpga Implementation of Hearing Aids Based on Wavelet Packets

Nivin Ghamry

Journal of Computers, 7: 680-684 (2012)

Advances in digital signal processing andcroelectronics have led to the development of superiordigital hearing aids for ameliorating severe defects ofhearing. The progress in field programmable gate arrays(FPGA) technology, especially for miniaturized systemapplications, allowed increasing sophisticated features to bebuilt for better sound reproduction, keeping small size andlow power consumption of the devices. In this paper therecent trend of combining nterconnects of FPGAs withembedded microprocessors and related peripherals to forma complete system on a programmable chip is employed forthe design of digital hearing aids. Wavelet packet transformis applied for speech compensation of the hearing loss. Thewavelet packet module is described in VHDL, implementedon FPGA and then added as a peripheral to the processorsystem. The embedded software processor used is theMicroBlaze soft core processor.

The chip used is DigilentXUP II Virtex-II Pro system FPGA containing audio codecLM4550. The features of the design are small area and fastprocessing and low cost.

Keywords: Hearing aids; Fpga; Microblaze; Lm4550; Wavelet packet transform.

23. Multimodal Biometric System Using Iris, Palmprint and Finger-Knuckle

Ola M. Aly, Hoda M. Onsi, Gouda I. Salama and Tarek A. Mahmoud

International Journal of Computer Applications, 57: 1-6 (2012)

Most real-life biometric systems are still unimodal. Unimodal biometric systems perform person recognition based on a single source of biometric information. Such systems are often affected by some problems such as noisy sensor data, nonuniversality and spoof attacks. Multibiometrics overcomes these problems. Ultibiometric systems represent the fusion of two or more unimodal biometric systems. Such systems are expected to be more reliable due to the presence of multiple independent pieces of evidence. In this paper, we present a multibiometric ecognition system using three types of biometrics Iris, Palmprint and Finger_Knuckle Print. The fusion is applied at the matching-score level. The experimental results showed that the designed system achieves an excellent recognition rate with total Equal Error Rate EER zero percent.

Keywords: Finger; Knuckle; Biometric fusion; Iiris; Matching score; Multibiometrics; Palmprint.

24. Spatial Cloud Detection and Retrieval System for Satellite Images

Noureldin Laban, Ayman Nasr, Motaz ElSaban and Hoda Onsi

International Journal of Advanced Computer Science and Application (Ijacsa),12, 3: 212-217 (2012)

In last the decade we witnessed a large increase in data generated by earth observing satellites. Hence, intelligent processing of the huge amount of data received by hundreds of earth receiving stations, with specific satellite image oriented approaches, presents itself as a pressing need. One of the most important steps in earlier stages of satellite image processing is cloud detection. Satellite images having a large percentage of cloud cannot be used in further analysis. While there are many approaches that deal with different semantic meaning, there are rarely approaches that deal specifically with cloud detection and retrieval. In this paper we introduce a novel approach that spatially detect and retrieve clouds in satellite images using their unique properties .Our approach is developed as spatial cloud detection and retrieval system (SCDRS) that introduce a complete framework for specific semantic retrieval system. It uses a Query by polygon (QBP) paradigm for the content of interest instead of using the more conventional rectangular query by image approach. First, we extract features from the satellite images using multiple tile sizes using spatial and textural properties of cloud regions. Second, we retrieve our tiles using a parametric statistical approach within a multilevel refinement process. Our approach has been experimentally validated against the conventional ones yielding enhanced precision and recall rates in the same time it gives more precise detection of cloud coverage regions.

Keywords: Satellit images; Content based image retrieval; Cloud detection.

25. An Adaptive Watermarking Approach for Medical Imaging using Swarm Intelligent

Mona M. Soliman, Aboul Ella Hassanien, Neveen I. Ghali and Hoda M. Onsi

International Journal of Smart Home, 6: 37-50 (2012)

In this paper we present a secure patient medical images and authentication scheme which enhances the security, confidentiality and integrity of medical images transmitted through the Internet. This paper proposes a watermarking by invoking particle swarm optimization (PSO) technique in adaptive quantization index modulation and singular value decomposition in conjunction with discrete wavelet transform (DWT) and discrete cosine transform (DCT). The proposed approach promotes the robustness and watermarked image quality. The experimental results show that the proposed algorithm yields a watermark which is invisible to human eyes, robust against a wide variety of common attacks and reliable enough for tracing colluders.

Keywords: Watermarking; Swarm intelligent.

26. Artificial Immune System Inspired Intrusion Detection System using GeneticAlgorithm

Amira Sayed A. Aziz, Mostafa A. Salama, Aboul Ella Hassanien and Sanaa El-Ola Hanafi

Informatica, 36: 347-357 (2012)

Computer security is an issue that will always be under investigation as intruders never stop to find ways to access data and network resources. Researches try to find functions and approaches that would increase chances to detect attacks and at the same time would be less expensive, regarding time and space. In this paper, an approach is applied to detect anomalous activity in the network, using detectors generated by the genetic algorithm. The Minkowski distance function is tested versus the Euclidean distance for the detection process. It is shown that it Minkowski distance give better results than the Euclidean distance, and can give very good results using less time. It gives an overall average detection rate of 81.74% against 77.44% with the Euclidean distance. In addition, formal concept analysis was applied on the data set containing only the selected features and used to visualize correlation between highly effective features.

Keywords: Artificial immune system; Intrusion detection; Genetic algorithm; Minkowski distance.

27. Spectrum Allocation in Cognitive Radio Networks using Evolutionary Algorithms

Abd El-Baset S. Hamza, Haitham S. Hamzaand Mona M. El-Ghoneimy

Cognitive Radio and Its Application for Next Generation Cellular and Wireless Networks, (2012)

One of the key objectives of evolving communication technologies is toaximize the utilization of the available spectrum by increasing the number of imultaneous users while reducing

interferences among users. In cognitive radio networks, this problem is referred to as the spectrum allocation problem, and is shown to be NP-Hard. This chapter studies the use of evolutionary algorithms to solve the spectrum allocation problem in cognitive radio networks. In particular, a Binary Harmony Search Algorithm (BHSA) is proposed and used, for the first time, to solve the spectrum allocation problem. The performance of the proposed BHSA algorithm is evaluated via simulation and is compared with an optimized Genetic Algorithm (GA) under three utilization functions, namely, Mean-Reward (MR), Max-Min-Reward (MMR), and Max-Proportional-Fair (MPF). Extensive simulation results confirm that the BHSA is not only faster, but it also finds better solutions compared to those obtained by the GA. For instance, under the MMR function, the BHSA requires less than 4% of the time needed by the GA in order to find a solution that is 10% better than that obtained by the GA.

Dept. of Operation Research and Decision Support

28. Channel Choice and the Digital Divide inE-Government: the Case of Egypt

Christopher G. Reddick, Hisham M. E. Abdelsalam and Hatem A. Elkadi

Information Technology for Development, 18: 226-246 (2012)
IF: 0.605

This paper examines channel choice and the digital divide in Egyptian electronic governmentor e-government. Citizens have access to a variety of service delivery channels when theyinitiate contact with their government, ranging from e-government to ore traditionalchannels such as the phone and in-person visits to a government office. This paperexamines the extent of use of both contact channels for citizens and the impact of thedigital divide on channel use. A public opinion survey of Egyptian citizens was analyzed,and the results showed that there was a digital divide in the use of e-government bycitizens. The digital divide also extended to other contact channels such as the phone andwhen citizens used multiple contact channels for public service elivery. The results of thisstudy imply that for the development of e-overnment, especially in the context of adeveloping country such as Egypt, policy-makers need to understand that e-government isone of many channels that citizens can use when they initiate ontact with theirgovernment. The results of this study should encourage policy-makers to recognize theimportance of public service delivery in a multichannel environment.

Keywords: E-Government; Information technology and Public administration; Survey research; Egypt.

29. Factors Affecting PerceivedEffectiveness of LocalE-Government in Egypt

Hisham M. Abdelsalam, Christopher G. Reddick, Hatem A. ElKadi and Sara Gama

International Journal of Information Communication Technologies and Human Development, 4(1): 24-38 (2012)

An important area of e-government research is how different stakeholders perceive the impact and the use ofe-government systems on the different channels of governmental services.
The objective of this article is toexamine the perceived Effectiveness of local e-government systems through a survey of directors in differentEgyptian cities. The approach to accomplish this objective is to conduct exploratory factor analysis andregressionanalysis to determine what factors explain e-government fectiveness. This research adopts a modelthat usesthe citizen-initiated contacts with government literature as a way for understanding e-governmenteffectiveness. Results of anexploratory factor analysis reveal that e-government effectiveness is explainedby management capacity, security and privacy, andcollaboration. These factors were then analyzedthroughregression models that indicated that managementcapacity and security and privacy influenced e-governmenteffectiveness. However, there was no evidence thatcollaboration had atatistically significant impact one-governmenteffectiveness. This paper fits into the theme of the special issuesince it suggests strategies tobetter design e-government technology for local governments in Egypt through changes in security, privacy,and management capacity.

Keywords: Collaboration; E-Government; Effectiveness; Egypt; Local government; Management capacity; Security andprivacy.

30. E-Alexandria 2005-2010: A Multi-Perspective Analysis

Hatem A. Elkadi and Hisham M. Abdelsalam

The African Journal of Information and Communication, 143-155 (2012)

The Egyptian local e-government programme was established in 2002 to enhance both the quality and efficiency ofgovernment systems. The e-Alexandria project, initiated in 2003 represents a milestone in this programme. The projectincorporated seven councils that underwent technical, business and work-nvironment restructuring. This involved architecturalremodelling, enovations, furnishing, technological infrastructure setup and back office preparations, as well as personneltraining and backlog data entry. Later extensions included content development and an online services portal.This article presents a brief review of the process of constructing e-government systems experienced through the e-Alexandriaproject, which has continued to evolve over a full decade. The article provides a view of three services, namely elevatorinstallation permits, street occupation permits and retail shop licences, as these are very important local government servicesfor communities. The article uses the Lenk and Traunmuller (2000) multiple perspectives to document the public servicereforms that occurred in the ntroduction of e-government. It comments on continuation of the local e-government programmepost the January 25th revolution.

Keywords: Multi-perspective E-government; E-Alexandria; public service reform; Egyptian local government development programme (Elgdp).

31. Optimal Sequencing of Design Projects' Activities using Discrete Particle Swarm Optimisation

Hisham M. Abdelsalam and Amany M. Mohamed

International Journal of Bio-Inspired Computation, 4: 100-110 (2012)

The design structure matrix (DSM) has received considerable attention in literature asa tool that provides a compact and clear representation of activities and the relationships amongthese activities in product development projects. As much of the time and cost of such projectsis attributable to its iterative nature, determining the optimal sequence of project activities forefficient

execution becomes a necessity. This paper presents a discrete particle swarmoptimisation (DPSO) algorithm that determines the optimal sequence of activities executionwithin a product development or a design project that minimises project total iterative time.Algorithm performance was compared with published results and outperformed used methods.It was also used to minimise three other objective functions: iterative ime/cost, number offeedbacks and total feedback length.

Keywords: Product development projects; Design structure matrix; Dsm; Discrete particle swarm optimisation; Dpso; Design; Bio-inspired; Sequencing; Projects.

32. A Simulation Modelfor Managing Marketing Multi-Channel Conflict

Hisham M. Abdelsalam and Ahmed O. El-Tagy

International Journal of System Dynamics Applications, 1(4): 59-76 (2012)

In today's global competition, companies are obliged to go to market using multiple channels of strategy forvarious reasons. However, channel conflict is inevitable in multi-channeltructures causing sharp decreasesin the demand of one or more channels. A system dynamic model was developed to simulate the complexmultiple channel structure and factors that affect the demandand channel conflict; aiming to simulate thesituation of the supplier decision maker who takes fast decisions in one of the various variables that he controlsto achieve maximum profits and minimum channel conflict. The model was validated using real data ofa major consumer electronics supplier in Egypt that has traditional distributors and Hypermarkets as twodifferent channels. Various policies of inventory allocations in each channel and different promotion rateswere tested in order to achieve the objective of maximizing supplier profit and inimizing channel conflict.

Keywords: Channel conflict; Consumer electronics; Distribution; Hypermarkets; Multi-Channel; Simulation; System dynamics; Wholesales.

33. Egyptian Local Government Website Portals: Examining Maturity Levels and Human Development Indicators

Hisham M. Abdelsalam

Handbook of Research on E-Government in Emerging Economies: Adoption, E-Participation, and Legal Frameworks, (2012)

This chapter examines the development of e-Government in selected Egyptian local governments. A content analysis of 25 local government website portals was conducted examining categories of e-Management, e-Services, e-Democracy, and e-Decision making. The study first sets out to examine the overall level of maturity of local government websites in these four areas in Egypt. Second, this study examines whether Egyptian human development indicators explain the maturity of local government websites. Firstly, the overall results indicated that e-Government maturity in Egypt was primarily in the information dissemination stage. Secondly, local governments had a greater population in social services industries which indicated a greater level of e-Government maturity. Out of 17 variables tested, there were very few human development indicators related to e-Government website maturity. The results of this chapter showed the maturity of e-Government in local governments in a developing country matched against developed nations. Also, the results showed the limited impact of human development indicators to predict e-Government website maturity.

34. Onthe use of Particle Swarm Optimization Techniques for Channel Assignments in Cognitive Radio Networks

Hisham M. Abdelsalam

Multidisciplinary Computational Intelligence Techniques: Applications In Business, Engineering, And Medicine, (2012)

Efficient utilization of open spectrum in cognitive radio networks requires appropriate allocation of idle spectrum frequency bands (not used by licensed users) among coexisting cognitive radios (secondary users) while minimizing interference among all users. This problem is referred to as the spectrum allocation or the channel assignment problem in cognitive radio networks, and is shown to be NP-hard. Accordingly, different optimization techniques based on evolutionary algorithms were needed in order to solve the channel assignment problem.

This chapter investigates the use of particular swarm optimization (PSO) techniques to solve the channel assignment problem in cognitive radio networks. In particular, the authors study the definitiveness of using the native PSO algorithm and the Improved Binary PSO (IBPSO) algorithm to solve the assignment problem.

In addition, the performance of these algorithms is compared to that of a fine-tuned genetic algorithm (GA) for this particular problem. Three utilization functions, namely, Mean-Reward, Max-Min-Reward, and Max-Proportional-Fair, are used to evaluate the effectiveness of three optimization algorithms. Extensive simulation results show that PSO and IBPSO algorithms outperform that fine-tuned GA. More interestingly, the native PSO algorithm outperforms both the GA and the IBPSO algorithms in terms of solution speed and quality.

35. Success and Failure of Local E-Government Projects: Lessons Learned from Egypt

Hisham M. Abdelsalam

Managing E-Government Projects: Concepts, Issues, And Best Practices (Premier Reference Source), (2012)

This chapter examines the Information Systems success model in the Egyptian context. Much of the existing literature on information system success focuses primarily on the private sector. There are fewer studies that examine success in the context of the development of e-government. This study focuses specifically on local e-government development of projects in Egypt.

A survey is administered in three local governments on actual users of Information Systems. The results of this study confirm much of the existing research on information system success, but highlight the importance of net benefit as a success factor that examines the organizational and managerial context of e-government development. The importance of this research indicates that managerial functions matter for the success of e-government projects.

Faculty of Engineering

Dept. of Aeronautics and Aerospace Engineering

36. Recent Design and Utilization Trends of Small Satellites in Developing Countries

Mohamed B.Argoun

Acta Astronautica, 71: 119-128 (2012) IF: 0.614

Several small remote sensing satellites have been developed and launched during the last decade by several developing countries n Africa, the Middle East and East Asia. These satellites share among them several features; chief among them is that they were developed for use in developmental planning and to gain access to space technology. The first generation of those satellites had a relatively course resolution of about 30 m, but the second generation reaches a resolution of 2.5 m. This group of satellitesalsohave ‘‘similar’’ designs, which stems from the fact that they were developed to achieve a similar purpose: introducing developing countries to space technology and application through small remote sensing satellites. The other side of buildingnational space programs in developing nations is building the technological base for satellite manuacturing, building the infrastructure for operation and utilization of these satellites and most importantly building the user community and the user applications, which uses these results for sustainabledevelopment. This paper attempts to assess the degree to which these objectives were achieved for various satellites. In addition to these more ‘‘programmatic’’ aspects, the paper attempts to shed light, from published information,on some aspects of the recent trends in designs of small remote sensing satellites.

Keywords: Satellite;Space technology; Space programs; Developing countries.

37. Aerodynamic Shape Optimisation, Wind Tunnel Measurements and Cfd Analysis ofa Mav Wing

M. R. A. Nabawy, M. M. ElNomrossy and G. M. ElBayoumi

The Aeronautical Journal, 116: 685-708 (2012) IF: 0.482

The aerodynamic shape optimisation of a micro air vehicle (MAV) wing is performed to obtain the basic wing geometrical characteristics which produce the maximum range and endurance reqirements. Multhopp's method based on Prandtl's classical lifting line theory is used for the determination of the spanwise load distribution required during the optimisation process. The obtained lift and drag characteristics are used for the derivation of the range and endurance equations of an electrically driven micro air vehicle. The optimisation process is based on the modified feasible directions gradient based optimisation algorithm. Results are validated using wind tunnel measurements showing very good agreement. Results are also compared with solutions to the Navier-Stokes equationsobtained withANSYS-CFX finite elements using different turbulence models. These include the k-ε and the shear stress transport (SST) models as well as the Reynolds stress model.

Keywords: Cfd; Mav; Aerodynamics; Optimisation; Roll Control; Turbulence models; Finite Wing; Lifting line; Wing twist.

38. Adaptive Neuro-Fuzzy Controller for Multi-Layered Switched Reluctance Motor

Wafaa A. Arakat, Amira Y. Haikal and Ayman H. Kassem

International Journal of Computer Applications Ijca, 44: 22-28 (2012)

There has been big interest in switched reluctance motor (SRM) due to its simplicity and reasonable cost, however excessive torque ripple is one of the major disadvantages of switched reluctance motor. This paper attempts to reduce torque ripples of Switched Reluctance Motor through building multi-layered motor controlled by a hybrid intelligent system known as Adaptive Neuro-fuzzy Inference System ANFIS. Simulation of the proposed motor is conducted using Matlab Simulink environment 2011 and comparison results with single layer switched reluctance motor for both PI and ANFIS controllers show improvement in behavior of MSRM controlled by ANFIS through reduction in speed settling time as well as torque ripples.

Keywords: Multi-Layerswitched reluctance motor; Srm; Torque ripples; Anfis.

Dept. of Architectural Engineering

39. Assessment ofthe Role ofInternational Organizations in the Rehabilitaion of Historic Districts: Case of Darb Alahmar

Asmaa Abdel Aty Mohamed and Sherine Ali Gammaz

Journal of Urban Planning and Development, 138: 215-226 (2012) IF: 1.032

This study began by raising the question of whether the international organizations have effectively contributed in the revitalization of the old historic districts and whether the community participation approaches they implemented succeeded in sustaining the development and in the preservation of heritage or, just resulting in an attractive external temporary treatments not linked to the roots of the local identity. The paper answers these questions through an analytical and statistical assessment for the role of Aga Khan Project in the rehabilitation of Darb Alahmar in Cairo. It deduces statistical correlations between each of the roles of international organizations in the revitalization of historic districts and the community participation with the physical, social, and economic development aspects of the area, together with plotting the correlations between the role of these organizations and community participation. The conclusion of the paper draws attention to the fact that rehabilitation plans managed by these organizations have led to the internationalization of heritage that resulted in packaged frozen icons for the tourist industry, and the nationalization of heritage translated into the contemporary political construct. They have hindered the total development and caused gentrification problems. The paper has consequently highlighted the strengths and limitations of the role of these organizations in the rehabilitation of old historic districts, and presented a statistical model for the precise assessment of these agencies’ role, and which also enables comparing between their performances in future researches.

Keywords: Urban development; Public participation; Community development; Local government.

40. A Proposed Statistical Model for Real Estate Appraisal Applied to the Mixed-use Historical Maspiro District of Cairo

Asmaa Abdel Aty Mohamed

Journal of Sustainable Development and Planning, 7: 302-316 (2012)

This paper introduces a new statistical methodological approach for the real estate appraisal based on the consideration of the changing purchasing power of money, by deducing an equation based mainly on all the affecting urban context variables other than the market, cost, and income approach that are currently used for that purpose. This is achieved through testing the proposed statistical model using these urban variables on one of the most important districts in downtown Cairo, Maspiro (next to Tahrir Square incorporating 1130 land lots), together with comparing its predicted values with a sample evaluated by professional real estate appraisers to ensure its validity. Maspiro district confronts the Nile River, and faces the Egyptian Union of Radio and Television Building, Ministry of foreign Affairs, Embassy of Brazil, Embassy of Italy, and others.Accordingly, the paper fi nally illustrates that all theoretical approaches dealing with the real estate appraisal are subject to some defects ignoring the changing circumstances of each district and the urban planning variables that constitute its real value. They mainly depend on factors that are subject to change from time to time in accordance with the surrounding political, social, and economic circumstances. Over or underestimations may lead to economic loss and mislead the proposed developmental plans for the regions. The urban variables, on the other side, once measured for each real estate are not subject to these changes. Therefore, the research tests the validity of fi nding strong correlation between these variables and their real value, in the form of an equation by using statistical methods.

Keywords: Mixed-Use development; Real estate appraisal; urbancontext variables; Urbandevelopment; Urban.

41. Buildings as Catalysts in CommunityDevelopment: Monitoring, Evaluating and Enhancing the Interrelation Between Buildings, Settings of Value and Urban Communities

Sahar Imam

Book Published By Lap Lambert Academic Publishing, (2012)

This book contain a research discusses an approach for the redevelopment of existing deteriorated urban areas of value. Existing urban areas deterioration is usually influenced by transformation through time and the related chronological layers' traces on urban fabric. The study examines the possible role of new projects as catalysts in the development of such areas, it highlights existing areas' physical and non physical aspects before and after a new project intervention, as a step towards the understanding of catalytic projects effects on existing urban settings. The study aims at the formulation of an approach, preventing new investments from turning into a chaotic act in existing urban areas. The research depends on selected case studies, from Western, Regional and Local experiences. The analysis of the selected case studies helps in formulating a general approach to redevelopment which could be used in other settings and contexts of value.

Dept. of Chemical Engineering

42. Preliminary Investigation of Zinc Transport Through Zeolite-X Barrier:Linear Isotherm Assumption

R.O. Abdel Rahmana, O.A. Abdel Moamen, M. Hanafy and N.M. Abdel Monem

Chem Eng J, 185-186: 61-70 (2012) IF: 3.461

Hydrated sodium zeolite-X was synthesized and tested to evaluate its technical feasibility as a permeable reactive barrier (PRB) for remediating contaminated groundwater. Laboratory tests have been performed to characterize the synthesized material anddetermine some of its important physical and chemical properties. Batch and column techniques were used to give insight into the optimum conditions at which this material can efficiently retain zinc, as a model for bivalent cations, from contaminated aqueous solution. The batch investigations were directed to study the effect of initial zinc concentration and the plume pH on the retention characteristics. It was found that zeolite-X will efficiently remove Zn2+ ions from slightly contaminated groundwater under slightly acidic or alkali conditions. for highly contaminated groundwater and under acidic conditions, the zeolite efficiency for remediating the groundwater is reduced.Then zinc transport under saturated conditions was studied using column technique. Two methods were used to estimate the hydrodynamic dispersion coefficient; namely Brigham and nonlinear fitting. Simple analytical pulse model was used to preliminary investigate zinc transport through the barrier and a comparison between the two methods was performed. It was found that nonlinear regression method produces more realistic prediction for zinc transport.

Keywords: Remediation; Engineered barrier; Mathematical models;Sorption;Heavy metals.

43. Combined Coagulation Flocculation Pre Treatment Unit for Municipal Wastewater

IbrahimM. Ismail, Ahmed S. Fawzy, Nabil M. Abdel-Monem,Mahmoud H. Mahmoudand Mohamed A. El-Halwany

Journal of Advanced Research, 3: 331-336 (2012) IF: 3

The potentials of using the hydraulic technique in combined unit for municipal wastewatertreatment were studied.
A combined unit in which processes of coagulation, flocculation andsedimentation, has been designed utilizing hydraulic mixing instead of mechanical mixing.
A jar testtreatability study has been conducted to locate the optimum dose of the coagulants to be used.Alum, ferrous sulfate, ferric sulfate, a mixture of ferric and ferrous sulfates, and mixture of limeand ferrous sulfate were all tested. A pilot unit was constructed in the existing wastewater treatmentplant at El Mansoura governorate located in north Egypt. The optimum dose of coagulants used inthe combined unit gives removal efficiencies for COD, BOD, and total phosphorous as 65%, 55%,and 83%, respectively.

Keywords: Combined Unit; Coagulants; Flocculation; Hydraulic Mixing; Municipal waste water.

44. Novel Cdpds/Pvac Core–Shell Nanofibers as an Effective Photocatalyst for Organic Pollutants Degradation

Afeesh R. Unnithan, Nasser A.M. Barakat, M.F. Abadir, Ayman Yousef and Hak Yong Kim

Journal of Molecular Catalysis A: Chemical, :186-194 (2012) IF: 2.947

Photocorrosion and toxicity are the main constraints facing wide application of the CdS-based nanomaterials. In this study, CdS/PdS alloy is introduced as a core inside poly(vinyl acetate) (PVAc) nanofibers as a novel, efficient, reusable and easily recyclable photocatalyst. The core–shell structure was achieved using simple, effective and high yield technique: electrospinning. Typically, the CdS/PdS alloy was synthesized inside the polymer solution using cadmium acetate dihydrate, palladium acetate andammonium sulfide precursors. Electrospinning of the obtained colloidal solution led to produce core–shell structure due to resultant water from formation of CdS/PdS reactions. The utilized physiochemical characterizations affirmed formation of the CdS/PdS alloy as well as the core–shell morphology. The obtained CdPdS–PVAc electrospun nanofibers exhibit good photocatalytic performance toward dye degradation. Two azo dyes, Reactive black 5 (RB5) and Reactive Orange 16 (RO16), were completely eliminated within very short time. Moreover, the photocatalytic efficiency was not affected after three consecutive cycles for both dyes. This solar-light-driven reusable CdPdS–PVAc hybrid mat photocatalyst can be easily applied for industrial application, especially in the open water surface.

Keywords: Electrospinning cdpds; Polymer; Photocatalyst solar Light; Secondary pollution.

45. A Modified Procedure for Measuring Oxygen-18 Content of Nitrate

M.A. Ahmed, A.I.M. Aly, N. Abdel Monem, M. Hanafy and H.E. Gomaa

Journal of Hydrology, 472-473: 193-204 (2012) IF: 2.656

Mass spectrometric analysis of O-isotopic composition of nitrate has many potential applications in studies of environmental processes. Through this work, rapid, reliable, precise, broadly applicable, catalyst-free, low-priced and less labor intensive procedure formeasuring d18-O of nitrate using Isotope Ratio Mass Spectrometer has been developed and implemented. The conditions necessary to effect complete nitrate recovery and complete removal of other oxygen containing anions and dissolved organic carbon (DOC) without scarifying the isotopic signature of nitrate were investigated. The developed procedure consists of two main parts: (1) wet chemistry train for extraction and purification of nitrate from the liquid matrix; (2) off-line pyrolysis of extracted nitrate salt with activated graphite at 550 ^{o}Cfor 30 min. The conditions necessary to effect complete nitrate recovery and complete removal of other oxygen containing compounds were investigated. Dramatic reduction in processing times needed for analysis of d18O of nitrate at natural abundance level was achieved. Preservation experiments revealed that chloroform (99.8%) is an effective preservative. Isotopic contents of some selected nitrate salts were measured using the modified procedure and some other well established methods at two laboratories in Egypt and Germany.Performance assessment of the whole developed analytical train was made using internationally distributed nitrate isotopes reference materials and real world sample of initial zero-nitrate content. The uncertainty budget was evaluated using the graphical nested hierarchal approach. The obtained results proved the suitability for handling amples of complicated matrices. Reduction of consumables cost by about 80% was achieved.

Keywords: 18-O Isotopes; Nitrate extraction; Irms; Cl-Interference;Performance assessment; Uncertainty evaluation.

46. A Glance at the World: Current Status of Egyptian E-Waste Managemen

Shakinaz El Sherbiny, Hanem Sebak and Samah Shaalan

Waste Management, 32: 789-791 (2012) IF: 2.428

E-waste in Egypt is the fastest growing component of municipalsolid waste and hazardous waste streams, currently subject toupgrading due to the presence of mobile phones, computers, andaudio equipment. Egypt has not formal policy regulating e-waste management,although a number of actions have been implemented over the last three years.This mini-review focuses on such points.

Keywords: E-Waste; Waste management; Egypt.

47. Synthesis and Characterization of Pd-Doped Co Nanofibers as a Multifunctional Nanostructure

Nasser A.M.Barakat, M.F.Abadir, M.ShaheerAkhtar, MohamedEl-NewehyYu-shik Shin and HakYongKim

Mater Lett, 85: 120-123 (2012) IF: 2.307

Due to the axial ratio feature, bimetallic nanofibers are expected to have novel characteristics. In this study, Pd-doped Co nanofibers could be successfully prepared using simple, low cost, high yield and effective technique; electrospinning. The introduced nanofibers have been synthesized by calcination of electrospun nanofibers composed of Pd NPs/cobalt acetate tetrahydrate/poly(vinyl alcohol) in a vacuum atmosphere. The introduced Pd–Co nanofibers revealed distinct photocatalytic activity as an almost 90% from the methylene blue dye has been oxidized within 30 min. As an active layer in a diode, the introduced nanofibers showed good performance. Magnetic properties study indicated that Pd nanoparticles negatively affected the saturation magnetization of the cobalt nanofibers, however very low remenant magnetization was obtained (7.7 emu/g) compared to the un-doped Co nanofibers (69.22 emu/g) which concludes that Pd modified Co to be magnetically clean material.

Keywords: Metallic nanofibers; Electrospinning; Pd-Doped cobalt; Photocatalyst; Diode.

48. Flow Dynamics in Perforated Plate Liquid Extraction Columns

R.S. Ettouney and M.A. El-Rifai

Chem Eng Res Des, 90: 1417-1424 (2012) IF: 1.968

A linearized unsteady state flow model is developed for two counter-currently flowing liquids in an un-agitated perforated plate liquid–liquid column contactor. The model is based on the simultaneous solution of dynamic conservation equations and linearized hydrodynamic constitutive equations relating pressure

drops and dispersed phase holdups to flow rates. Analytical expressions are obtained for the dynamic responses of inter-stage continuous and dispersed phase flow rates, inter-stage holdups, and level of the top interface to changes in the light liquid and heavy liquid inflow rates to the column. The system's dynamic behavior is vividly demonstrated through a set of typical frequency and transient response computations. Owing to the interaction between the dynamics associated with the flow of the two liquids, the frequency responses of the flow rates and holdups of the two phases are characterized by resonance peaks and non-minimum phase behavior.

Keywords: Extraction; Perforatedplate columns; Hydrodynamics; Transient response; Frequency response.

49. Evaluation of Covariance Matrix Adaptation EvolutionStrategy, Shuffled Complex Evolution and Firefly Algorithmsfor Phase Stability, Phase Equilibriumand ChemicalEquilibrium Problems

Seif-Eddeen K. Fateena, Adrin Bonilla-Petriciolet and Gade Pandu Rangaiah

Chem Eng Res Des, 90: 2051-2071 (2012) IF: 1.968

Phase equilibrium calculations and phase stability analysis of reactive and non-reactive systems play a significantrole in the simulation, design and optimization of reaction and separation processes in chemical engineering. Thesechallenging problems, which are often multivariable and non-convex, require global optimization methods for solvingthem. Stochastic global optimizaion algorithms have shown promise in providing reliable and efficient solutionsfor these thermodynamic problems. In this study, we evaluate three alternative global optimization algorithms forphase and chemical equilibrium calculations, namely, Covariant Matrix Adaptation-Evolution Strategy (CMA-ES),Shuffled Complex Evolution (SCE) and Firefly Algorithm (FA). The performance of these three stochastic algorithmswas tested and compared to identify their relative strengths for phase equilibrium and phase stability problems. Thephase equilibrium problems include both multi-component systems with and without chemical reactions. FA wasfound to be the most reliable among the three techniques, whereas CMA-ES can find the global minimum reliablyand accurately even with a smaller number of iterations.

Keywords: Covariant matrix adaptation evolution strategy; Shuffled complex evolution; Phase stability analysis; Phase equilibrium calculations; Chemical equilibrium calculations.

50. Synthesis and Characterization of Polyurethane – Treated Waste Milled LightBulbs Composites

M. Bassyouni, Sayed A. Sherif, M.A. Sadek and F.H. Ashour

Compos Part B-Eng, 43: 1439-1444 (2012) IF: 1.731

In this study, polyurethane (PU)-milled light bulbs glass composites were synthesized and characterized.The main interest in this study that the polyurethane derived from renewable resources and waste glassare used to form the composite constituents as an attempt towards environmental preservation. Castoroil and polymeric diphenyl methane di-isocyanates (PMDI) were used in NCO/OH ratio = 2 for polyurethanesynthesis. Milled glass with average particles size less than 300 lm were prepared based on wastelight bulbs. Silane A1100 (as a compatibilizer) was used in order to improve the value of recycled milledglass beads. The adhesion force between polyurethane matrix and milled glass beads was evaluated usingmechanical and physical tests. Scanning electron microscopy (SEM) was used to investigate dispersionand fracture surfaces of the composites. Infrared spectrum (IR), Differential scanning calorimetry (DSC)behavior, and Thermogravimetric analysis (TGA), were employed to characterize the developed compositematerials in details. Chemical resistance (weight change, thickness swelling) was measured in oil,waterand dilute acetic acid media. Furthermore, tensile strength and hardness were investigated usinguniversal materials testing machines. A slight increase in the hardness values was reported along withthe increasing in particulate fillers loading up to 10% as a considerable improvement has been detectedwhen milled glass reached 20%. The DSC analysis showed the presence of treated milled glass beads influencesthe thermal behavior of pure PU and composites. This can be attributed to enhancing the physicalbonding between PU and silica group. Waste milled glass showeda significant effect on the thermal degradationof the composites in the presence of coupling agent. Further analysis on the tensile strength ofthe composites indicated that such improved mechanical properties may be attributed to the presence ofcoupling agent.

Keywords: Polymer–Matrix composites (Pmcs);Recycling;Physical properties; Mechanical testing.

51. Adsorptive Removal of Iron and Manganese Ions from Aqueous Solutions WithMicroporous Chitosan/Polyethylene Glycol Blend Membrane

Neama A. Reiad, Omar E. Abdel Salam, Ehab F. Abadirand Farid A. Harraz

Journal of Environmental Sciences, 24(8): 1425-1432 (2012) IF: 1.66

Microporous chitosan (CS) membranes were directly prepared by extraction of poly(ethylene glycol) (PEG) from CS/PEG blendmembrane and were examined for iron and manganese ions removal from aqueous solutions. The different variables affecting theadsorption capacity of the membranes such as contact time, pH of the sorption medium, and initial metal ion concentration in thefeed solution were investigated on a batch adsorption basis. The affinity of CS/PEG blend membrane to adsorb Fe(II) ions is higherthan that of Mn(II) ions, with adsorption equilibrium achieved after 60 min for Fe(II) and Mn(II) ions. by increasing CS/PEG ratio inthe blend membrane the adsorption capacity of metal ions increased. Among all parameters, pH has the most significant effect on theadsorption capacity, particularly in the range of 2.9–5.9. The increase in CS/PEG ratio was found to enhance the adsorption capacityof the membranes. The effects of initial concentration of metal ions on the extent of metal ions removal were investigated in detailThe experimental data were better fitted to Freundlich equation than Langmuir. In addition, it was found that the iron and manganeseions adsorbed on the membranes can be effectively desorbed in 0.1 mol/L HCl solution (up to 98% desorption efficiency) and the blendmembranes can be reused almost without loss of the adsorption capacity for iron and manganese ions.

Keywords: Chitosan; Blend membrane; Iron andmanganese ions; Adsorption.

52. Synthesis of Cu2o Nanocrystallites and their Adsorption and Photocatalysis Behavior

Sameh S.F. Mehanny

Advanced Powder Technology, 3: 17-35 (2012) IF: 1.612

Cuprous oxide (Cu2O) nano-crystallites have been prepared via an electrochemical method by the anodicdissolution of copper in an alkaline solution of concentrated sodium chloride in a simple electrochemicalcell. The effect of addition of glucose on the crystal size, structure and photocatalytic activity of Cu2O particleswas studied. Photocatalytic decolorization of MeO in aqueous Cu2O suspensions was investigated.X-ray diffraction (XRD), scanning electron microscope (SEM) and Fourier transformation infrared spectroscopy(FTIR) were used to characterize the samples. UV–vis Spectroscopy was employed to investigatethe photocatalysis behavior of the Cu2O samples. The adsorption performance of the Cu2O samplesshowed that after adsorption of 2 h, the decolorization efficiencies of MO reached 11.81%, 95.24% and56.53% for samples 1, 2 and 3, respectively, which proves that sample 2 has the highest adsorption capacity.The photocatalytic results showed that the as prepared Cu2O on the addition of 5 g/L glucose was thebest sample since it was photostable and decolorized 98.7% of MeO solution in 30 min without any furtherdecrease in the photocatalyticefficiency with increase in the irradiation time for 120 min. Higherconcentrations of glucose lead to the decrease of photocatalytic efficiencies of the Cu2O particles.2011 The Society of Powder Technology Japan. Published by Elsevier B.V. and The Society of PowderTechnology Japan. All rights reserved.

Keywords: Cuprous oxide;Chemicalsynthesis infrared;Spectroscopy X-Ray;Diffraction optical properties.

53. Explosion of Ammonium Nitrate Solutions, Two Case Studies

R.S. Ettouney and M.A. EL-Rifai

Process Safety and Environmental Protection, 90: 1-7 (2012) IF: 1.05

Two ammonium nitrate solution explosion accidents are analyzed in terms of the boiling point and solubility data. Both accidents occurred following a prolonged stoppage. In both cases a local increase in concentration and/or crystallization of ammonium nitrate has been suspected. In the first case this has been due to loss of temperature control with consequent evaporation under vacuum. In the second case crystal formation was attributed to cooling crystallization owing to poor insulation. Other conditions increasing the likelihood of the explosion were also satisfied. These include lack of flow, increase in temperature, and catalysis by both increased solution acidity and presence of stainless steel corrosion products.

Keywords: Ammonium nitrate; Solution explosion; Evaporation; Crystallization; Burstingpressure.

54. Emergency Venting Into Redundant Pipelines

R.S. Ettouney, M.A. El-Rifai and A.A. Elzoubier

Loss Prevention in the Process Industries, 25: 739-745 (2012) IF: 0.913

The evolution of pressure, temperature, and gas inventory during containment of blowdown from two high pressure gas networks into a third lower pressure relatively large redundant pipeline is followed through a simple lumped parameter model. Numerical solution of the non-linear model equations enabled to study the effects of relevant operating conditions on the system's dynamics. The effects of initial pressure difference between the supply and receiving networks, ratio of discharge orifice to pipe diameters in the supply networks, and heat transfer from the surroundings are investigated. A set of computer generated results are presented to demonstrate vividly the effect of the above variables on the percent of gas recovered in the lower pressure pipeline, the blowdown time, and the minimum temperatures reached in the networks.

Keywords: Blowdown containment; Depressurization dynamics; Venting.

55. Extraction ofCerium(Iv) Using Tributyl PhosphateImpregnated Resin from Nitric Acid Medium

O. S. Helaly, M. S. Abd El-Ghany, M. I. Moustafa, A. H. Abuzaid, N. M. Abd El-Monem and I. M. Ismail

Transaction of Nonferfous Metals Socity of China, 22: 206-214 (2012) IF: 0.751

Tributyl phosphate (TBP) solvent was used for impregnation into Amberlite XAD16 nonionic polymeric resin beadsusing the wet method to prepare solvent impregnated resin (SIR). Undiluted TBP in a ratio to the resin support (volume to mass) of6.0 at room temperature (RT) in 24 h was impregnated the resin with a mass ratio of 1.944, while the prepared gross sample of SIR atthe ratio of solvent to resin of 3.0 was impregnated with a mass ratio of 1.88. Cerium(IV) oxide concentrate, prepared from crudeEgyptian monazite sand, containing 37% cerium, 1.6% thorium and about 40% the other trivalent rare earth oxides, was used toprepare cerium(IV) nitrate solution for extraction using the prepared SIR. The impregnated resin was satisfactory forCe(IV)extraction from nitric acid medium at room temperature. Cerium loading capacity of the impregnated resin reached 95.6% of thecalculated theoretical capacity (173 g/kg (Ce/SIR)) under the conditions of 51.57 g/L cerium and 2.48 g/L thorium, 5.0 mol/L freenitric acid, solution to resin ratio of 10.0 and contacting the phases for 5.0 min. The loading capacity reached 98.75% when ceriumconcentration was increased to 91.43 g/L under the same conditions.

Keywords: Cerium (Iv); Crude monazite Sand; Tributyl Phosphate; Impregnated resin; Extraction; Nitric acid medium.

56. The Removal of Heavy Metal Ions fromWaste Water using Jojoba Oil in a NewTechnique

O. S. El Kinawy, N. A. El Moneim and D. E. El Haron

Energy Sources, 34: 1169-1177 (2012) IF: 0.715

The removal of heavy metal ions (CuCC and PbCC) from their aqueoussolutions of cupper sulfate and lead nitrate has been investigated with a new techniqueusing jojoba oil obtained from solvent extraction of prepressed jojoba meal. Syntheticaqueous solutions having different initial concentrations (20–80 ppm) were treatedwith different jojoba oil doses ranging from 2–15% by mixing for different intervals(0.5–2 h) at room temperature. The effect of these variables on the removal ofheavy metal was investigated. In addition, a corresponding relation between initialconcentration of heavy metal and its removal was also

obtained. on the other hand,jojoba oil loaded with heavy metal was regenerated and tested to its efficiency in asecond removal cycle and the results showed that jojoba oil has the ability to removeheavy metal with the same efficiency several times after its regeneration.

Keywords: Heavy metal; Jojoba Oil; Removal; Waste water.

57. The use of Magnesite Waste as FeldsparReplacement in the Production of Ceramic Wall Tiles

Sh. K. Amin, Hammam El-Abd, Nadia F. Youssef and M. F. Abadir

Ceramic forum International, (2012) IF: 0.051

The waste utilized in this work is the coarse fraction of inactive magnesia (MgO) that is discarded whenever only very fine magnesia active particles are required. This inactive magnesia is the magnesite (MgCO3) raw material over fired at around 1000 °C, when treated in a simple primitive method onsite, in the South Eastern Desert of Egypt. It is suggested as total or partial replacement of the fine expensive potash feldspar in the basic mixture used for manufacturing ceramic wall tiles from Egyptian raw materials. The experimental program includes assessment of nine Egyptian raw materials, using XRF and XRD. on the other hand, the magnesite waste was subjected to XRF and XRD, DTA and TGA. Two mixtures were prepared so as to replace 50 mass-% and 100 mass-% (total replacement) of fine feldspar by the waste, while a third mixture involves total replacement of fine feldspar by waste and reduction of glass sand from 12 to 7 mass-% while increasing the cheaper coarse feldspar content from 18 to 23 mass-%. Mixtures of glazed and unglazed samples were prepared, pressed into tile form, dried and fired through a fast single firing technique. Physical, chemical and mechanical properties were then measured and compared to both ISO and Egyptian Standards. Fired samples were also subjected to SEM in order to assess the existing phases and minerals. All the prepared mixtures showed conformity to both Egyptian and International standards of ceramic wall tiles.

Keywords: Ceramic wall tiles; Magnesite waste; Feldspar replacement; Vitrification parameters.

58. Thermal and Mechanical Characteristics of Epdm Composites

K.S. Ghase, S.M. El-Marsafy, E.F. Abadeer and A.M. Samir

Australian Journal of Basic and Applied Sciences, 6(5): 23-30 (2012)

Ethylene–Propylene–Diene terpolymers (EPDM)-based insulation systems are being widely used as internal thermal insulation for case-bonded solid rocket motors. In this paper, efforts have been made to quantify the effect of fumed silica, basalt fibers, or glass fibers loading on the thermal and mechanical behaviors of EPDM-based thermal insulation. EPDM is compounded with 0, 10, 20, 30 and 40 Phr (parts per hundreds parts of rubber) of fumed silica, basalt fibers, or glass fibers in two roll mill in the presence of organic peroxide varox DBPH-50 as cross linking agent. It has been observed that the addition of fumed silica, basalt fibers, or glass fibers improves the thermal and mechanical performances of the EPDM composites. Also thermal conductivity of the EPDM based composites for thermal insulation significantly decreased with fumed silica or basalt fibers loadings. on the contrary thermal conductivity of the EPDM based composites for thermal insulation significantly increased with glass fibers loadings.

Keywords: Epdm; Fumed silica; Basalt fibers; Glass fibers; Thermal insulation; Peroxide cross link.

59. Effect of New Coating Flame Retardant System on the FlammabilityProperties of Different Building Materials

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Australian Journal of Basic and Applied Sciences, 6(3): 393-400 (2012)

Abstract: The aim of this study is to determine the combustion characteristics for some selected building materials from the Egyptian market before and after treating with a newly initiated flame retardant; namely, Malonyl Phosphate Borate. Fire behavior of selected samples of building materials including woods, venal, canaltex, gypsum boards, sandwich panel and wall paper commonly used in the Egyptian market is assessed. The combustion characteristics of the selected building materials are examined using a cone calorimeter according to the ISO5660-I at heat flux 50 kW/m2. The results demonstrated variations in the burning characteristics of the selected samples of building materials before and after treatment. The heat release rate (HRR), effective heat of combustion (EHC), mass loss rate (MLR) and carbon monoxide yield (CO Yield) of the treated samples were found to be significantly lower than those of the untreated samples. The new coating system succeeded in changingthe classification of most of the building materials under test from flammable to fire resistant class.

Keywords: Flame retardant; Building materials; Flammability broperties.

Dept. of Computer Engineering

60. Rapid Collision Detection for Deformable Objects using Inclusion-Fields Applied to Cloth Simulation

Asma A. ElBadrawy, Elsayed E. Hemayed and Magda B. Fayek

Journal of Advanced Research, 3: 245-252 (2012) IF: 3

We introduce an inclusion-field technique for fast detection of collisions between a highly deformable object and another object with limited deformations. We mainly target the cloth simulation application where cloth (highly deformable) collides with deforming skin of a moving human model (has limited deformation as skin stretches and compacts within finite spacial and temporal limits specified by the bending angle and speed). Our technique intermixes concepts from space voxelization and distance fields to make use of the limited deformation nature of human skin. The technique works by discretizing the space containing the object into cells, and giving each cells an inclusion property. This property specifies whether this cell lies inside, outside, or on the surface of the deforming object. As the object deforms, the cells' inclusion properties are updated to maintain the correctness of the collision detection process. We tested our technique on a generally deforming Bezier surface, and on cloth

simulation to detect collisions between cloth and several articulated and deforming human body parts. Results showed that the inclusion field allows realtime collision detection between cloth and limited deformable objects on a standard PC. The technique is simple and easy to implement.

Keywords: Cloth simulation; Collision detection; Inclusion fields; Deformable objects.

61. A Review and Comparison of Strategies for Multi-Step Ahead Time Series forecasting Based onthe Nn5 forecasting Competition

Souhaib Ben Taieb, Gianluca Bontempi, Amir F. Atiya and Antti Sorjamaa

Expert Syst Appl, 39(6): 7067-7083 (2012) IF: 2.203

Multi-step ahead forecasting is still an open challenge in time series forecasting. Several approaches thatdeal with this complex problem have been proposed in the literature but an extensive comparison on alarge number of tasks is still missing. This paper aims to fill this gap by reviewing existing strategies formulti-step ahead forecasting and comparing them in theoretical and practical terms. To attain such anobjective, we performed a large scale comparison of these different strategies using a large experimentalbenchmark (namely the 111 series from the NN5 forecasting competition).

In addition, we considered theeffects of deseasonalization, input variable selection, andforecast combination on these strategies and onmulti-step ahead forecasting at large. The following three findings appear to be consistently supported bythe experimental results: Multiple-Output strategies are the best performing approaches, deseasonalizationleads to uniformly improved forecast accuracy, and input selection is more effective when performedin conjunction with deseasonalization.

Keywords: Time series forecasting; Multistep.

62. Fault Modeling and Worst-Case Test Vectors for Delay Failures Induced by Total Dose in Asics

Ahmed A. Abou-Auf, Mostafa M. Abdel-Aziz, Hamzah A. Abdel-Aziz, Amr G. Wassal and Ihab E. Talkhan

IeeeTransaction on Nuclear Science, 59: 2930-2935 (2012)

IF: 1.447

We analyzed the delay failure induced in standard-cell ASICs by total-ionizing dose. We developed a novelcell-level fault model for delay failures. We used this fault modelto identify worst-case test vectors (WCTV) for delay failuresinduced in ASIC devices exposed to total ionizing dose.

The faultmodel was experimentally validated using SPICE simulation andtotal dose data. We introduced a fast search algorithm based ondirected graph and genetic algorithms to help identify WCTV forlarge ASICs within reasonable search time. The methodology wasvalidated using ASIC test chip and Cobalt 60 facility.

Keywords: Cmos; Delay failure; Test vectors; Total dose.

63. Fault Modeling and Worst-Case Test Vectors of Sequential Asics Exposed to Total Dose

Ahmed A. Abou-Auf, Mostafa M. Abdel-Aziz, Hamzah A. Abdel-Aziz and Amr G. Wassal

Ieee Trnasactions on Nuclear Science, 59 (4): 829-837 (2012)

IF: 1.447

We introduce a novel methodology for identifyingworst-case test vectors for sequential circuits in ASIC devicesexposed to total dose. Testing of sequential circuits requires theuse of sequence of test vectors. Those test vectors were generatedusing cell-level fault models for failures induced by total dose. Inthis paper we focused on three types of failures: logic, leakagecurrent, anddelay failures. A novel cell-level fault model for delayfailures induced by total dose is introduced in this paper. Thismethodology was validated using SPICE simulation as well asexperimental results.

Keywords: Cmos; Delay failure; Test vectors; Total dose.

64. On Heuristic Solutions to the Simple Offset Assignment Problem in Address-Code Optimization

Hesham Shokry and Hatem M. El-Boghdad

Acm Transactions on Embedded Computing Systems, 11: (2012)
IF: 0.607

The increasing demandfor more functionality in embedded systems applications nowadays requires efficientgeneration of compact code for embedded DSP processors. Because such processors have highly irregulardata-paths, compilers targeting those processors are challenged with the automatic generation of optimizecode with competent quality comparable to hand-crafted code. A major issue in code-generation is to optimizethe placement of program variables in ROM relative to each other so as to reduce the overhead instructionsdedicated for address computations. Modern DSP processors are typically shipped with a featurecalled Address Generation Unit (AGU) that provides efficientaddress-generation instructions for accessingprogram variables. Compilers targeting those processors are expected to exploit the AGU to optimize variablesassignment. This article focuses on one of the basic offset-assignment problems; the Simple OffsetAssignment (SOA) problem, where the AGU has only one Address Register and no Modify Registers. Thenotion of Tie-Break Function, TBF, introduced by Leupers and Marwedel [1996], has been used to guide theplacement of variables in memory.In this article, we introduce a more effective form of the TBF; the Effective Tie-Breaking Function, ETBF,and show that the ETBF is better at guiding the variables placement process. Underpinning ETBF is thefact that program variables are placed in memory in sequence, with each variable having only two neighbors.We applied or technique to randomly generated graphs as well as to real-world code from the OffsetStonetestbench [2010]).In previous work [Ali et al. 2008], our technique showed up to 7% reduction in overhead when applied torandomly-generated problem instances. We report in this article on a further experiment of our technique onreal-code from the Offsetstone testbench. Despite the substantial improvement our technique has achievedwhen applied to random problem instances, we found that it shows slight overhead reduction when applied to real-world instances in OffsetStone, which agrees with similar existing experiments. We analyze theseresults and show that the ETBF defaults to TBF.

Keywords: Code Size; Offset Assignment; Compilation.

65. A Fuzzy Type-2 Facial Recognition System

Elsayed E. Hemayed and Hala Gabr

Wulfenia Journal, 19: 121-135 (2012) IF: 0.267

This paper presents a type-2 fuzzy logic controller used for face recognition. The process of identifying a face of an individual can be summed up in three phases; face detection, feature extraction, and face recognition. In this system, we are only concerned with the last phase; i.e. the face recognition of the human being. In this paper, we propose a fuzzy type-2 inference system that solely handles the facial recognition process.

The reason we decided to tackle the facial recognition problem using fuzzy inference is (1) the use of fuzzy set theory in membership functions allows us to intuitively collect, classify and categorize our training data, (2) the fuzzy inference system (i.e. the if-then rules structure) gives us an intuitive reasoning that mimics the human way of thinking. We have tested our system and compared it with existing facial identification models, and it showed superiority in performance. This is because fuzzy logic is a powerful tool that is able to handle uncertainties existing in data; in our case the person's facial image.

Keywords: Face recognition; Fuzzy logic; Security systems; Identification systems; Pattern recognition; Principal component analysis; Uncertainties.

66. A Rapid Convex Decomposition Technique for Shape Simplification

Hemayed, E. E. and A. M. Abd-ElAal

Ciit International Journal of Digital Image Processing,4(3): 113–122, (2012)

In this paper we address the problem of decomposing a polyhedral surface into convex patches. We describe a modified convex patch definition and based on that definition we develop a convex decomposition algorithm that decomposes a given surface model into "exact convex" or "approximate convex" patches according to a user defined angle threshold.

The resulting patches provide similar benefits as former surface convex decompositions and takes less processing time. The proposed decomposition technique takes few seconds to decompose complex models such as Armadillo model. In order to show the effectiveness of the proposed technique, we use it along with edge collapse technique and develop a shape simplification algorithm.

The proposed simplification algorithm decomposes the model first into convex patches, categorizes them into large and small convex patches and then applies a simplification scheme only to the large ones, thus maintaining important geometrical and topological information of original model. The proposed simplification technique is faster than the general decimation approach. The details of the proposed techniques along with experimental results are discussed in this paper.

Keywords: Polyhedral surface decomposition; Convexdecomposition; Shape simplification; Computer graphics.

Dept. of Electric Power and Machines

67. Design of Aerospace Control Systems using FractionalPid Controller

Magdy A.S. Aboelela, Mohamed F. Ahmed and Hassen T. Dorrah

Journal of Advanced Research, Cairo University, 3: 225-232 (2012) IF: 3

The goal is to control the trajectory of the flight path of six degree of freedom flying bodymodel using fractional PID. The design of fractional PID controller for the six degree of freedomflying body is described. Theparameters of fractional PID controller areoptimized by particleswarm optimization (PSO) method. In the optimization process, various objective functions wereconsidered and investigated to reflect both improved dynamics of the missile system and reducedchattering in the control signal of the controller.

Keywords: Six degree offreedom missile model; Particle swarm optimization; Fractional pid control; Matlab;Simulink.

68. Consolidity: Mystery of Inner Property of Systems Uncovered

Hassen T. Dorrah

Journal of Advanced Research- Elsevier, 3: 345-358 (2012) IF: 3

This paper uncovers the mystery of consolidity, an inner property of systems that was amazingly hidden. Consolidity also reveals the secrecy of why strong stable and highly controllable systems are not invulnerable of falling and collapsing. Consolidity is measured by its Consolidity Index, defined as the ratio of overall changes of output parameters over combined changes of input and system parameters, all operating in fully fuzzy environment. Under this notion, systems are classified into consolidated, quasi-consolidated, neutrally consolidated, unconsolidated, quasi-unconsolidated and mixed types. The strategy for the implementation of consolidity is elaborated for both natural and man-made existing systems as well as the new developed ones. An important critique arises that the by-product consolidity of natural or built-as-usual system could lead to trapping such systems into a completely undesired unconsolidity. This suggests that the ample number of conventional techniques that do not take system consolidity into account should gradually be changed, and adjusted with improved consolidity-based techniques. Four Golden Rules are highlighted for handling system consolidity, and applied to several illustrative case studies. These case studies cover the consolidity analysis of the Drug Concentration problem, Predator-Prey Population problem, Spread of Infectious Disease problem, AIDS Epidemic problem and Arm Race model. It is demonstrated that consolidity changes are contrary (opposite in sign) to changes of both stability and controllability. This is a very significant result showing that our present practice of stressing on building strong stable and highly controllable systems could have already jeopardized the consolidity behavior of an ample family of existing real life systems. It is strongly recommended that the four Golden Rules of consolidity should be enforced as future strict regulations of systems modeling, analysis, design and building of different disciplines of sciences. It can be stated that with the mystery of consolidity uncoveredthe door is now wide open towards the launching of a newgeneration of systems with superior consolidity in variousscience and disciplines.

Examples of these disciplines are basicsciences evolutionary systems engineering astronautics astronomy biology ecologymedicine pharmacology economics financecommerce political and managementsciences humanities social sciences literature psychology philosophy mass communication and education.

Keywords: Applied physics andEngineering; System consolidity; Fuzzy theory andsystems; Superior consolidated systems; Inferior consolidated systems; System controllability.

69. Development of New Consolidity Theory for Systems' Analysis and Design in Fully Fuzzy Environment

Hassen Taher Dorrah and Walaa Ibrahim Gabr

Expert Systems with Applications, 39: 1191-1199 (2012) IF: 2.203

This paper establishes the foundation of new systems' Consolidity Theory using the Arithmetic Fuzzy Logic-Based Representation approach for investigating the internal behavior of systems operating in fully fuzzy environment. Consolidated systems are defined as being stable at the original state, but due to fuzzy variations in their inputs or parameters tend to react accordingly in a manner leading to maintaining their consolidity and strength, or vice versa. Under the new theory, systems are classified into consolidated, neutrally consolidated or unconsolidated type based on their output fuzziness reaction to combined input and parameters fuzziness action. The systems' Consolidity Theory is demonstrated by several examples of mathematical functions of different dimensionalities, control theory and Predator-Prey populations' dynamics. The suggested Consolidity Theory is illustrated to be an effective tool for revealing the inner property of systems and predicting their hidden behavior when operating in fully fuzzy environment. Monitoring and control of systems' consolidity through forward and backward fuzziness tracking are suggested during systems' operation, for avoiding their drifting to possible unwanted unconsolidated domains. It is shown that the analysis will lead at the end to determining the system's consolidity index that could be regarded as a general basic internal property of the system. Such systems' consolidity concept can also be defined far from fuzzy logic, and is applicable to the analysis and design of various types of linear, nonlinear, multi-variable, and dynamic, etc., systems in real life in the fields of basic sciences, evolutionary systems, engineering, biology, medicine, economics, finance, political and management sciences, social sciences, humanities, and education.

Keywords: Fuzzy theory; Arithmetic fuzzy logic-Based representation; Normalized fuzzy matrices; Fuzzy dynamic systems; Advanced fuzzy control systems; Fuzzy smart grids; Fuzzy econometric Models; Systems' consolidity theory.

70. Energy Harvesting Tests with Galfenol at Variable Magneto-Mechanical Conditions

Daniele Davino, Alessandro Giustiniani, Ciro Visone and Amr A. Adly

Ieee Transactions on Magnetics, 48: 3096-3099 (2012) IF: 1.363

This paper deals with the experimental characterization of Galfenol (iron-gallium alloy) and its energy harvesting capabilities. Two rods are considered, one with a stress annealing treatment. The impact on the harvesting performance of magnetic bias, mechanical prestress and termination resistor are considered.Moreover, the performed measurements allow toverify an important feature of the energy conversion of this magneto-mechanical material: the energy harvested loops, in the B–H plane, are confined within the magnetic characteristics at the extrema of the applied stress. This suggests the significance of the static characteristics in the energy conversion process.

Keywords: Energy Harvesting; Galfenol; Magnetomechanical Effects.

71. Optimal Sizing of a Solar Water Heating System Based ona Genetic Algorithm foran Aquaculture System

Doaa M. Atia, Faten H. Fahmy, Ninet M. Ahmed and Hassen T. Dorrah

Mathematical and Computer Modelling: 55, 1436-1449 (2012) IF: 1.346

The most common use of thermal solar energy has been for water heating systems; this use has been commercialized in many countries in the world. This paper presents a model of a forced circulation solar water heating system for supplying a hot water at a certain temperature for an aquaculture system. The main components of the system are flat plate collector, storage tank, and a biogas auxiliary heater. The optimization problem is carried out using a genetic algorithm, which is one of the modern optimization techniques because of its evolutionary nature; it can handle any kind of objective function and constraint. Genetic algorithms don't have mathematical requirements about the optimization problem; Also genetic algorithms are very effective in performing a global search (in probability), and provide a great flexibility. The optimal design of flat plate collector area using genetic algorithm is used to optimize the objective functionconsidering the constraints required for the system. As the genetic algorithm is a discrete optimization tool, the number of variables in principle is unlimited. The economic analysis of such system is evaluated with the life cycle cost method. The collector area is equal to 63 m2, at this value the solar fraction reached 98% which is a very high value. Also, sensitivity analysis to solar radiation variation, air temperature variation, and interest rate has been carried out.

Keywords: Solar Thermal Energy; Aquaculture System, Optimization Genetic Algorithm; Economic Optimal Sizing.

72. Torsional Vibration Control of Large Induction Motors using Constant Air Gap Flux Scheme

N.M.B. Abdel-Rahim and A. Shaltout

Iet Electr Power App, 6: 545-552 (2012) IF: 1.173

Comprehensive analysis of the starting period of inverter-fed large induction motors reveals that these motors are subjected to additional components of pulsating torsional torque. These torque pulsations may coincide with the natural torsional frequency of the large motor system and produce hazardous shaft torque oscillations. To alleviate the torsional toque problem and limit the motor starting current, a constant air gap flux using slip frequency control scheme is proposed to operate the motor inverter. Simulation results show that the proposed scheme is capable of drastically reducing the torsional torque oscillations and limiting the motor line current to approximately 22% of its direct on-line starting value without prolonging its starting period.

Keywords: Large squirrel-Cage induction Motor; Variablespeed Drives; constant air gap flux control; Torsional torque Oscillations.

73. Simulation Study of a New Approach for Field Weakening Control of Pmsm

Mohamed Taha Elsayed, Osama Ahmed Mahgoub and Sherif Ahmed Zaid

Journal of Power Electronics, 12: 136-144 (2012) IF: 0.842

In this paper, the different techniques for the field weakening, also known as constant power speed range (CPSR) operation, for permanent magnet synchronous motor (PMSM) will be introduced and analysed. Field weakening of PMSM, can be done using either vector control (VC) or conventional phase in advance (CPA). Implementation of these techniques depending on some features and constrains. Most of these features and constrains came from the motor parameters. One of these constrains is the motor inductance which determining whether the motor can be driven in the CPSR or not. A new approach for the field weakening will be discussed and to be verified to overcome this constrain. The new approach will be verified through both techniques VC and CPA.

Keywords: Cpa; Cpsr; Mtpa; Pmsm.

74. The Effect of Harmonic Detection Speed on the Overall Performance ofShunt Active Power Filters

Shousha Mahmoud Fawzy; Zaid Sherif Ahmedand Mahgoub Osama Ahmed

Wseas Transactions on Systems,11(8): 294(2012)

Active Power Filters (APFs) are the up-to-date solution to power quality problems. Shunt active filters (the most common type) allow the compensation of current harmonics, unbalance, together with power factor correction, and can be much better solution than the conventional approach. Harmonic reference detection is the key word for the proper operation of APF. This paper studies the effect of the speed and the complexity of the detection algorithm on the overall performance of the shunt APF. An experimental shunt APF is built and controlled using a Digital Signal Processor (DSP). Three different detection algorithms are analyzed and tested. These algorithms are the Instantaneous Reactive Power Theory (IRPT) or simply the p-q theory, Synchronous Reference Frame (SRF), and Synchronous Detection Method (SDM). The three different extraction techniques result finally in a graded performance of the shunt APF which lead to different results for the supply current THD% and supply power factor.

Keywords: Shunt Apf; Dsp; Harmonic detection; Irpt; Sdm; Srf.

75. Spacecraft Neural Network Control System Design Using Fpga

Hanaa T. El-Madany, Faten H. Fahmy, Ninet M. A. El-Rahman and Hassen T. Dorrah

Online Journal on Electronics and ElectricalEngineering (Ojeee), 4: (2012)

Designing and implementing intelligent systems has become a crucial factor for the innovation and development of better products of space technologies. A neural network is a parallel system, capable of resolving paradigms that linear computing cannot. Field programmable gate array (FPGA) is a digital device that owns reprogrammable properties and robust flexibility. for the neural network based instrument prototype in real time application, conventional specific VLSI neural chip design suffers the limitation in time and cost. With low precision artificial neural network design, FPGAs have higher speed and smaller size for real time application than the VLSI and DSP chips. So, many researchers have made great efforts on the realization of neural network (NN) using FPGA technique. In this paper, an introduction of ANN and FPGA technique are briefly shown. Also, Hardware Description Language (VHDL) code has been proposed to implement ANNs as well as to present simulation results with floating point arithmetic. Synthesis results for ANN controller are developed using Precision RTL. Proposed VHDL implementation creates a flexible, fast method and high degree of parallelism for implementing ANN. The implementation of multilayer NN using lookup table LUT reduces the resource utilization for implementation and time for execution.

Keywords: Spacecraft; Neural network; Fpga; Vhdl.

76. Optimization and Feasibility Analysis of Satellite Earth Station Power System using Homer

Hanaa T. El-Madany, Faten H. Fahmy, Ninet M. A. El-Rahman and Hassen T. Dorrah

Telkomnika, 10: 359-370 (2012)

Satellite earth stations which located in remote areas are one of many applications powered by the renewable energy sources. Ground system consists of ground station and control centers working together to support the spacecraft and the data user. Earth station consists of major subsystems, transmitter, receiver, antenna, tracking equipment, terrestrial interface equipment and power supply. Power subsystem is an important part that required for supplying the earth station with electrical power to continue communicating with its remote sensing satellite. This paper deals with simulation and optimal sizing of earth station power system using HOMER software. A combination of two energy sources (solar, and wind) to provide a continuous electric power production is used to determine the optimum system operation. Three system configurations are compared with respect to the total net present cost (NPC) and levelized cost of energy (COE). Also, economical study will be analyzed for energy demandand sensitivity analysis will be performed.

Keywords: Earth Station; Homer; Optimal sizing; Photovoltaic; Remote Area.

77. Design of Fpga Based Neural Network Controller for Earth Station Power System

Hanaa T. El-Madany, Faten H. Fahmy, Ninet M. A. El-Rahman and Hassen T. Dorrah

Telkomnika Indonesian Electrical Engineering Journal, 10: 281-290 (2012)

Automation of generating hardware description language code of neural networks models can highly decrease time of implementation those networks into a digital devices, thus significant money savings. To implement the neural network into hardware design, it is required to translate generated model into device structure. VHDL language is used to describe those

networks into hardware. VHDL code has been proposed to implement ANNs as well as to present simulation results with floating point arithmetic of the earth station and the satellite power systems using ModelSim® PE 6.6 simulator tool. Integration between MATLAB® and VHDL is used to save execution time of computation. The results shows that a good agreement between MATLAB and VHDL and a fast and flexible feed forward NN which is capable of dealing with floating point arithmetic operations; minimum number of CLB slices; and good speed of performance. FPGA synthesis results are obtained with view RTL schematic and technology schematic from Xilinix tool. Minimum number of utilized resources is obtained by using Xilinix VERTIX5.

Keywords: Earth Station;Pga; Neural Network; Vhdl.

78. Pi Controller Based on Genetic Algorithm for Pmsm Drive System

Faeka Khater, Adel Shaltout, Essam Hendawi and Mohamed Abu El-sebah

Journal of Cybernetics Informatics, 13: 1-12 (2012)

This paper introduces a genetic-algorithm-based PI controller for position control of permanent magnet synchronous motor. The algorithm is proposed for optimizing the PI controller gains in the position control. Different controllers' strategies are applied for the cascaded-loop position controller, speed controller and current controllers. The controllers are compared together to select the best one. The objective target, which has been used for comparison, is the rise time, settling time, steady state error. In addition, the response of the developed torque is investigated. Simulation.

Keywords: Pi Controller; Pmsm control; Genetic algorithm.

79. Identification of Stator Winding Faults and Remedial Operation of Permanent Magnet Synchronous Motors with Suppress Noise and Ripple

Hamdy Mohamed Soliman and S. M.EL. Hakim

International of Soft Computing and Engineering (Ijsce), 2: 1-10 (2012)

The reliability of the drive system is very important in critical systems. The faults in these systems are unwanted and the drive system must be operated under the fault conditions. If fault occurs this may be lead to loss of the human life and capital so the detection of this fault, separation the faulty part and method invention for remedial operation is very important. In this paper the performance of a permanent magnet synchronous motor drive under a stator winding fault is studied and a negative sequence is used to detect the different types of the faults in that winding. This paper is suggested two models for solving these faults. The control in these models depends upon the controlling in each phase separately.

The first model doesn't contain any special tools to improve the torque ripple and THD. The second model contains 2PI current controllers to improvement the performance at fault and remedial operation. One is for the torque and the other is for the flux. The first PI controller is feeding from the torque error between the reference and estimated torques to get new q-axis current component representing modifier current arises from uncertain things inside the machine and drive system. This current will add to reference q-axis current to get robust new q-axis current to satisfy the drive requirement and solve the torque problem (ripple torque). With robust current, the total harmonic distortion is a decrease but doesn't reach the best value so the other PI controller is used to adjust the THD. In this PI controller, the d-axis flux is compared to rotor permanent magnet flux to solve this problem arises from non-sinusoidal of the magnetic flux. The output of the PI controller is introduced to the reference d-axis current. The new d-axis current will reach the best value of THD. The simulation of the second controller is compared to the simulation of first controller to show if the adding the 2 PI current controllers is profit or not. Here the matlab simulink is used to simulate the drive system.

Keywords: Fault detection; Pi controller; Remedial operation; stator winding fault; Torque ripple.

80. Torque Ripple Minimization, Suppress Harmonics, and Noise of Brushless Pm Synchronous Motors Derivedby Field Oriented Control

Hamdy Mohamed Soliman and S. M. Hakim

International Journal of Research and Reviews in Applied Sciences (Ijrras), 12(3): 481-497 (2012)

Conventional field oriented control for brushless PM synchronous motor depends upon mathematical model so the parameters variations, noise, electromagnetic interface, non-sinusoidal flux and harmonics in the motor or in power converter will cause performance deteriorating of the drive system. They are causing speed oscillations, ripples in torque, ripples in current and an increase the total harmonics distortion (THD). This paper is addressed these problems and suggested novel two PI controller for solving these problems. One for the torque and the other for the flux.

The first PI controller is feeding from the torque error between the reference and estimated torques to get new q-axis current component representing modifier current arises from uncertain things such as earliest problems. This current will add to reference q-axis current to get robust new q-axis current to satisfy the drive requirement and solve the torque problem. With robust current, the total harmonic distortion is a decrease but doesn't reach the best value so the other PI controller is used to adjust the THD. In this PI controller, the d-axis flux is compared to rotor permanent magnet flux to solve this problem arises from non-sinusoidal of the magnetic flux.

The output of the PI controller is introduced to the reference d-axis current. The new d-axis current will reach the best value of THD. The simulation of the proposed controller is compared to the simulation of conventional controller to show the advantages of the proposed controller. To display the effectiveness of the second PI controller (flux controller), the result of the new controller is displayed with new PI torque controller only and with new two proposed controller. MATLAB SIMULINK is used to simulate the drive system.

Keywords: Pmsm; Foc; Hysteresis current controller; Pi Controller; Torque ripple; Current ripple; Thd.

81. Improvement the Current Control Methods for Three Phase Voltage Source Inverter to Drive the Permanent Magnet Synchronous Motor

Hamdy Mohamed Soliman and S. M.EL. Hakim

International Journal of Engineering and Advanced Technology (Ijeat), 2: 53-61 (2012)

Three phase pluse width modelation voltage soruce inverter are widly used in many industrial applications such as the drive system. The performance of the drive systems depend up on the motor control and method of control in power converter. From the most important methods to control the power converter are current and voltage controls. The current control is preferable. This is because it is simple. The quality control of this method depends upon the quality of the waveform is generated by current controlled of converter. This paper aims to improve the performance of Ac drives through the improvement the different methods of the current controlled. Here the classical hysteresis controller, ramp type controller and delta modulator controller are discussed and improvement by general design of PI current controller for each phase. The improvement can be seen through the torque ripple and total harmonic distortion. The proposed model is compared to classical model to show the effectiveness of the proposed model. This work is simulated through matlab simulink.

Keywords: Hysteresis controller; Delta modulator controller; Ramp type controller; Matlab simulink.

82. Optimum Remedial Operation of Permanent MagnetSynchronous Motor

Hamdy Mohamed Soliman and S. M. El. Hakim

International Journal of Electrical and Computer Engineering (Ijece), 2: 621-631 (2012)

In critical systems, the reliability of the drive is very important. The faults are unwanted. The faults may be lead to loss of the human life and capital. This paper is addressed this problem and suggested two models to solve it. The first model doesn't contain any special tools to improve the torque ripple and THD. The second model contains 2PI current controllers to improvement the performance at fault and remedial operation. One is for the torque and the other is for the flux. The first PI controller is feeding from the torque error between the reference and estimated torques to get new q-axis current component representing modifier current arises from uncertain things inside the machine and drive system such as temperature and parameters variations.This current will add to reference q-axis current to get robust new q-axis current to satisfy the drive requirement and solve the torque problem (ripple torque). With robust current, the total harmonic istortion is a decrease but doesn't reach the best value so the other PI controller is used to adjust the THD. In this PI controller, the d-axis flux is compared to rotor permanent magnet flux to solve this problem arises from non-sinusoidal of the magnetic flux. The output of the PI controller is introduced to the reference d-axis current. The new d-axis current will reach the best value of THD. The simulation of the second controller is compared to the simulation of first controller to show if the second controller strong or weak. Matlab simulink is used to simulate the drive system.

Keywords: Field oriented control; Remedial operation; Pi Controller; Torque ripple; Thd.

83. Extensions to the Finite Element Technique for the Magneto-Thermal Analysis of Aged Oil Cooled-Insulated Power Transformers

Jehan Shazly and Amr A. Adly

Jehan Shazly and Amr A. AdlyJournal of Electromagnetic Analysis and Applications, 4: 167-176 (2012)

It is well known that the hot spot temperature represents the most critical parameter identifying the power rating of a transformer. This paper investigates the effect of the degradation of core magnetic properties on temperature variation of aged oil-cooled transformers. Within this work, 2D accurate assessment of time average flux density distribution in an oil insulated-cooled 25 MVA transformer has been computed using finite-element analysis taking into account ageing and stress-induced non-uniform core permeability values. Knowing the core material specific loss and winding details, local core and winding losses are converted into heat. Based upon the ambient temperature outside the transformer tank and thermal heat transfer related factors, the detailed thermal modeling and analysis have then been carried out to determine temperature distribution everywhere. Analytical details and simulation results demonstrating effects of core magnetic properties degradation on hot spot temperatures of the transformer's components are given in the paper.

Keywords: Oil insulated; Cooled power transformer; Finite element method; Electromagnetic field analysis; Thermal analysis.

84. Fuzzy Like Pid Controller Tuning byMultiobjective Genetic Algorithm for LoadFrequencyControl in Nonlinear Electric Power Systems

M. A. Tammam, M. A. S. Aboelela, M. A. Moustafa and A. E. A. Seif

International Journal of Advances in Engineering & Technology, 5: 572-583 (2012)

This paper studies control of load frequency in single and two area power systems with fuzzy like PID controller. In this study, multi-objective genetic algorithm is used to determine the parameters of the fuzzy like PID controller according to the system dynamics.

The proposed controller has been compared with the conventional PID controllers tuned by Ziegler-Nicholas method and Particle Swarm Optimization technique. The overshoots and settling times with the proposed Genetic-PID controller are superior to the outputs of the same characteristics of the conventional PID controllers. The effectiveness of the proposed schemes is confirmed via extensive study using single area and two areas load frequency control examples through the application of MATLAB-Simulink software.

Keywords: Load frequency control; Electric power system; Fuzzy logic; Multi-Objective genetic algorithm.

85. Hybrid Modeling of Power Plant and Controlling Using Fuzzy P+Id with Application

Marwa M. Abdulmoneim, Magdy A.S. Aboelela and Hassen T. Dorrah

International Journal of Advances In Engineering & Technology, 4: 42-53 (2012)

This paper provides a method one can model manufacturing processes in hybrid systems framework utilizingsimple bond graph to determine the flow of events and differential equation models that describe the systemdynamics. Controlling of these systems can be easy to develop. "Modeling and Simulation of thermal Powergeneration Station for power control" will be presented by using hybrid bond graph approach. This workincludes the structure and components of the thermal electrical power generation stations and the importance ofhybrid bond graph to model and control complex hybrid system, controlling of power plant will be presented byusing Fuzzy P+ID controller.

Keywords: Hybrid system; Bond graph; Word bond Graph and Hydraulic system.

86. Small Wind Turbine Emulator with Armature Controlled Separately Excited Dc MotorVia Analogue ElectronicbCircuit

A. Mahdy, S.M. El-Hakim and Hanafy Hassan Hanafy

International Journal of Renewable Energy Technology, 3: 356-371 (2012)

In this paper, a small wind turbine emulator (WTE) using separatelyexcited DC motor is modelled, designed, simulated, implemented and tested. A 1 HP separately excited DC motor is used to emulate the characteristics of the rotor of small wind turbine. The DC motor is driven by a thyristor bridge with closed-loop cascaded PI controller for armature control. A separately excited DC generator with a variable resistive load is directly coupled to the DC motor. A small cheap analogue electronic circuit, with less interfacing, is used to generate a specific reference wind turbine speed based on the wind turbine rotor characteristics and the mechanical wind power available. Simulation andexperimental results are compared to proof the validity and accuracy of the WTE.

Keywords: Small wind turbine emulator; Dc Motor; Thyristor Bridge; Analogue.

87. A Novel Study for Constant Voltage and Frequency Operation of Self-Excited Short-Shunt Induction Generator

H.H. Hanafy, S.A. Zaid, A.M. Gesraha andM.M. Abd-Elaziz

International Journal of Renewable Energy Technology, 3: 237-253 (2012)

This paper presents an analytical technique for selecting theoptimalshunt and series capacitances required for maintaining constant load voltage and frequency of a self excited short shunt induction generator (SESSIG). The study investigates the performance of the SESSIG at different operating conditions, such as speed of the prime mover, load impedance and load power factor. The required capacitances have been determined using two second order non-linear equations based on the steady state equivalent circuit model, instead of the high order non-linear equations in the literatures. The capacitance values obtained by the proposed technique have been verified experimentally to confirm the validity and the accuracy of the proposed technique.

Keywords: Induction generator; Self-Excited; Variable speed prime mover; Voltage control; Frequency control.

88. Treatment of Contaminated Water by Electrostatic Fields- A Pilot Study

Ahmed Raslan, Hussein Anis and Hany M.A. Elghazaly

International Journal of Civil Engineering and Building Materials, 2: 9-17 (2012)

Water has become a vital and scarce resource. The need for safe, efficient and economical water treatment method forces scientists throughout the world to investigate different biological and chemical methods in order to remove contamination particles from industrial and municipal waste waters. In this pilot study, an attempt is made to use finite element-based routine to investigate the effectiveness of using electrostatic decontamination in water treatment. The effect of water resistivity, electric field, decontamination cell size and contaminants' density and radius are investigated. The initial results prove that electrostatic water treatment can be effective, especially with high resistivity water.

Keywords: Electrostatics; Electric fields; Water resources.

89. Design and Control Strategy of Diffused Air Aeration System

Doaa M. Atia, Faten H. Fahmy, Ninet M. Ahmed and Hassen T. Dorrah

World Academy of Science, Engineering and Technology, (2012)

During the past decade, pond aeration systems have been developed which will sustain large quantities of fish and invertebrate biomass. Dissolved Oxygen (DO) is considered to be among the most important water quality parameters in fish culture. Fishponds in aquaculture farms are usually located in remote areas where grid lines are at far distance. Aeration of ponds is required to prevent mortality and to intensify production, especially when feeding is practical, and in warm regions. To increase pond production it is necessary to control dissolved oxygen. Artificial intelligence (AI) techniques are becoming useful as alternate approaches to conventional techniques or as components of integrated systems.

They have been used to solve complicated practical problems in various areas and are becoming more and more popular nowadays. This paper presents a new design of diffused aeration system using fuel cell as a power source. Also fuzzy logic control Technique (FLC) is used for controlling the speed of air flow rate from the blower to air piping connected to the pond by adjusting blower speed. MATLAB SIMULINK results show high performance of fuzzy logic control (FLC).

Keywords: Aeration system; Fuel cell; Artificial intelligence (Ai); Techniques; Fuzzy logic control.

90. Earth Station Neural Network Control Methodology and Simulation

Hanaa T. El-Madany, Faten H. Fahmy, Ninet M. A. El-Rahman and Hassen T. Dorrah

World Academy of Science, Engineering and Technology, 61: 1284-1289 (2012)

Renewable energy resources are inexhaustible, clean as compared with conventional resources. Also, it is used to supply regions with no grid, no telephone lines, and often with difficult accessibility by common transport. Satellite earth stations which located in remote areas are the most important application of renewable energy.
Neural control is a branch of the general field of intelligent control, which is based on the concept of artificial intelligence. This paper presents the mathematical modeling of satellite earth station power system which is required for simulating the system. Aswan is selected to be the site under consideration because it is a rich region with solar energy.
The complete power system is simulated using MATLAB–SIMULINK. An artificial neural network (ANN) based model has been developed for the optimumOperation of earth station power system. An ANN is trained using a back propagation with Levenberg–Marquardt algorithm. The best validation performance is obtained for minimum mean square error. The regression between the network output and the corresponding target is equal to 96% which means a high accuracy.
Neural network controller architecture gives satisfactory results with small number of neurons, hence better in terms of memory and time are required for NNC implementation. The results indicate that the proposed control unit using ANN can be successfully used for controlling the satellite earth station power system.

Keywords: Satellite; Neural network; Matlab; Power system.

91. Modeling and Control Pv-Wind Hybrid System Based on Fuzzy Logic Control Technique

Doaa M. Atia, Faten H. Fahmy, Ninet M. Ahmed and Hassen T. Dorrah

Telkomnika, 10: 431-441 (2012)

As energy demands around the world increase, the need for a renewable energy sources that will not harm the environment is increased. The overall objective of renewable energy systems is to obtain electricity with competitive cost and even benefit with respect to other energy sources.
The optimal design of renewable energy system can significantly improve the economical and technical performance of power supply. This paper presents the power management control using fuzzy logic control technique.
Also, a complete mathematical modeling and MATLAB/Simulink model for the proposed the electrical part of an aquaculture system is implemented to track the system performance. The simulation results show the feasibility of control technique.

Keywords: Battery banks; Fuzzy bogic control (Flc); Hybrid System; Pv Array; Wind turbine.

92. A New Control and Design of Pem Fuel Cell Powered Air Diffused Aeration System

Doaa M. Atia, Faten H. Fahmy, Ninet M. Ahmed and Hassen T. Dorrah

Telkomnika, 10: 291-302 (2012)

Aeration of water by using PEM fuel cell power is not only a new application of the renewable energy, but also, it provides an affordable method to promote biodiversity in stagnant ponds and lakes. This paper presents a new design and control of PEM fuel cell powered by diffused air aeration system for a shrimp farm in Marsa Matrouh in Egypt. Also Artificial intelligence (AI) techniques control is used to control the fuel cell output power by controlling input gases flow rate. Moreover the mathematical modeling and simulation of PEM fuel cell is introduced. A comparison study is applied between the performance of fuzzy logic control (FLC) and neural network control (NNC). The results show the effectiveness of NNC over FLC.

Keywords: Artificial intelligence; Diffused aeration system; Fuel cell; Fuzzy logic; Neural network control.

93. Performance Prediction of a New Connection for Dual Voltage Operation of Single Phase Capacitor Run Motor

H. H. Hanafy

Journal of Electrical Engineering, 185-191 (2012)

This paper describes the theory and test results of a new connection of Single-Phase Capacitor Run Motor (SPCRM) for dual voltage operation. A program simulating the operation of the new connection gives sufficient results to illustrate its steady state performance. The effects of the operating capacitor on the performance of the new connection are included. Experimental measurements are carried out on both traditional and new connections for comparison and verification of simulating results. The agreement of experimental and computational results approves the modeling of the new connection.

Keywords: Single phase induction motor; Capacitor run motor; Dual voltage.

Dept. of Electronics and Communication Engineering

94. Distributed Spectrum Sensing with Sequential Ordered Transmissions to a Cognitive Fusion Center

Laila Hesham, Ahmed Sultan, MohammedNafie and Fadel Digham

Ieee T Signal Proces, 60: 2524-2538 (2012) IF: 2.628

Cooperative spectrum sensing is a robust strategythat enhances the detection probability of primary licensed users.However, a large number of detectors reporting to a fusion centerfor a final decision causes significant delay and also presumesthe availability of unreasonable communication resources at thedisposal of a network searching for spectral opportunities. Inthis paper, we employ the idea of sequential detection to obtaina quick, yet reliable, decision regarding primary activity. Localdetectors take measurements, and only a few of them transmit thelog likelihood ratios (LLR) to a fusion center in descending orderof LLR magnitude. The fusion center runs a sequential test with amaximum imposed on the number of sensors

that can report theiLLR measurements. We calculate the detection thresholds usingtwo methods. The first achieves the same probability of error asthe optimal block detector. In the second, an objective function isconstructed and decision thresholds are obtained via backward inductionto optimize this function. The objective function is relateddirectly to the primary and secondary throughputs with possibleprivilege for primary operation. Simulation results demonstratethe enhanced performance of the approaches proposed in thispaper. We also investigate the case of fading/shadowing channelsbetween the local sensors and the fusion center, and the situationin which the sensing cost is negligible.

Keywords: Cognitive radios; Cooperative spectrum sensing; Detection delay; Sequential detection.

95. An Accurate Power Delivery System (Pds) Design Methodologyfor High-Speed Digital Systems

Shaymaa M. Nabil, Alaa B. El-Rouby and Ahmed H. Khali

Int J Circ Theor App, 40: 37-47 (2012) IF: 1.625

The trend in high-speed digital circuits is to increase speed anddensityand to operate at lower voltage.This fast increase in the switching speed combined with the decrease of the operating voltage causes theallowable absolute voltage variations to decrease, which makes the PDS design a more challenging taskthan everMoreover, the complex 3D nature of the modern PDS causes it to be more sensitive to capacitors'placement as well as capacitance value.In this paper, we introduce an efficientcomplete solution for the design of high-speed digital PDS.This solution (a) takes the effects of the decoupling capacitor placement into consideration through a 3Delectromagnetic simulation of the PDS, (b) defines a more-realistic PDS design target, and (c) presentsa clear capacitor value selection methodology. Finally, we applied our methodology to an industrial testcase, compared its results with that of industrial design, and showed its advantages.

Keywords: Power delivery network; High-Speed system; Power delivery system; Power integrity; Pdn; Pcb; Printed circuit board; Power integrity.

96. A 70-Mw Isdb-T Tuner for Vhf and Uhf Bands

Janakan Sivasubramaniam, Hassan Elwan, Ali Ismail, Edward Youssoufian, Dzung Le, Mohammed Omar and Ahmed Emira

Ieee T Circuits-Ii, 59: 321-325 (2012) IF: 1.41

This brief presents a highly integrated low Intermediate Frequency receiver for use in UHF/VHF channel 7 and Channel 8 Integrated Services Digital Broadcasting Terrestrial (ISDB-T) systems (90–220 MHz). It features an ultra low power consumption of 68mW (55mW in attenuator mode) with a noise figur**e** of 3 dB. The device fully complies with the ISDB-T standard and is implemented in 0.13-µm CMOS technology with fully integrated low-noise amplifier/matching networks, a voltage-controlled oscillator, a phase-locked loop/loop filter, a crystal oscillator, basebandfilters, and Variable Gain Amplifier. The tuner only requires a prefilter**,**ring RF surface acoustic wave filterto notch out cellular frequencies and a biasing inductor to implement a fully compliant ISDB-T tuner.
The full characterization of the tuner and the comparison with previous implementation are presented. The chip area is 2.1mm × 2.1mm.

Keywords: Frequency-Dependent negative Resistor (Fdnr); Isdb-T; Mobile television (Tv); Noise-canceling Low-Noise amplifier(Lna); Tuner; Ultra high frequency receiver; Very high Frequency receiver.

97. Ota-C Arbitrary-Phase-Shift Oscillators Phase-Shift Oscillators

Shu-HuiTu, Yuh-Shyan Hwang, Jiann-Jong Chen, Soliman, Ahmed M.and Chun-Ming Chang

Ieee Transactions on Instrumentation and Measurement, 61(8): 2305-2319 (2012) IF: 1.24

This paper exhibits the generation of an operational transconductance amplifier and capacitor (OTA-C) arbitraryphase-shift sinusoidal oscillator (APSO) for an order n ? 3 for various advanced applications. A new nth-order quadrature oscillator (QO) is obtained via the algebraic quadrature manipulations of an oscillatory characteristic equation. Based on a phase shift transformation from a quadrature, an APSO is then generated by superposing OTAs with required +/- transconductance(s) in parallel with some grounded capacitor(s) on the QO. For eliminating nonideal and parasitic effects to improve phase accuracy, phase compensation schemes are proposed. A new native amplitude control exploiting the nonlinearity of all employed OTAs of the APSO is presented as well to lead to rather low THD and a lower variation of THD with respect to amplitude enlargement. A fourth-order APSO is demonstrated and simulated using Hspice with a 0.35-?m process for validation. In addition, its real application to a polyphase rectifier is improved. Finally, an experiment using LM13700s shows favorable potential of APSOs.

98. Opportunistic Spectrum Access: from Theory to Practice

Ahmed Khattab, Dmitri Perkins and Magdy A. Bayoumi

Ieee Vehicular Technology Magazine, 62-68 (2012) IF: 1.226

In this article, an experimental study of the less studied topic of distributed OSA implementation have been presented. Hardware technologies do not provide the cognitive Transceiver requirements needed to exploit OSA to its full potential, suboptimal OSA approaches developed to target that low-complexity transceivers can achieve significant performancegains compared to approaches theoretically optimized disregarding.
Thepractical system constraints, is demonstrated. TheoreticalOSA approaches can exploit the gains available to the individualpractical components. A radio transceiver with cognitioncapabilities and real-time reconfigurability can be used to realize cognitive radio networks.

Keywords: Cognitive radio networks; Opportunistic spectrum management.

99. An All-Digital Dll Using Novel Harmonic-Free and Multi-Bit Sar Technique

Al-Hussein A. El-Shafie and S.E.D. Habib

Microelectron J, 43: 393-400 (2012) IF: 0.919

A novel force/Release technique is proposed to eliminate the harmonic locking issue, which occurs in wide-range operation of

Delay Locked Loops (DLLs). The proposed technique does not require replica delay line or multiphase clocks for frequency estimation, and hence, reduces the chip area and power consumption. Moreover, it can be employed, without modifications, to any type of the delay line controller. In addition, an area efficient technique for multi-bit Successive Approximation Register (SAR) DLL is proposed. A complete All-Digital DLL (ADDLL) design implementing the proposed forceRelease technique and the proposed 2-bit SAR scheme is developed. All design units are fully digital, described in Verilog and mapped to silicon using the IBM 0.13 mm Artisan standard cell library. The proposed design has an active area of 0.014 mm2 and can operate from 110 MHz to 1 GHz with a fixed latency of one clock cycle. It locks in 12 clock cycles and has a closed loop characteristics.

Keywords: Dll; Addll; Harmonic-Locking; force-Release technique; Multi-Bit Sar; Fast-Locking; Wide-Range.

100. A Low-Voltage Low-Power Cmos FullyDifferential Linear Transconductor withMobility Reduction Compensation

Tamer Farouk, Ahmed Nader Mohieldin and Ahmed Hussien Khali

Microelectron J, 43: 69-76 (2012) IF: 0.919

A highly linear fully differential CMOS transconductor architecture based on flipped voltage follower (FVF) is proposed. The linearity of the proposed architecture is improved by mobility reduction compensation technique. The simulated total harmonic distortion (THD) of the proposed transconductor with 0.4Vpp differential input is improved from -42dB to -55dB while operating from 1.0V supply. As an example of the applications of the proposed transconductor, a 4th-order 5MHz Butterworth Gm-C filter is presented. The filter has been designed and simulated in UMC 130nm CMOS process. It achieves THD of -53 dB for 0.4Vpp differential input. It consumes 345µw from 1.0V single supply. Theoretical and simulated results are in good agreement.

Keywords: Transconductor; Low-Voltage; Low-Power; Nonlinearity; Gm-C Filters; Common-Mode Feedback (Cmfb); Fully Differential; Cmos.

101. Optimized Spectrum Sensing Algorithms for Cognitive Lte Femtocells

Mahmoud A Abdelmonem, Mohammed Nafie, Mahmoud H Ismail and Magdy S El-Soudani

Eurasip Journal of Wireless Communications and Networking (Jwcn): (2012) IF: 0.873

In this article, we investigate to perform spectrum sensing in two stages for a target long-term evolution (LTE) signal where the main objective is enabling co-existence of LTE femtocells with other LTE femto and macrocells. In the first stage, it is required to perform the sensing as fast as possible and with an acceptable performance under different channel conditions. Toward that end, we first propose sensing the whole LTE signal bandwidth using the fast wavelet transform (FWT) algorithm and compare it to the fast Fourier transform-based algorithm in terms of complexity and performance. Then, we use FWT to go even deeper in the LTE signal band to sense at multiples of a resource block resolution. A new algorithm is proposed that provides an intelligent stopping criterion for the FWT sensing to further reduce its complexity. In the second stage, it is required to perform a finer sensing on the vacant channels to reduce the probability of collision with the primary user. Two algorithms have been proposed for this task; one of them uses the OFDM cyclic prefix for LTE signal detection while the other one uses the primary synchronization signal. The two algorithms were compared in terms of both performance and complexity.

Keywords: Spectrum sensing;Lte;Femtocells;Energy detection;Fft;Fwt.

102. Onthe Cumulative Distribution Function ofthe Sum and Harmonic Mean ofTwoa-2mRandom Variables with Applications

M.M.H. El Ayadi and M.H. Ismail

Iet Communications, 1-9 (2012) IF: 0.829

The sum and harmonic mean of random variables (RVs) appear frequently in performance evaluation studies of wireless communications systems. In particular, the sum appears in the performance evaluation of maximal ratio combining (MRC) and equal gain combining (EGC) diversity receivers whereas the harmonic mean is encountered in performance evaluation studies of cooperative diversity networks with non-regenerative relays. In this study, the authors propose highly accurate finite-series approximations for the cumulative distribution function (CDF) of the sum and harmonic mean of two a- 2mdistributed RVs. The proposed approximations do not require neither a look-up table nor solving complicated transcendental equations, as is typically the case in the literature. The results reveal that the proposed approximations are very accurate over the typical range of interest when compared with the exact CDFs computed using numerical integration methods.

Keywords: Diversity systems;Cumulative distribution function; Fading;Harmonic mean.

103. Phase Ambiguity Mitigation for Per-Cell Codebook-Based Limited Feedback Coordinated Multi-Point Transmission Systems

M.H. HassanY.A. andFahmy M.M. Khairy

Iet Commun, 6: 2378-2386 (2012) IF: 0.829

Limited feedback techniques, that employ codebook-based quantisation, are used in coordinated multi-point (CoMP) transmission to convey the channel direction information between the mobile user and each base station in the cooperative set and also among the cooperating base stations. However, unlike single-cell multiple-user multiple input multiple output (MU-MIMO) systems, CoMP systems face additional challenges in this codebook design. Among these challenges are the huge feedback overhead and the need for dynamic codebook size. These problems are solved when CoMP uses the so-called per-cell codebook, in which the channel to each cell is quantised separately. However, this results in a further problem, that is having random phase values between the quantised per-cell channels of the same user. In this study, the phase ambiguity problem is explained and its effect on performance degradation is quantified. A new quantisation technique is proposed where the quantisation of each of the real and the imaginary parts is performed independently using the same real codebook. This

novel solution prevents the phase ambiguity problem instead of trying to mitigate its effects, in addition to simplifying the codebook design. The proposed quantisation technique outperforms two recently introduced solutions in the literature. The first solution is to quantise phase ambiguity as part of channel state information (CSI), whereas the other avoids phase ambiguity by an iterative selection procedure. Mathematical validations and simulations are provided to verify these findings.

104. A Note on the Generation of Generalized ImpedanceConverter Circuits using NamExpansion

Ahmed M. Soliman

Journal of Circuits Systems and Signal Processing, 31: 1147-1157 (2012) IF: 0.817

The nodal admittance matrix (NAM) expansion is used to generatethe voltage generalized impedance converter (VGIC) and the current generalized impedance converter (CGIC) with both A and D of the transmission matrix (T) being negative. Simulation results are included.

Keywords: Voltage generalized impedance converter; Current generalized impedance converter; Current conveyors; Invertingcurrent conveyors.

105. Proposed Hardware Architectures of Particle Filter for Object Tracking

Howida Abd El-Halym, Imbaby Ismail Mahmoud and SED Habib

Eurasip Journal on Advances in Signal Processing, 1-19 (2012) IF: 0.811

In this article, efficient hardware architectures for particle filter (PF) are presented. We propose three different architectures for Sequential Importance Resampling Filter (SIRF) implementation. The first architecture is a two-step sequential PF machine, where particle sampling, weight, and output calculations are carried out in parallel during the first step followed by sequential resampling in the second step. for the weight computation step, a piecewise linear function is used instead of the classical exponential function. This decreases the complexity of the architecture without degrading the results. The second architecture speeds up the resampling step via a parallel, rather than a serial, architecture. This second architecture targets a balance between hardware resources and the speed of operation. The third architecture implements the SIRF as a distributed PF composed of several processing elements and central unit. All the proposed architectures are captured using VHDL synthesized using Xilinx environment, and verified using the ModelSim simulator. Synthesis results confirmed the resource reduction and speed up advantages of our architectures.

Keywords: Object tracking; Particle filters; Hardware implementation; Sirf.

106. Network Design Methods for Mitigation of Intentional Attacks in Scale-Free Networks

Walid K. Ghamry and Khaled M. F. Elsayed

Telecommun Syst : (2012) IF: 0.689

Network robustness and network reliability are important issues in the design of Internet Service Providers' topologies. In this paper, we examine the structural characteristics of network topologies that affect robustness and reliability. We examine the interplay between the structural characteristics of network topologies and the resource capacity over-provisioning strategies when the network breakdowns subject to practical constraints (router technology) and economic considerations (link costs).
We study the robustness of the Internet connectivity under node intentional harmful attack using two attacks strategies: static degree-based and static load-based. We find that the robustness of network topologies is affected by the variation of their structural characteristics.
In our proposed approach, we show that highly-heterogeneous topologies have less robustness compared with lightly-heterogeneous topologies. The observations from the robustness study provide us useful insights for proposing multiple efficient preventive resource capacity over-provisioning strategies for mitigation of intentional attacks.
The proposed strategies utilize the structural properties by calculating the excess traffic in case of single global cascading failure for each node and measure its influence on the other nodes as well as locally.
The results show that our proposed strategies can significantly enhance the robustness and increase the resilience of network topology. We also show that highly-heterogeneous topologies have high resilience compared with lightly-heterogeneous topologies. by using real data from the Sprint network at the router level, we provide further empirical evidence in support of the proposed approach.
Keywords: Resource Over-Provisioning; Network robustness; Network Resilience; Mitigation of Attacks; Scale-Free networks.

107. Performance Analysis of Multiple-Antenna Cooperative Networks under Weibull Channel

M. Abou Bakr Othman, Mahmoud H. Ismail and Magdi M.S. El-Soudani

Aeu-International Journal of Electronics and Communications, 66: 817-827 (2012) IF: 0.588

In wireless communications, cooperative relaying is well-known to enhance the overall system performance, but implementation and cost constraints stand against its wide deployment.
This paper investigates the performance of cooperative relays with and without multiple antennas under independent and identically distributed (i.i.d.) Weibull faded channels in a two-hop wireless network. We consider the Weibull fading channel model due to its flexibility in describing the radio propagation environment more than the classical Rayleigh model.
Our study relies on applying selection combining (SC) along with threshold decode andforward (TDF) protocol at the cooperative relays as a good compromise between cost and performance. In addition, maximal ratio combining (MRC) is used at the destination.
We derive analytical expressions for the end-to-end (E2E) error performance of the network under such scenario and provide simulation results to confirm the validity of the obtained analytical expressions.

Keywords: Spatial diversity;Cooperative relays;Multiple antennas;Threshold decode andforward;Selection combining;Weibull fading.

108. Three Port Gyrator Circuits using Transconductance Amplifiers or Generalized Conveyors

Ahmed M. Soliman

Aeu-International Journal Electronics and Communication, 66: 286-293 (2012) IF: 0.588

The three port gyrator was introduced and defined in [1] in two alternative forms of the admittance matrix (Y). Four alternative realizations of the three port gyrator using three transconductance amplifiers (TA) are given, three of them are new. Sixteen alternative three port gyrator circuits using four current conveyors (CCII) or four inverting current conveyors (ICCII) or a combination of both of them and four grounded resistors are given.
Eight alternative three port gyrator circuits using two CCII or two ICCII or a combination of both of them, balanced output current conveyors (BOCCII) and three grounded resistors are also introduced. Eight alternative three port gyrator circuits using two CCII or two ICCII or a combination of both of them, differential voltage current conveyors (DVCC) and three grounded resistors are also introduced. Finally four equivalent three port gyrator circuits using a combination of DVCC and BOCCII and two grounded resistors are also introduced, three of them are new.

Keywords: Gyrators; Transconductance amplifiers; Current conveyors.

109. A Dynamic Radio Resource Management Scheme for the Ieee 802.16 Band-Amc Mode with Proportional Rate Constraints

Mina A. A. Sokar and Khaled M. F. Elsayed

Transactions on Emerging Telecommunications Technologies, 23: 254-267 (2012) IF: 0.454

In this paper, we consider the problem of downlink resource allocation in the IEEE 802.16 standard based on the orthogonal frequency-division multiple access physical layer. The objective is to allocate the downlink frequency-time slots and transmission power to different users such that the total throughput is maximized. The allocation is subject to constraints on the total transmission power and satisfying the quality of service requirements of different users expressed in terms of proportional rates. A three-step heuristic scheme that incorporates a linear programming technique is proposed. The problem is modelled as an unbalanced transportation problem that is solved to obtain the users' slot assignment. The Vogel approximation method is used to efficiently solve the transportation problem with a slight degradation relative to the optimal solution. The Vogel approximation method gain is shown by replacing it in the three-step heuristic by simple round-robin or greedy slot assignment. In terms of total throughput and fairness, it is shown that the proposed scheme is a good compromise between the greedy-oriented schemes, which aspire to maximize the total system throughput but sacrificing fairness, and a proportional rate constraints scheme introduced in the literature that achieved short-term fairness but penalizes the total throughput. The study also shows that the proposed scheme consumes a fraction of the time needed by the proportional rate constraints scheme.

Keywords: Radio resource management; Wimax band-Amc Mode; Constrained optimization; transportation broblem; Vogel approximation; Fairness; Proportional rates.

110. Optimal Tuning ofPid Controller using Adaptive HybridParticle Swarm Optimization Algorithm

S. Morkos, H. Kamal, Sawsan Morkos Gharghory and Hanan Ahmed Kamal

Int J Comput Commun, 101-114 (2012) IF: 0.438

Particle swarm optimization (PSO) has proved its ability as an efficient searchtool in many optimization problems. However, PSO is easy to be trappedinto local minima due to its mechanism in information sharing. Under thiscircumstance, all the particles could quickly converge to a position by theattraction of the best particle; all particles could hardly be improved. Toovercome premature convergence of the standard PSO algorithm, this paperpresents an adaptive hybrid PSO, namely (AHPSO) by employing an adaptivemutation operator for local best particles instead of applying the mutationoperator to the global best particle as has been done in previous work. Thedeveloped algorithm is a new approach which allows the swarm to be morediverse by making better exploration of the local search space instead of globalsearch space investigated by previous researchers. The proposed algorithmholds on the properties of simple structure, fast convergence, and at the sametime enhances the variety of the population, and extends the search space.It is applied to self-tuning of proportional-integral-derivative-(PID) controllerin the ball and hoop system which represents a system of complex industrialprocesses. The results are compared with those obtained by applying standardPSO, and adaptive hybrid PSO based on global best particles. It has beenshown that the developed AHPSO local best algorithm is faster in convergenceand the obtained results are proved to have higher fitness than the other twoalgorithms.

Keywords: Pso; Adaptive Mutation; Pid Controller; and Ball and Hoop System.

111. Classification and Pathological Realizations of Transconductance Amplifiers

Sherif Mogawer, Mona Mansour, Mohamed Marie,Mervat El-Ansary and Samah Abd El-Hamid

Journal of Circuits Systems and Computers: (2012) IF: 0.281

Classification of transconductance amplifiers (TA) based on the number of input ports andoutput ports is given. A systematic generation method of TA based on using nullator, noratorelements, and pathological mirror elements is used to provide pathological realizations ofdifferent types of TA. Four pathological realizations of the single input balanced output TA each using two grounded G are given. Four pathological realizations of the differential input single output TA each using two grounded G are given.Six pathological realizations of the differential input balanced output TA known as BOTAare given. Three pathological realizations for each of the two types of the differential inputdouble output TA are also given. Finally, four alternative ideally equivalent realizations of the BOTA using two current conveyors (CCII) or two inverting current conveyors (ICCII) aregenerated from the pathological realizations.

Keywords: Transconductor; Nullator; Norator; Voltage mirror; Current mirror.

112. PathologicalRealizations of Bota and Fddta using Grounded Resistors

Ahmed M. Soliman

Journal of Circuits, Systems, and Computers, 21: (2012) IF: 0.281

Sixteen pathological realizations of the balanced outputtransconductance amplifier (BOTA)usingfour grounded G are generated. Each of these circuits is realizable using four current conveyors(CCII) or four inverting current conveyors (ICCII) or a combination of four CCII and ICCII. Six new pathological realizations of the BOTA using two grounded G based on current subtraction are introduced.

Four new pathological realizations of the BOTA using two grounded G based onvoltage subtraction are introduced. Several new pathological realizations of the FDDTA as a voltage subtraction stage and a BOTA stage are also given. Simulation results are included.

Keywords: Balanced output Transconductor; Nullator; Norator; Voltage mirror; Current mirror.

113. New Active Circulator Circuits using Balanced Output Ccii and Balanced Output Iccii

Ahmed M Soliman

J.of Active and Passive Electronic Devices,7: 233-249 (2012)

Eight novel active circulator circuits using Balanced Output Current Conveyors(BOCCII) or Balanced Output Inverting Current Conveyors (BOICCII)or combination of both are introduced.

The first proposed circulator circuituses three BOCCII and three grounded resistors. The second proposed circulatorcircuit uses three BOICCII and three grounded resistors. Six additionalcirculator circuits using combinations of the BOCCII and BOICCII togetherwith three grounded resistors are also discussed very briefly.Spice simulation results using 0.5 µmCMOS model from MOSIS areincluded to support the theoretical analysis. Comparisons between twodifferent CMOS circuits of the BOCCII in realizing the circulator areincluded.

Keywords: Active circulators; Op Amps; Balanced output current conveyors.

114. Fair Traffic Relaying for Two-Source-One-Destination Wireless Networks

Alessandro Nordio, Carla-Fabiana Chiasseriniand Tamer ElBatt

Ieee Wireless Communications Letters, 1: 6-9 (2012)

We propose a communication strategy for a three node wireless network, where the relay nodes generate their own data besides decoding andforwarding other nodes messages. Unlike previous work, we consider that the nodes are arbitrarily located on a 2D plane, are equipped with half-duplex radios and require a fair rate allocation. We quantify the performance in terms of achievable rate as the SNR conditions, the network geometry and the nodes traffic demand vary, and compare it to the cut-set bound that we derive for the network understudy. Furthermore, we show that our strategy outperforms that proposed in [1].

Keywords: Traffic relaying; Fair rate allocation; Cut-set bound.

115. Bode-Type Amplitude Equalizers usingCurrent Feedback Operational Amplifier

Ahmed M Soliman

J.of Active and Passive Electronic Devices, 7: 159-171 (2012)

New active RC Bode-type variable equalizers using current feedbackoperational amplifier (CFOA) are introduced. The proposed equalizerscan operate at much higher frequencies than the classical Voltage OperationalAmplifier (VOA) based variable amplitude equalizers. Spice simulationresults using technology SCN 0.5 feature size 0.5 µmfrom MOSISvendor: AGILENT are included to confirm the practicality of the proposedcircuits and detailed comparisons of the VOA based equalizers and theCFOA based equalizers are included.

Keywords: Current feedback operational amplifier; Variable equalizers.

116. New Grounded Capacitor Single Resistance Controlled Sinusoidal Oscillator using Two Cfoas

Ahmed M Soliman

J.of Active and Passive Electronic Devices, 7: 209-213 (2012)

A new canonic grounded capacitor sinusoidal oscillator using two CFOAsis introduced. The frequency of oscillation is controlled by varying agrounded resistor without affecting the condition of oscillation. Simulationresults to confirm theoretical analysis are included.

Keywords: Oscillators; Current feedback Op Amp.

117. E-Mail Classification using Deep Networks

Ahmad A. Al Sallab and Mohsen A. Rashwan

Journal of Theoretical and Applied Information Technology, 37: 241-251 (2012)

Email has become an essential communication tool in modern life, creating the need to manage the huge information generated. Email classification is a desirable feature in an email client to manage the email messages and categorize them into semantic groups. Statistical artificial intelligence and machine learning is a typical approach to solve such problem, driven by the success of such methods in other areas of knowledge management. Many classification methods exist, of which some have been already applied to email classification task, like Naïve Bayes Classifiers and SVM. Deep architectures of pattern classifiers represent a wide category of classifiers. Recently, Deep Belief Networks have demonstrated good performance in literature, driven by the fast learning algorithm using Restricted Boltzmann Machine model by Hinton et al, and the improvement in computing power which enables learning deep neural networks in reasonable time. Many datasets and corpus exist for email classification, with the most famous one is Enron dataset, made public by FERC, annotated and processed by many entities like SRI and MIT. In this paper, a machine learning approach using Deep Belief Networks is applied to email classification task, using the Enron dataset to train and test the proposed model.

Keywords: Deep belief networks (Dbn); Restrictedboltzmann machine (Rbm); Knowledge management; Email classification; Enron email dataset.

118. A Low-Power Parallel Architecture for Finite Galois Field Gf(2M) Arithmetic Operations for Elliptic Curve Cryptography

Esmaeil Amini, Zahra Jeddi, Ahmed Khattab and Magdy Bayoumi

Journal of Low Power Electronics (Jolpe), 8: 1-12 (2012)

In this paper, a parallel, power-efficient and scalable word-based crypto architecture is proposedthat performs the operations required for scalar point multiplication including add, multiplicationand inversion operations on GF(2m) operands.
The proposed architecture distinguishes itself fromexiting architectures, including our prior architecture, by the fact that its resource usage and powerconsumptionis based on the input data. Hence, such architecture might be used for various operandsizes without modifying or reconfiguring the underlying hardware. Besides, the architecture has theability to perform several different operations in parallel when each operation requires a small keysize which significantly increases the overall performance and throughput of the system. In theabsence of parallel requests, the remaining unused modules will be turned off in order to savepower.
The experimental results show significant improvement in the timing, throughput and energyperformances with a slight overhead in the circuit area.

Keywords: Public key encryption; Parallel architecture.

119. Approach: an Application to the Control of Flexible Robot Systems

Sarah Deif, Hanan A. Kamal and Mohammad Tawfik

Ciit International Journal of Artificial Intelligent Systems andMachine Learning, 4: 9-16 (2012)

This paper presents an investigation into a new optimization technique based on genetic algorithm (GA). A dynamically-changed mutation value approach is introduced to increase the diversity in the search space and avoid premature convergence caused by simple genetic algorithm (SGA). The enhanced genetic algorithm (EGA) is used to tune the feedback gains of a PD controller which controls both the position and vibration of a single-link flexible arm. The dynamic model of the system is derived using Hamilton's principle and modeled using the finite element method (FEM). A multi-objective function is defined and altered to reach a range of specified system responses and therefore it is shown to be able to satisfy different objectives. Adaptive Genetic Algorithm (AGA) and Cloud Model Based Adaptive Genetic Algorithm (CAGA) techniques are used to challenge the proposed technique. Results obtained show that EGA creates significant improvement in the speed of convergence compared to other techniques. Moreover, the obtained solutions are of higher average fitness values. EGA succeeded to consistently reach a global solution for an objective function that needs rigorous search mechanism which encourages for further application to various control problems, complex mathematical functions and real time applications.

Keywords: Adaptive genetic algorithm (Aga); Cloud model based adaptive genetic algorithm (Caga); Enhanced genetic algorithm (Ega); genetic algorithms (Ga); multi-objective optimization; Pd controller; Single-Link flexible manipulator.

120. Adaptive Mutation Pso for Optimum Design ofPid Controller in Robotic Arm

Sawsan Marcos Gharghory and Hanan Ahmed Kamal

The Mediterranean Journal of Measurement and Control, 8: 477-484 (2012)

In this paper, a new Adaptive Mutation Particle Swarm Optimization (AMPSO) algorithm is introduced. It is applied for optimal tuning of proportional – integral – derivative-(PID) controller in robotic arm which represents a coupling, nonlinear and time varying system. PSO has proved its ability as an efficient search tool in many optimization problems. However, PSO is easy to be trapped into local minima due to its mechanism in information sharing as; all the particles could quickly converge to a position by the attraction of the best particle. The proposed AMPSO algorithm is employed to solve this problem and enhance the performance of PSO by employing an adaptive local search. In this algorithm, the value of mutation probability is adapting at each iteration based on solutions fitness and best fitness in the population. Unlike the previous work in the literatures, the best fitness solutions are protected, the solutions with sub average fitness are mutated based on Gaussian mutation, while the particles which have large values of mutation probability are randomly regenerated. This proposed algorithm combines the advantage of the high speed of PSO with the powerful ability of mutation velocity to overcome the premature convergence of the standard PSO algorithm. Comparative evaluation of AMPSO with respect to standard PSO and hybrid PSO with mutation based on Gaussian distribution (GMPSO) is presented to validate the controller design. Using various objective functions based on error performance criterion, it has been shown that the time response characteristic of robot arm controlled by AMPSO has superior performance in terms of improvement in transient and steady state response than PSO and GMPSO. The simulation results show that the AMPSO is faster in convergence and has higher fitness than the other two algorithms.

Keywords: Proportional integral-derivative (Pid) control; Particle swarm optimization (Pso); Adaptive mutation Probability; Wastewater treatment process.

121. Pso-Based Optimal Fuzzy Controller Design for Wastewater Treatment Process

Hanan Ahmed Kamal and Sawsan Morkos Gharghory

(Ijcsis) International Journal of Computer Science and Information Security,10: 20-29 (2012)

Fuzzy logic control (FLC) is a useful modeling tool that can handle the uncertainties and nonlinearities of modern control systems. However the main drawbacks of FLC methodologies is challenging for selecting the optimum tuning parameters. The set of parameters that can be altered to modify the controller performance are fuzzy rules and the parameters of membership functions for each input variable. In all cases, the correct choice of membership functions of the fuzzy sets plays an essential role in the performance of FLC. This paper proposes a method for finding the optimum membership function parameters of a fuzzy system using particle swarm optimization (PSO). As the set of nonlinear differential equations of an aerobic unit for wastewater treatment is a multivariable nonlinear problem, the combination of PSO and FLC named PSO-FLC controller is proposed for further improvements of the system response in both the transient and steady state response. To establish its efficiency, the proposed

technique was employed to enhance the triangle membership functions of the fuzzy model of a nonlinear sludge activated system; the results show that the optimized membership functions (MFs) offered better performance than a fuzzy model with heuristically described MFs.

Keywords: Pso; Flc controller; Wastewater treatment process.

122. Robust Decentralized State Feedback Stabilization of Nuclear Power Plant with State and Control Constraints

A. A. Abouelsoud, H. Abdelfattah and M. El Metwally and M. Nasr

The Mediterranean Journal of Measurement and Control, 8: 375-389 (2012)

The objective of this paper is to propose an approach to robust stabilization of nuclear power plants which are modeled by the composition of two interconnected subsystems subject to polyhedral state and control constraints. the proposed controller consists of a dynamic pole assignment controller and an h infinity controller for each subsystem.

Keywords: Stabilization;Robust decentralized state feedback; State andcontrol constaints.

123. State Feedback Controller of Robinson Nuclear Plantwith States and Control Constraints

A.A. Abou-Elsoud, H. Abd-Elfattah and M. El Metwally M. Nas

Nonlinear Dynamics and Systems Theory, 12(1): 1-17 (2012)

This paper deals with the problem of finding a stabilizing feedback controller for nuclear reactor power plant. A mathematical model of the H. B. Robinson pressurized water reactor plant is formulated. The model includes representations for point kinetics, core heat transfer, piping, pressurizer, and the steam generator.The designed linear state feedback controller accounts for constraints on neutron fluxlevel, steam pressure in steam generator, hot leg temperature and constraints on con-trol inputs of reactivity and electric heater to pressurizer. Simulation results showthe effectiveness of the proposed design.

Keywords: H.B. Robinson nuclear plant; Stabilization; State feedback controller; State constraints.

124. Synthesis, Analysis, and Modeling of Analog Active Circuits:Generalized Symbolic Framework: Theory and Applications

Ramy A. Saad and Ahmed M. Soliman

Book Published By Lap Lambert Academic Publishing, (2012)

This book presents a generalization for the symbolic synthesis framework of analog circuits using admittance matrix expansion. The synthesis approach is generalized to accommodate mirror elements (voltage mirrors and current mirrors) in the admittance matrix expansion and ideal description of active elements, rather than using only nullor elements (nullators and norators). Accordingly, more alternative ideal representations, based on nullor-mirror elements, can be obtained and a wide range of active elements can be used in the circuit synthesis. Systematic synthesis, modeling, and analysis of the CCII-based GICs and Gyrators are presented as application examples to illustrate the potential of this generalized synthesis framework. A systematic derivation technique for the ideal representations of all active devices is proposed, which proves to be very powerful in obtaining ideal representations for large active devices (exhibiting complicated relationships between their terminals) whose ideal representations cannot be obtained intuitively. The systematic approach has been illustrated through the derivation of novel pathological sections describing common analog signal-processing features. Furthermore, the potentials of the generalized framework in obtaining novel powerful circuits are demonstrated through the systematic synthesis of novel wide-band floating simulators. The performance of the new circuits is verified through SPICE simulations.

125. Analog Design: Cmos Realizations of the Operational Mirror Amplifierand its Applications

Ahmed Soltan Ali and Ahmed M Soliman

Book Published By Lap Lambert Academic Publishing, (2012)

Continuous scaling in the technology feature size and hence the supply voltage, has directed analog designers to change the signal representation from the voltage domain to the current domain. Thus, recently high performance current – mode building blocks have received a great deal of interest, this also goes back to their potential over voltage – mode circuits in aspects such as: lower voltage supplies, lower power consumption, wider dynamic range and higher bandwidth. The second part introduces a new CMOS realization for the differential difference operational mirrored amplifier (DDOMA) and some applications based on the new block.Finally, the third part proposes a new CMOS realization for the fully balanced operational mirrored amplifier (FBOMA) and presents someapplications using the FBOMA block.

126. Low Start up Voltage Charge Pump forThermoelectric Energy Harvesting

Ahmed Mohamed Soliman, Ahmed AhmedEmiraand SalwaAbd-Elaziz

Book Published By Lap Lambert Academic Publishing, (2012)

Charge pumps are widely used in thermoelectric scavenging systems to increase the thermoelectric generator output voltage to a suitable voltage that can supply the standard integrated circuit. Threshold voltage cancellation (Vt cancellation) scheme is applied to cancel the threshold drop associated with each diode-connected device and improve charge pump performance. Applying this scheme by using the next stage higher voltage is presented. Improving the output stage using this scheme is also presented. Simulations are performed using TSMC 0.25μm CMOS technology in Spectre.

127. Effect of Decentralized Clustering Algorithm and Hamming Coding on Wsn Lifetime and Throughput

Nora Ali, Hany ElSayed, Magdy El-Soudani, Hassanein Amer and Ramez Daoud

Cutting Edge Research In New Technologies,(2012)

Wireless Sensor Networks (WSN) has become an interesting field of research because of its wide range of applications such as

environmental monitoring, electromagnetic pollution monitoring, medical applications and industrial applications (Teo et al., 2007; Margi et al., 2009; Castelluccia et al., 2005; AbouElSeoud et al., 2010; Tavares et al., 2008). WSN consists of multi- unctioning sensor nodes with limited power capacity, so prolonging the lifetime is essential and is one of the main concerns (Castelluccia et al., 2005; Schmidt et al., 2009; Karlsson et al., 2005). For this reason different routing protocols are obtained to increase network lifetime. The clustering routing protocol is one of the most commonly routing protocols because it is energy efficient (Heinzelman et al., 2000, 2002). In any clustering protocol, the network is divided into clusters where some nodes are responsible for others. These nodes are called cluster heads (CHs) or network masters (NMs) There are different algorithms and different methods of choosing the CHs. For example, LEACH (Heinzelman et al., 2000) used the randomized rotation to choose CH nodes.This randomized rotation allows some nodes to act as CHs and the others cannot Therefore LEACH was improved to be LEACH-C (Heinzelman et al., 2002) that uses central algorithm to choose the CHs and allows only the nodes in the center of each cluster to act as CHs Also two different algorithms of choosing the NMs are considered in (Botros et al., 2009). The network is considered as one cluster; therefore the CH node that is responsible for collecting data from other nodes is called NM.In the first algorithm, the sensor couldbecome NM more than once for a fixed number of cyclesIt was proven that this algorithm provided a lifetime longer than the lifetime obtained by LEACH and LEACH-C algorithms (Heinzelman et al., 2000, 2002)However, this algorithm has some residual energy after the network failure and this energy cannot be used anymore Therefore, the second algorithm is obtained to improve the first one by allowing each sensor to become NM once with a different number of cycles and acts as an active node or ordinary node.

Dept. of Engineering Mathematics and Physics

128. High Pressure Synthesis andin Situ Raman Spectroscopy of H2 andHd Clathrate Hydrates

Mohamed A. S. Zaghloul, Milva Celli, N. M. Salem, S. M. Elsheikhand Lorenzo Ulivi

The Journal of Chemical Physics: (2012) IF: 3.333

by means of a newly constructed high pressure and low temperature optical apparatus we have measured the Raman spectra of H2 and HD simple clathrate hydrates, synthesized in situ by the applicationof more than 2500 bar gas pressure on solid water. High resolution spectra of the molecular vibration have been measured at low temperature (about 20 K). In the case of HD this band is simpler than in the case of H2, where the presence of the ortho- and para-species complicated the interpretation of the spectrum. We have determined frequency positions of the bands arising from multiple occupancy of the large cages of the sII clathrate, some of which are almost superimposed. The intensity of the bands gives information on the average and distribution of cage occupation, and of the ortho-para (o-p) ratio of H2 molecules. Hydrogen o-p conversion rate is measured, for molecules in the small cages and in the large cages, and it is observed that these are different. A model considering both intrinsic and extrinsic conversion processes is applied to the measured data. The intrinsic conversion rate so derived is compared favorably to that measured for pure hydrogen in different situations.

Keywords: Clathrate hydrates;H2andHdsimple clathrate Hydrates;Raman spectroscopy.

129. One-Dimensional Metallic-Dielectric (Ag/Sio2) Photonic Crystals Filter forThermophotovoltaic Applications

Samia I. Mostafa, Nadia H. Rafat and Sahar A. El-Naggar

Renewable Energy, 45: 245-250 (2012) IF: 2.978

In this article, the performance of one dimensional metallic-dielectric photonic crystals (1D MDPCs) filterfor improving the performance of thermophotovoltaic (TPV) systems is studied. The reflectance andabsorbance of Ag/SiO2 filters are calculated using the transfer matrix method. The spectral efficienciesand the above-bandgap transmissions of the filters are calculated for different choices of number ofperiods and layer thicknesses. Furthermore, an optimized stack design that exhibits better spectralefficiencies and better above-bandgap transmission is presented.

Keywords: Tpv; Filter; Photonic crystals; Metal; Dielectric.

130.Effectof Olloidal Nano-Silica onthe Mechanical andPhysicalBehaviourofWaste-GlassCement Mortar

M. Aly, M.S.J. Hashmi, A.G. Olabi, M. Messeiry, E.F. Abadir and A.I. Hussain

Materials and Design, 33: 127-135 (2012) IF: 2.2

This paper presents a laboratory study of the properties of colloidal nano-silica (CS)/waste glass cementcomposites. The microstructure, alkali–silica reaction (ASR), and the mechanical properties of cementmortars containing waste glass powder (WG) as a cement replacement with and without CS are investigatedand compared with plain mortar. In addition, the hydration of cement compounds was followed bydifferential thermal analysis (DTA), thermogravimetric analysis (TGA), and X-ray diffraction (XRD). Theresults show that incorporation of WG has a positive effect on the mechanical properties of cement mortarsespecially when CS is presented. In addition, the DTA/TGA results and XRD analysis show a reductionin the calcium hydroxide (CH) content in mortars with both WG and a hybrid combination of WG and CS.This confirms the improvement of mechanical properties and the occurrence of the pozzolanic reactionafter 28 days of hydration.

Keywords: Nano-materials concrete mechanical.

131. A Wavelet Approach for the Identification of Surface Cracks using Current Injection Perturbation

A. A. Adly and S. K. Abd-El-Hafiz

J Appl Phys, 111: (2012) IF: 2.168

The non-destructive identification of surface cracks in steel parts has always been an issue of great industrial interest. Among the non-destructive crack inspection approaches proposed in the past is field measurement resulting from impressed current crack perturbation. Obviously, crack detection becomes more challenging as the active sensor dimensions and/or surface clearance become large in comparison to the crack itself. In this paper, the wavelets approach is utilized in crack volume andlocation detection using impressed current differential

measurements involving relatively large sensing elements. Detailed methodology and results demonstrating the advantages of the proposed approach are given in the paper.

Keywords: Non-Destructive testing; Integral equations; Wavelets.

132. RF Mems Fractal Capacitors with High Self-Resonant Frequencies

Amro M. Elshurafa, Ahmed G. Radwan, Ahmed Emiraand Khaled N. Salama

Journal of Microelectromechanical Systems, 21: 10-12 (2012) IF: 2.098

This letter demonstrates RF microelectromechanical systems(MEMS) fractal capacitors possessing the highest reported self-resonantfrequencies (SRFs) in PolyMUMPS to date. Explicitly, measurement results show SRFs beyond 20 GHz. Furthermore, quality factors higherthan 4 throughout a band of 1–15 GHz and reaching as high as 28were achieved.

Additional benefits that are readily attainable from implementing fractal capacitors in MEMS are discussed, including suppressing residual stress warping, eliminating the need for etching holes, and reducing parasitics. The latter benefits were acquired without anyfabricationintervention.

Keywords: QCapacitors; RFmicroelectromechanical systems (Mems); Fractals; Self-resonant frequency (Srf).

133. Rototranslational Collision-Induced Absorption and Collision-Induced LightScattering Spectra of Molecular Hydrogen using Isotropic Intermolecular Potentials

M.S.A. El-Kader and G. Maroulis E. Bich

Chem Phys, 403: 37-51 (2012) IF: 1.896

Quantum mechanical lineshapes of collision-induced absorption (CIA) at different temperatures and of collision-induced light scattering (CILS) at room temperature are computed for gaseous molecular hydrogen using theoretical values for induced dipole moments and pair-polarizability trace and anisotropy as input. Comparison with measured spectra of absorption, isotropic and anisotropic light scattering shows satisfactory agreement, for which the uncertainty in measurement of its spectral moments is seen to be large.

Empirical models of the dipole moment and pair-polarizability trace and anisotropy which reproduce the experimental spectra and the first three spectral moments more closely than the fundamental theory are also given.

Good agreement between computed and experimental lineshapes of both absorption and scattering is obtained when potential models which are constructed from the thermophysical, transport, total scattering cross-section and spectroscopic properties are used. Also, the use of the new potential in lattice dynamic calculations yields good results for several properties of solid hydrogen.

Keywords: Induced dipole moment; Pair polarizability trace and Anisotropy; Potential; Hydrogen.

134. Complete Band Gaps of Phononic Crystal Plates with Square Rods

Sahar A. El-Naggar, Samia I. Mostafa and Nadia H. Rafat

Ultrasonics, 52: 536-542 (2012) IF: 1.838

Much of previous work has been devoted in studying complete band gaps for bulk phononic crystal (PC). In this paper, we theoretically investigate the existence and widths of these gaps for PC plates. We focus our attention on steel rods of square cross sectional area embedded in epoxy matrix. The equations for calculating the dispersion relation for square rods in a square or a triangular lattice have been derived. Our analysis is based on super cell plane wave expansion (SC-PWE) method. The influence of inclusions filling factor and plate thickness on the existence and width of the phononic band gaps has been discussed. Our calculations show that there is a certain filling factor (f = 0.55) below which arrangement of square rods in a triangular lattice is superior to the arrangement in a square lattice. A comparison between square and circular cross sectional rods reveals that the former has superior normalized gap width than the latter in case of a square lattice. This situation is switched in case of a triangular lattice. Moreover, a maximum normalized gap width of 0.7 can be achieved for PC plate of square rods embedded in a square lattice and having height 90% of the lattice constant.

Keywords: Phononic crystal plates;Super cell plane wave expansion;Completephononic bandgaps.

135. Onthe Oscillation of Third Order Neutral Delay Dynamic Equations onthe Time-Scales

Said R. Grace, John R. Graef and Mohamed A. El-Beltagy

Comput Math Appl, 63: 775-782 (2012) IF: 1.747

Han et al. [Z. Han, T. Li, S. Sun, C. Zhang, Oscillation behavior of third order neutral Emden–Fowler delay dynamic equations on time-scales, Adv. Differential Equations 2010 (2010). Article ID 586312, 23 pages] gave some criteria for the oscillation and asymptotic behavior of solutions of the third order neutral delay dynamic equation

$$r(t)\,(x(t)-a(t)x(\tau(t)))^{\Delta\Delta})^{\Delta}+p(t)x^{\gamma}(\delta(t))$$

on a time scale T , where $\gamma > 0$ is the quotient of odd positive integers. In this paper, the authors establish some new criteria for the oscillation of this equation that improve andunify those of Han et al.

Keywords: Dynamic equations; Third order; Neutral delay equations; Nonlinear equations; Oscillation; Time scales.

136. The Fractional-Order Modeling andSynchronizationof Electrically Coupled NeuronSystems

K. Moaddy, A.G. Radwan, K.N. Salama, S. Momani and I. Hashim

Comput Math Appl, 64: 3329-3339 (2012) IF: 1.747

In this paper, we generalize the integer-order cable model of the neuron system into the fractional-order domain, where the long memory dependence of the fractional derivative can be a better fit for the neuron response. Furthermore, the chaotic synchronization with a gap junction of two or multi-coupled-neurons of fractional-order are discussed. The circuit model, fractional-order state equations and the numerical technique are introduced in this paper for individual and multiple coupled neuron systems with different fractionalorders.Various examples are introduced with

different fractional orders using the nonstandard finite difference scheme together with the Grünwald–Letnikov discretization process which is easily implemented and reliably accurate.

Keywords: Non-Standard finite deference scheme; Fractional differential equation; Chaoticsynchronization; Neuron system.

137. New Insights intoCollision-InducedRototranslational Absorption and ScatteringSpectra of Gaseous Methane at Different Temperatures

M.S.A. El-Kader and G. Maroulis

J Molecular Spectroscopy, 281: 28-39 (2012) IF: 1.512

Quantum mechanical lineshapes of collision-induced absorption (CIA) and of collision-induced light scattering(CILS) at different temperatures for gaseous molecular methane are computed using as input theoreticalvalues for induced dipole moments and pair-polarizability anisotropy. The quantum lineshapesof absorption are reproduced accurately by the extended Birnbaum Cohen (EBC) model with the parametersbased on certain function of different coefficients for the octopole and hexadecapole mechanisms.for the scattering, the spectrum consists essentially of an intense, purely translational component whichincludes scattering due to free pairs and bound dimers and of another component due to the inducedrotational scattering. This spectrum has been interpreted by means of pair-polarizability terms; whicharise from a short range dipole-induced-dipole (DID) with small dispersion corrections and long rangeinteraction mechanism involving higher-order dipole–quadrupole (A) and dipole–octopole (E) polarizabilities.Good agreement between computed and experimental lineshapes of both absorption and scatteringis obtained with potential models constructed from thermophysical and transport properties.

Keywords: Induced dipole moment; Pair polarizability trace and anisotropy; Potential; Hydrogen.

138. High Pressure Optical Cell for Synthesis andin Situ Raman Spectroscopy ofHydrogen Clathrate Hydrates

Milva Celli, Marco Zoppi, Mohamed A. S. Zaghloul and Lorenzo Ulivi

Review of Scientific Inturements, 83: (2012) IF: 1.367

We report the design, realization, and test of a high-pressure optical cell that we have used to measure the Raman spectra of hydrogen clathrate hydrates, synthesized in situ by the application of 200-300 MPa of gas pressure on solid water. The optical apparatus is mounted on a cryogenic system so to allow measurements and sample treatment at any temperature between 300 and 20 K. A capillary pipe is connected to the inside of the cell to allow the gas flow into and out of the cell, and to regulate the internal pressure at any value from 0 to 300 MPa. In the experimental test described in this paper, the cell has been partly filled, at room temperature, with a small amount of water, then frozen at 263 K before injecting hydrogen gas, at pressure of 150 MPa, into the cell. This procedurehas permitted to study hydrogen clathrate formation, by measuring Raman spectra as a function of time.

Keywords: High-Pressure optical cell;Raman spectroscopy;Hydrogen clathrates.

139. A New Technique ofusing Homotopy Analysis Method for Second Order Nonlinear Differential Equations

Hany N. Hassan and Magdy A. El-Tawil

Applied Mathematics and Computation, 219: 708-728 (2012) IF: 1.317

In this paper, a new technique of homotopy analysis method (nHAM) is proposed for solving second order nonlinear differential equations. This method improves the convergence of the series solution, eliminates the unneeded terms and reduces time consuming in the standard homotopy analysis method (HAM). The proposed provides an approximate solution byrewriting the second order nonlinear differential equation in the form of two first order differential equations. The solution of these two differential equations is obtained as a power series solution. This scheme is tested on four non-linear exactly solvable differential equations.Three of the examples are initial value problems and the fourth is boundary value problem. The results demonstrate reliability and efficiency of the algorithm developed.

Keywords: Second order nonlinear differential equations; Homotopy analysis method; A New technique ofhomotopy analysis method; System oftwo first order differential equations.

140. Robust Wide Zero-Average-Index Gap inPhotonic Heterostructures that Incorporate Left-Handed Materials

Sahar A. EL-Naggar

Physica B, 407: 3982-3986 (2012) IF: 1.063

In this article, we theoretically study electromagnetic waves that propagate in a one-dimensionalphotonic heterostructure that contains left-handed materials.

We suggest a type of heterostructure thatis composed of two photonic crystals (PCs) that consist of different materials, rather than the previouslystudied heterostructures that are based on changing the thicknesses of alternating layers, to targetzero-average-index gap enlargement. Numerical calculations of the transmittance show that thesuggested structure possesses an ultra-wide zero-average-index gap that is robust for both transverseelectric and magnetic polarizations.

The demonstrated wide gap is independent of the incidence angle.The proposed structure works as a perfect stop-band filter, which completely blocks both polarizations,and may have many other potential applications.

Keywords: Photonic heterostructures;Omnidirectional zero-N Gap;Left-handed materials.

141. Efficient Vector Hysteresis Modeling using Rotationally Coupled Step Functions

A.A. Adly and S.K. Abd-El-Hafiz

Physica B, 407: 1350-1353 (2012) IF: 1.063

Vector hysteresis models are usually used as sub-modules of field computation software tools. When dealing with a massive field computation problem, computational efficiency and practicality of such models become crucial. In this paper, generalization of a recently proposed computationally efficient vector hysteresis model based upon interacting step functions is presented. More specifically, the model is generalized to cover vector hysteresis

modeling of both isotropic and anisotropic magnetic media. Model configuration details as well as experimental testing and simulation results are given in the paper.

Keywords: Vector hysteresis; Magnetic anisotropy; Discrete hopfield neural networks.

142. Charge Controlled Memristor-LessMemcapacitor Emulator

M.E. Fouda and A.G. Radwan

Electronics Letters, 48: (2012) IF: 0.965

Recently, many promising applications are oriented towards the newmemristive elements. But since these elements are not commerciallyavailable yet, the memristive elements emulators are very important.Introduced is a new memcapacitor emulator without using any memristor.The circuit concept and mathematical modelling are discussedanalytically and numerically to validate the operation of the proposedemulator. Moreover, the proposed emulator is assembled usingcommercial off-the-shelf components and verified using PSpicesimulations.

Keywords: Memristors; Spice; Numerical analysis; Capacitors.

143. Dependency of the Photonic Band Gaps in Two-Dimensional Metallic Photonic Crystals onthe Shapes and OrientationsofRods

Sahar A. El-Naggar

Optical Engineering, 51(6): (2012) IF: 0.959

Photonic bands in two types of two-dimensional metallic photoniccrystals (2-D MPCs), which are composed of dielectric rods embeddedinto a metallic background (type I MPCs) and metallic rods in a dielectric background (type II MPCs), are investigated theoretically using a method based on the frequency-dependent plane-wave expansion method. We discuss the maximization of the normalized gap width as a function of the rod shapes and orientations. In addition, we study the effect of dielectric constants of the rods and the background on the width of the photonic band gap. Four different shapes of rods—square, circular, diamond, and rectangular—are considered. The numerical results show that the type I MPCs have a higher normalized gap width than the type II MPCs. We observe that the rotation of the noncircular rods in the type I MPCs leads to a slight variation, less than 10%, in the normalized values of the gap width in the two lattice structures. However, rotating the metallic square rods arranged in a square lattice results in doubling of the normalized gap width. The normalized gap width can be tailored by changing the dielectric constant of the rods (background) in type I (type II) MPCs.

Keywords: Photonic bandstructures;Frequency-Dependent Plane-wave expansion method; Metallic photonic crystals.

144. Low-Voltage Puzzle-Like Fractal Microelectromechanial System Variable Capacitor Suppressing Pull-in

A.M. Elshurafa, P.H. Ho2, A.G. Radwan, M.H. Ouda and K.N. Salama

Micro & Nano Letters, 7: 965-969 (2012) IF: 0.944

This Letter introduces an electrostatically actuated fractal MEMS variable capacitor that, by utilising the substrate, extends the tuning range (TR) beyond the theoretical limit of 1.5 as dictated by the pull-in phenomenon.

The backbone concept behind the fractal varactor is to create a suspended movable plate possessing aspecific fractal geometry, and to simultaneously create a bottom fixed plate complementary in shape to the top plate. Thus, when the top plate is actuated, it moves towards the bottom plate and fills the void present within the bottom plate without touching it akin to how puzzle pieces are assembled. Further, a reasonable horizontal separation is maintained between both the plates to avoid shorting.

The electrostatic forces come from the capacitance formed between the top plate and bottom plate, and from the capacitance formed between the top plate and the doped substrate. The variable capacitor was fabricated in the Poly MUMPS process and provided a TR of 4.1 at 6 V, and its resonant frequency was in excess of 40 GHz.

Keywords: Fractals; Microactuators; Capacitors; Capacitance.

145. Non Linear Dynamics of Memristor Based 3Rd Order Oscillatory System

A. Talukdar, A.G.Radwan and K.N.Salama

Microelectron J., 43: 169-175 (2012) IF: 0.919

In this paper, we report for the first time the nonlinear dynamics of three memristor based phase shift oscillators, and consider them as a plausible solution for the realization of parametric oscillation as an autonomous linear time variant system. Sustained oscillation is reported through oscillating resistance while time dependent poles are present. The memristor based phase shift oscillator is explored further by varying the parameters so as to present the resistance of the memristor as a time varying parameter, thus potentially eliminating the need of external periodic forces in order for it to oscillate. Multi memristors, used simultaneously with similar and different parameters, are investigated in this paper. Mathematical formulas for analyzing such oscillators are verified with simulation results and are found to be in good agreement.

Keywords: Memristor;Oscillating poles; Stableoscillationmemristor; Dynamic poles.

146. Fractional Order Filterwith TwoFractional Elementsof Dependant Orders

A. Soltan, A.G.Radwan and AhmedM.Soliman

Microelectron J, 43: 818-827 (2012) IF: 0.919

This work is aimed at generalizing the design of continuous-time filters in the non-integer-order (fractional-order) domain. In particular, we consider here the case where a filter is constructed using two fractional-order elements of different orders and . The design equations for the filter are generalized taking into consideration stability constraints. Also, the relations for the critical frequency points like maximum and minimum frequency points, the half power frequency and the right phase frequency are derived. The design technique presented here is related to a fractional order filter with dependent orders and related by a ratio k. Frequency transformations from the fraction allow-pass filter to both fractional high-pass and band-pass filters are discussed. Finally, case studies of KHN active filter design examples are illustrated and supported with numerical and ADS simulations.

Keywords: Fractance; Fractional filter; Stability; Analog filter; Khn filter.

147. Oscillation of Higher Order Nonlinear Dynamic Equations on Time Scales

Said R Grace, Ravi P Agarwal and Ağack Zafer

Advances In Difference Equations, 67: 1-18 (2012) IF: 0.845

Some new criteria for the oscillation of nth order nonlinear dynamic equations of the form

$$x^{\Delta n}(t) + q\,(t)\,(X^{\sigma}\,(\xi(t))^{\lambda} = 0$$

are established in delay $\xi(t) \leq$ tand non-delay $\xi(t) = t$ cases, where $n \leq 2$ is a positive integer, l is the ratio of positive odd integers. Many of the results are new for the corresponding higher order difference equations and differential equations are as special cases.

Keywords: Oscillation; Neutral; Time scale; Higherorder.

148. Fractional-Order Rcand Rl Circuits

A.G. Radwan and K.N. Salama

Circuits Syst Signal Process, 31: 1901-1915 (2012) IF: 0.817

This paper is a step forward to generalize the fundamentals of the conventional RC and RL circuits in fractional-order sense. The effect of fractional orders is the key factor for extra freedom, more flexibility, and novelty.

The conditions for RC and RL circuits to act as pure imaginary impedances are derived, which are unrealizablein the conventional case.

In addition, the sensitivity analyses of the magnitude and phase response with respect to all parameters showing the locations of these critical values are discussed. A qualitative revision for the fractional RC and RL circuits in the frequency domain is provided. Numerical and PSpice simulations are included to validate this study.

Keywords: Fractional calculus; Frequency domain analysis; Fractional; Order circuit; Sensitivity analysis; Fractional-Order Filter.

149. Controllable V-Shape Multiscroll Butterfly Attractor: System and Circuit Implementation

M. Affan Zidan, A. G. Radwan and K. N. Salama

International Journal of Bifurcation and Chaos, 22: (2012) IF: 0.755

In this paper, a new controllable V-shape multiscroll attractor is presented, where a variety of symmetrical and unsymmetrical attractors with a variable number of scrolls can be controlled using new staircase nonlinear function and the parameters of the system.

This attractor can be used to generate random signals with a variety of symbol distribution. Digital implementation of the proposed generator is also presented using a Xilinx Virtex R 4 Field Programmable GateArray and experimental results are provided.

The digital realization easily fits into a small area (<1.5% of the total area) and expresses a high throughput (4.3Gbit/sec per state variable).

Keywords: Controlled chaos; Digital chaos generator; Multiscrollattractor.

150. Stagnation Point Flow through A Porous Medium Towards A Radially Stretching Sheet in the Presence of Uniform Suction or Injection and Heat Generation

Hazem Ali Attia, Karem Mahmoud Ewis and Mostafa A. M. Abdeen

J Fluid Eng-T Asme, 134: (2012) IF: 0.747

An analysis is made of the steady laminar axisymmetric stagnation point flow of an incompressible viscous fluid in a porous medium impinging on a permeable radially stretching sheet with heat generation or absorption. A uniform suction or blowing is applied normal to the plate which is maintained at a constant temperature. Similarity transformation is used to transform the governing partial differential equations to ordinary differential equations. The finite difference method and generalized Thomas algorithm are used to solve the governing nonlinear momentum and energy equations. The effects of the uniform suction/blowing velocity, the stretching parameter and the heat generation/absorption coefficient on both the flow field and heat transfer are presented and discussed. The results indicate that increasing the stretching parameter or the suction/blowing velocity decreases both the velocity and thermal boundary layer thicknesses. The effect of the stretching parameter on the velocity components is more apparent for suction than blowing while its effect on the temperature and rate of heat transfer at the wall is clearer in the case of blowing than suction.

Keywords: Numerical solution; Stagnation point; stretchingsheet; Suction; Heat generation.

151. Onthe Oscillatory Behavior of Even Order Neutral Delay Dynamic Equations on Time-Scales

Said R. Grace, John R. Graef, Saroj Panigrahi and Ercan Tunc

Electronic Journal of Qualitative Theory of Differential Equations, 96: 1-12 (2012) IF: 0.557

We establish some new criteria for the oscillation of the even order neutraldynamic equation

$$(a(t)\,(x(t) - p(t)x(\tau(t)))^{\Delta n-1})^{\alpha})^{\Delta} + q(t)\,x^{\sigma}\,(g(t))) = 0$$

on a time scale T, where $n \geq 2$ is even, α and are ratios of odd positive integers, a, p and q are real valued positive rd-continuous functions defined on T, and $g$and tau are real valued rd-continuous functions on T. Examples illustrating the results are included.

Keywords: Oscillation; Neutral delay equations; Time scale; higher order; Evenorder.

152. Approximations for Some Statistical Moments ofthe Solution Process of Stochastic Navier-Stokes Equation using Whep Technique

Magdy A. El-Tawiland Abdel-Hafeez A. El-Shikhipy

Applied Mathematics and Information Sciences,721-736 (2012) IF: 0.523

Wiener-Hermite expansion linked with perturbation technique (WHEP) is used to solve the stochastic tow-dimensions non-linear Navier-Stokes equations. An approximate formula for the ensemble average, variance and some higher statistical moments of the stochastic solution process are obtained using WHEP technique and some cases study are considered to illustrate the method of analysis.

Keywords: Stochastic navier stokes equations; Perturbation method; Whep wiener; Hermite expansion (Whe).

153. Steady Hydromagnetic Flow ofa Non-Newtonian Power Law Fluid Due to A Rotating Porous Disk with Heat Transfer

Hazem Ali Attia, Karem Mahmoud Ewis, Ibrahim Hamdy Abd Elmaksoudand Mostafa A. M. Abdeen

Russ J Phys Chem A+, 86: 2063-2070 (2012) IF: 0.459

The steady MHD flow of an incompressible viscous non-Newtonian power law fluid above an infinite rotating porous disk with heat transfer is studied. A uniform magnetic field is applied perpendicularly to the plane of the disk and a uniform injection or suction is applied through the surface of the disk. Numerical solutions of the nonlinear differential equations which govern the hydromagnetic and heat transfer are obtained. The effects of characteristics of the non-Newtonian fluid, the magnetic field parameter and the suction or injection velocity on the velocity and temperature distributions are considered.

Keywords:MHD Flow; Porous rotating Disk; Power law fluid; dissipations.

154. MHD Stability of Streaming Jet using Artificial Intelligence Technique

Mostafa A. M. Abdeen and Alfaisal A. Hasan

Journal of Mechanics, 28: 453-459 (2012) IF: 0.325

Mathematical formulation for Magnetohydrodynamic (MHD) stability of a streaming cylindrical model penetrated by varying transverse magnetic field is presented. Eigen value relation is derived and discussed analytically. In the current paper, Artificial Neural Network (ANN) model, one of the artificial intelligence techniques, is developed to simulate the stability of streaming jet penetrated by magnetic field. The ANN results presented in the current study showed that ANN technique, with less effort and time, is very efficiently capable of simulating and predicting the effect of magnetic field variation and axial exterior field on the stability of the streaming jet. The influence of magnetic field has a stabilizing effect for all short and long wavelengths. However the streaming is strongly destabilizing.

Keywords: Magnetohydrodynamic; Streaming Jet; Magnetic field; Numerical simulation; Artificial neural network.

155. Oscillation Criteria for Quasi-Linear Functional Dynamic Equations on Time Scale

Samir H. Saker and Said R. Grace

Math. Slovaca, 62: 501-524 (2012) IF: 0.269

This paper is concerned with oscillation of the second-order quasilinearfunctional dynamic equation

$$(r(t)(x^{\Delta}(t))^{\gamma})^{\Delta}+ p(t)x^{\beta}(\tau(t)) = 0,$$

on a time scale T where r, p,andτ are quotient of odd positive integers, r, p, andτ are positive rd-continuous functions defined on T, τ :T $\rightarrow$T and lim$\tau(t) = \infty$.(t) = $t\rightarrow\infty$. We establish some new sufficient conditions which ensure that every solution oscillates or converges to zero. Our results improve the oscillation results in the literature when $\gamma = \beta$,andτ(t) >tand when τ(t) > t the results are essentially new. Some examples are considered to illustrate the main results.

Keywords: Oscillation; Quasi-Linear dynamic equations; Time scales.

156. Effect of Porosity and Hall Current on Couette Flow and Heat Transfer between Two Parallel Porous Plates with Variable Propertiesunder Constant Pressure Gradient

Mostafa A. M. Abdeen, Hazem Ali Attia, W. Abbas and Alaa El-Din Abdin

Wulfenia, 19: (2012) IF: 0.267

The transient hydromagneticCouette flow through a porous medium between two infinite parallel porous plates is studied with heat transfer considering the Hall effectand temperature dependent physical properties under constant pressure gradient. The upper plate moves with a uniform velocity while an external uniform magnetic field and a uniform suction and injection are applied perpendicular to the horizontal plates. A numerical solution for the governing non-linear coupled set of the momentum equations and the energy equation including the viscous and Joule dissipations is adopted. The effect of the porosity of the medium, the Hall current and the temperature dependent viscosity and thermal conductivity on both the velocity and temperature distributions is reported.

Keywords: Flow between Two parallel plates; Couette flow; Temperature dependent properties; Hydromagnetics; Porous medium; Heat transfer; Finite differences.

157. Optimization of Alkaline TreatmentConditions ofFlax Fiber usingBox–Behnken Method

M. Aly, M. S. J. Hashmi, A. G. Olabi, K. Y. Benyounis, M.Messeiry, A. I. Hussain and E. F. Abadir

Journal of Natural Fibers, 9: 256-276 (2012) IF: 0.25

Flax fibers, along with a number of other plant fibers, are richin cellulose, are relatively cheap, have low density, are highlybiodegradable, and are easily renewable with the potential formany composites' reinforcement. However, natural fibers arehydrophilic in nature and covered with waxy substances andpectin, which obstruct the hydroxyl groups from reacting withmost binder materials, making it less attractive for reinforcementin polymer composites. Natural fibers are, therefore, usually subjectedto alkaline treatment to bleach the fiber surface, swell the cellwall to enable large chemical molecules to penetrate the crystallineregion, stop the moisture absorption, and increase the surfaceroughness. The main goal of this work is to study the effect of thealkaline treatment conditions on the mechanical properties of flaxfiber. The effect of treatment parameters such as NaOH concentration,soaking time, and treatment temperature on single fibertensile strength (TS) and Youn's Modulus (YM) was investigated.In order to optimize the properties of flax fiber, Design-Expert softwarewas used to establish the design matrix and to analyze theexperimental data. Numerical and graphical optimization techniqueswere used. Furthermore, the effect of alkaline treatment onsurface morphology, crystallinity, and thermal properties of flaxfiber was investigated. The results were processed using the analysisof variance (ANOVA) technique, namely the Box–Behnken method.The results indicated that within the limits of treatment conditionsused in this study, the proposed models predicted single fiber TS andYM adequately. In addition, DTA/TGA results

showed that alkalinetreatment improved thermal stability of flax fibers.

Keywords: Flax fiber; Mechanical properties; Statistical method.

158. Oscillatory Behaviour of Odd Order Neutral Delay Dynamic Equations on Time-Scales

Said R. Grace, Sandra Pinelas and Ravi P. Agarwal

International Journal Dynamical Systems and Differential Equations, 4: 187-197 (2012

We shall establish some new criteria for the oscillation of neutral delay dynamic equations on an arbitrary time-scale.

Keywords: Neutral delay dynamic equations; Oscillation; Time-Scale; Higher order.

159. Oscillation of Higher Strongly-Superlinear and Strongly-Sublinear Difference Equations

Said R. Grace, Ravi P. Agarwal and Patricia J. Y. Wong

Communications in Applied Analysis, 16: 609-618 (2012)

We establish some new criteria for the oscillation of *m*th order nonlinear difference equations. We study the case of strongly superlinear and the case of strongly sublinear equations subject to various conditions. We also present a sufficient condition for every solution to be asymptotic at $\infty$to a factorial expression $(t)^{(m-1)}$.

Keywords: Difference equations; Higher order; Strongly - superlinear;Strongly; Sublinear.

160. On the Oscillation of Fourth Order Dynamic Equations

Said R. Grace, Ravi P. Agarwal and Donal O'regan

Journal of Advanced Mathematical Studies, 5: 1-10 (2012)

In this paper some new criteria for the oscillation of fourth order stronglysuperlinear and strongly sublinear dynamic equations on time scales of the formare$x^{\Delta 4}(t) + f(t, x^{\sigma}(t)) = 0$ established T.

Keywords: Oscillation; Stongly superlinear;Stongly sublinear.

161.Parametric Analysis of Beam Restingon Elastic Foundation (Ann)

Mostafa A M Abdeen and S M Bichir

Canadian Journal of Pure and Applied Science, 6(1): (2012)

Mathematical formulation for Timoshenko beam resting on an elastic foundation is presented. Parametric analysis is presented for three types of boundary conditions.

In the current paper, artificial intelligence technique is implemented to simulate and then predict the beam's deflection using one raw of the results from DQM (Differential Quadrature Method) analysis to study the effect of foundation parameter, beam stiffness and applied load on the Timoshenko beam's deflection for the three types of boundary conditions.

The ANN (Artificial Neural Network) results presented in the current study showed that the designed ANN models can simulate and predict very accurately the beam's deflection and the effect of different DQM parameters.

Keywords: Timoshenko beam; Elastic foundation; Analytic formulation; Numerical simulation; Artificialneural network.

162. Dynamics of Timoshenko Beam on Nonlinear Soil

M. Taha, A. Omar and M. Nassar

International Journal of Civil Engineering Research, 3: 93-103 (2012)

The main objective of this publication is to derive the characteristic differential equations for two-dimensional (2D) Timoshenko beam with simply supported ends subjected to distributed dynamic load and resting on one parameter nonlinear soil. A numerical solution using Adomian decomposition method is carried out to obtain the deflection shape of the beam. A Parametric analyses of are carried out and influences of all varying parameters on the beam responses are investigated. The model includes the simultaneous effects (or couplings) of bending and shear deformations, translational and rotational inertias of all masses considered.

Keywords: Nonlinear soil; Timoshenko; Adomian decomposition method.

163. Design of Logistic Map

Ahmed G. Radwan

Egyptian-Chinese Journal of Computational & Applied Mathematics, 1: 47-53 (2012)

This paper introduces a simple technique to resize the logistic map which is considered one of the famous iterative maps that model the growth rate. Three general logistic maps will be discussed, together with their bifurcation maps relative to the conventional case. A general procedure to scale the conventional logistic map horizontally, vertically, or using two independent scales is explained according to the application demands. Moreover, a new bifurcation diagram is presented with respect to one of the extra parameters. To validate the proposed idea, four different design examples are discussed in this paper.

Keywords: Logistic map; Bifurcation diagram; Generalizedlogistic map; Design ofmaps.

164. Homotopy Whep Algorithm, Solving Stochastic Differential Equations

Magdy A. El-Tawil

Egyptian-Chinese Journal of Computational and Applied Mathematics, 1: (2012)

The WHEP algorithm showed a great efficiency in computing some statistical moments of thesolution process for many perturbed stochastic differential equations. This technique has been greatlyextended by the use of homotopy perturbation to yield what is called Homotopy WHEP in which thehomotopy technique replaces the ordinary perturbation method which enables the application of thetechnique on non-perturbed problems. The solution proposed by the algorithm is sufficient for manyapplicants, e.g. engineers, to better handle a random system described by a stochastic differentialequation when having an average solution and a variance as a measure of an error in the averagesolution. Better design is obtained when having this

knowledge. In this paper, the algorithm is appliedon some nonlinear stochastic differential equations.

Keywords: Stochastic differential equations; Wiener hermite expansion; Whep technique; Homotopy perturbation method; homotopy whep; Picard approximation.

165. The Q-Homotopy Analysis Method (Q-Ham)

M. A. El-Tawil and S. N. Huseen

International Journal of Applied Mathematics and Mechanics (Ijamm), 8(15): 51-75 (2012)

In this paper, a more general method of homotopy analysis method (HAM) is introduced to solve non-linear differential equations, it is called (q-HAM). The interval of convergence of HAM, if exists, is increased when using q-HAM. The analysis shows that the series solution in the case of q-HAM is more likely to converge than that on HAM. The new method is applied to some nonlinear differential equations to illustrate the method of analysis.

Keywords: Homotopy analysis method (Ham); Partial differential equations.

166. Series Solution for Continuous Population Modelsfor Single and Interacting Species bythe Homotopy Analysis Method

Hany N. Hassan and Magdy A. El-Tawil

Communications In Numerical Analysis, 2012: 1-17 (2012)

The homotopy analysis method (HAM) is used to find approximate analytical solutions of continuous population models for single and interacting species. The homotopy analysis method contains the auxiliary parameter, which provides us with a simple way to adjust and control the convergence region of series solution. the solutions are compared with thenumerical results obtained using NDSolve, an ordinary differential equation solver found in the Mathematica package and a good agreement is found. Also the solutions are compared with the available analytic results obtained by other methods and more accurate and convergent series solution found. The convergence region is also computed which shows the validity of the HAM solution. This method is reliable and manageable.

Keywords: Homotopy analysis method; Convergence-controller Parameter; Nonlinear differential equations; Logistic growth; Predator-prey models.

167. Stability Analysis of the Fractional-Order Rl Circuit

A. G. Radwan

Journal of Fractional Calculus and Applications, 3: 1-15 (2012)

In this paper, we will introduce a generic study of the seriesRLC circuit in the fractional-order domain. The added two fractional-order parameters increase the degree of freedom in the design over the conven-tional RLC circuit. Therefore, the total number of parameters becomesve instead of three which means that the conventional RLC theorems and anal-yses represent a point (1; 1) in the plane. Stability study in the fractional plane (F) and in the physicals-planefordierent cases will be introduced. The e ect of the circuit values (R,L,C) on the poles of the characteristic equationwill be investigated for each case. The analytical formula of the poles in case of equal fractional-orders will be also presented. Many examples showing the magnitude and phase responsesforthefractional-orderRLC low-pass lter (LPF) will be discussed to validate the previous stability analysis.

Keywords: Fractional-order deferential equations; Stability; Fractional-order Cir-cuit theory; Fractional-order stability; Rlc circuit; Fractional-order.

168. Nonlinear Vibration Model for Initially Stressed Beam-Foundation System

M.H. Taha

The Open Applied Mathematics Journal, 6: 23-31 (2012)

An analytical solution for nonlinear vibration of an initially stressed beam with elastic end restraints resting on a nonlinear elastic foundation is obtained. As a first step in solving nonlinear vibration equation, the linear vibration mode functions for a beam with elastic end restraints resting on a linear elastic foundation are obtained. Then, the nonlinear vibration equation is solved by employing the linear mode functions to obtain frequency equation and nonlinear response using Jacobi elliptic integral. The nonlinearity due to lateral vibrations, the nonlinearity of foundations and lateral displacement due to lateral elastic restraints at beam ends not included in previous analytical work are considered in the present work. The effects of spring stiffness at the beam ends, foundation stiffness, axial load and vibration amplitude on the frequency parameter are studied. The present solution can be used to measure the accuracy of approximate methods.

Keywords: Nonlinear beam vibration; Elliptic integrals; Nonlinearfoundations; mode functions andnatural frequencies.

169. Unsteady MHD Flow and Heat Transfer Between Parallel Porous Plates with Exponential Decaying Pressure Gradient

Hazem A. Attia and Mostafa A. M. Abdeen

Kragujevac Journal of Science, 15-22 (2012)

The unsteady magnetohydrodynamic flow of an electrically conducting, viscous, incompressible fluid bounded by two parallel non-conducting porous plates is studied with heat transfer. An external uniform magnetic field and a uniform suction and injection are applied perpendicular to the plates while the fluid motion is subjected to an exponential decaying pressure gradient. The two plates are kept at different but constant temperatures while the Joule and viscous dissipations are included in the energy equation. The effect of the magnetic field and the uniform suction and injection on both the velocity and temperature distributions is examined.

170. On the Effectiveness of Porosity on Transient Flow Due to A Rotating Disk with Heat Transfer and Dissipation

Hazem A. Attia and Mostafa A. M. Abdeen

Kragujevac Journal of Science, 34: 5-13 (2012)

The transient flow with heat transfer through a porous medium of an incompressible viscous fluid due an infinite rotating disk is

studied considering Darcy's model. The nonlinear partial differential equations that govern the motion of the fluid and the energy equation including the dissipation are solved nume¬ri¬cally using finite differences. The effect of the porosity of the medium on both the velocity and temperature fields is investigated.

Keywords: Flow due to A rotating disk; Porous medium; Heat transfer; Finite differences; Unsteady state.

171. Mean Square Convergent Finite Difference Scheme for Random First Order PartialDifferential Equations

M. A. El-Tawiland M. A. Sohaly

Journal of Fractional Calculus and Applications, 3: 1-14 (2012)

In this paper, the random finite difference method is used in solvingrandom partial differential equations problems of first order. The conditions of the mean square convergence of the numerical solutions are studied. The numerical solutions are computed through numerical case studies.

Keywords: Random partial differential equations (Rpdes); Mean square sense (M.S); Second order random variable; Random finite difference method (Rfdm).

172. Unsteady Hartmann Flow with Heat Transfer of A Viscoelastic Fluid Under Exponential Decaying Pressure Gradient

Hazem Ali Attia and Mostafa A. M. Abdeen

Engineering Mechanics, 19: 37-44 (2012)

The unsteady Hartmann flow of a conducting incompressible non-Newtonian viscoelastic fluid between two parallel horizontal insulating porous plates is studied with heat transfer. A uniform pressure gradient which decays exponentially is imposed in the axial direction. An external uniform magnetic field and uniform suction and injection through the surface of the plates are applied in the vertical direction.

The two plates are kept at different but constant temperatures while the Joule and viscous dissipations are considered in the energy equation. Numerical solutions for the governing momentum and energy equations are obtained using finite differences. The effect of the magnetic field, the parameter describing the non-Newtonian behavior, and the velocity of suction and injection on both the velocity and temperature distributions is investigated.

Keywords:MHDflow; Heat transfer; Non-Newtonian; Viscoelastic; Electrically conducting fluids; Suction and Injection.

173. Velocity and Temperature Distributions between ParallelPorous Plates with the Hall Effect and Variable Properties under Exponential Decaying Pressure Gradient

Hazem Ali Attia and Mostafa A.M. Abdeen

Engineering Transaction, 60 (2): 139-153 (2012)

The time varying hydromagnetic flow between two infinite parallel porous plates is studied with heat transfer considering the Hall effectand temperature dependent physical properties. An exponential decaying pressure gradient is imposed in the axial direction and an external uniform magnetic field as well as a uniform suction and injection are applied perpendicular to the horizontal plates. A numerical solution for the governing non-linear coupled set of equations of motion and the energy equation is adopted. The effects of the Hall current and the temperature dependent viscosity and thermal conductivity on both the velocity and temperature distributions are investigated.

Keywords: Flow between Parallel Plates; Variable Properties; Hydromagnetics; Heat Transfer; Numerical Solution.

174. Forced Vibrations of Cantilever Beams

Bedier B EL-Naggar

Candian Journal of Pure & Applied Sciences,6: (3) 2187-2190(2012)

In this paper, the problem of forced vibrations of beams is investigated. The initial-boundary value problem is formulated. The cantilever beam-fixed in one end, and free in the other- is given prescribed initial displacement and velocity. The natural frequencies and the normal modes are obtained as the eigenvalues and the eigenvectors of the corresponding eigenvalue problem.

Keywords: Cantilever; Vibration; Natural Frequency; Normal Modes; Eigenvalues; Eigenvectors.

Dept. of Irrigation & Hydraulics Engineering

175. A Probabilistic Approach to Calculating the Reliability of Over-Year StorageReservoirs with Persistent Gaussian Inflow

K.H. Hamed

Journal of Hydrology,448:93-99(2012) IF: 2.656

The reliability of over-year storage reservoirs has been traditionally estimated by using Monte Carlo simulation (behavior analysis), numerical solution of the stochastic reservoir equation (difference or integral equations), or by using approximations and empirical relationships.

The case of persistent inflow, which is the case for most natural streams, adds complexity to the problem. Apart from simulation, which is the most flexible approach, other methods have had partial success in this case, and are mainly limited to the case of Markovian autocorrelation.

This paper suggests an alternative method for calculating the reliability of over-year storage reservoirs with persistent gaussian inflow using basic probability principles and the numerical integration of the standard multi-variate normal distribution.

It is shown that the classical probabilities of the reservoir being empty and those of spilling can be directly calculated based on the distribution of the critical drawdown and filling periods.

The results obtained by the application of the proposed method compare very well with those obtained by Monte Carlo simulation and those reported in previous studies. The proposed method thus offers another alternative that should be useful in handling complex problems.

Keywords: Reservoir reliability; Critical period; Persistence; Gaussian inflow;Stochasticreservoir.

Dept. of Mechanical Design and Production

176. Method for Physiologic Phenotype Characterization at the Single-Cell Level in Non-Interacting and Interacting Cells

Laimonas Kelbauskas, Shashanka P. Ashili, Jeff Houkal, Dean Smith, Aida Mohammadreza, Kristen B. Lee,Jessica forrester, Ashok Kumar, Yasser H. Anis, Thomas G. Paulson, Cody A. Youngbull, Yanqing Tian,Mark R. Holl, Roger H. Johnsonand Deirdre R. Meldrum

Journal of Biomedical Optics, 17(3): 1-12 (2012) IF: 3.157

Intercellular heterogeneity is a key factor in a variety of core cellular processes including proliferation, stimulus response, carcinogenesis, and drug resistance. However, cell-to-cell variability studies at the single-cell level have been hampered by the lack of enabling experimental techniques. We present a measurement platform that features the capability to quantify oxygen consumption rates of individual, non-interacting and interacting cells under normoxic and hypoxic conditions.

It is based on real-time concentration measurements of metabolites of interest by means of extracellular optical sensors in cell-isolating microwells of subnanoliter volume. We present the results of a series of measurements of oxygen consumption rates (OCRs) of individual non-interacting and interacting human epithelial cells.

We measured the effects of cell-to-cell interactions by using the system's capability to isolate two and three cells in a single well. The major advantages of the approach are: 1. ratiometric, intensity-based characterization of the metabolic phenotype at the single-cell level, 2. minimal invasiveness due to the distant positioning of sensors, and 3. ability to study the effects of cell-cell interactions on cellular respiration rates.

Keywords: Data analysis;Opticalcharacter recognition;Oxygen; Sensors.

177. Optimization ofthe Ti Sic Max Phase Synthesis

M.A. El Saeed, F.A. Deorsola and R.M. Rashad

Int. Journal of Refractory Metals and Hard Materials, 1-5 (2012) IF: 1.693

The synthesis of Ti3SiC2 MAX phase by self-propagating high-temperature synthesis (SHS) and pressureless argon shielding synthesis has been investigated following different pathways pertaining to the reactant systems Ti/Si/C, Ti/SiC/C and Ti/TiC/Si. Silicon in excess ranging from 10 to 50 mol% was employed to obtain powders mainly constituted by Ti3SiC2. Optimizing the excess of silicon and the pressing technique, the resultant powders with Ti3SiC2 content near to 100% were obtained. Result was consequent to the use of pressureless argon shielding synthesis obtained with 30 mol% of silicon excess in the examined different systems.

The Ti3SiC2 was also obtained by SHS, but with lower proportion (88% and 86% from 3Ti+1.2SiC+0.8C and 3Ti+1.3Si+2C respectively). These results driving from XRD patterns were confirmed by FESEM observations and the EDAX analyses.

Keywords: Max phase; Ti3sic2; Shs process; Nanostructured powders.

178. Analysis ofthe DynamicBehavioral Performance ofMechanical Systems withMulti–Clearance Joints

S.M. Megahed and A.F. Haroun

Journal of Computational and Nonlinear Dynamics, 7(1) (2012) IF: 0.827

In this investigation, the effect of revolute joints' clearance on the dynamic performanceof mechanical systems is reported. A computation algorithm is developed with the aid ofSolidWorks-CosmosMotion software package. A slider-crank mechanism with one andtwo clearance-joints is studied and analyzed when working in vertical and in horizontalplanes. The simulation results point out that the presence of such clearance in the jointsof the system understudy leads to high peaks in the characteristic curves of its kinematicand dynamic performance. for a multiclearance joints mechanism, the maximum impactforce at its joints takes its highest value at the nearest joint to the input link. This studyalso shows that, when the mechanism works in horizontal plane, the rate of impacts ateach clearance-joint increases and consequently the clearance-joints and actuators willdeteriorate faster.

Keywords:Solidworks; Cosmosmotion; Clearance-Joint; Impact force; Multiclearance joints; Mechanism; Contact force approach.

179. An Experimental Study on Heat Transfer and Entropy Generation in CircularTube Fitted with Trapezium-Nozzles

E. Ibrahim and E. El-Kashif

Energy Science and Technology, 3: 74-83 (2012)

Heat transfer, friction factor and entropy generation fromthe inside surface of a horizontal circular tube fitted withtrapezium - nozzle have been investigated experimentally.

The heat transfer test section is heated electricallyimposing axially andcircumferentially constant wall heatflux. Three different pitch ratios (PR) of trapezium –nozzlearrangements in the test tube are introduced with PR=2,4, and 7. The experiments covered a range of Reynoldsnumbers from 8000 to16000. Heat transfer and frictionfactor analyses are presented for different conditionsof pitch ratios (PR) and Reynolds number.The resultsindicate that the trapezium - nozzle of different pitchratios has a great effect on the results of heat transfercoefficient and friction factor.The Nusslet numberincreases with an increase in Reynolds number and itdecreases with an increase in pitch ratios. It is found thatusing the trapezium -nozzle results in increasing the heattransfer rate compared with the plain tube. The maximumgain in Nusslet number is obtained for the smallest pitchratio used, PR=2.This indicates that the effect of thereverse/re-circulation and surface flows can improve theheat transfer rate in the circular tube. for fixed Reynoldsnumber, the friction factor increases with the decrease inpitch ratio for the circular tubes with trapezium -nozzle.The entropy generation number increases with increaseReynolds number at all cases, whereas the entropygeneration number shows its highest value at pitch ratioof 2. From these results, it was found that the averageenhancement in Nusselt number for circular tube fittedwith trapezium - nozzle at pitch ratio (PR=2) is in therange of 202% to 257% compared with the plain circulartube for all tested conditions. Correlations of the Nusseltnumber and friction factor with Reynolds number andpitch ratio are presented.

Keywords: Enhancement heat transfer; Circular tube; Recirculation -reverse flow; Entropy generation; Turbulator.

180. Experimental Study of Forced Convection Over Equilateral Triangle Helical Coiled Tubes

E. Ibrahim and E. El-Kashif

Energy Science and Technology, 3: 1-9 (2012)

This study presents an experimental investigation of anequilateral triangular cross-sectioned helical tube underuniform heat flux boundary condition. The experimentsare carried out for nine helical coiled-tubes of differentparameters. Different diameter ratio (D/a) ranged from6.77 to 15.43 and pitch ratio (P/a) ranged from 1.127 to3.062 are employed in the present study, The experimentscovered a range of Reynolds number from 5.3×102 to2.2×103. Uniform heat flux is applied to the inside surfaceof the helical coil and air is selected as tested fluid.The experimental results obtained from the equilateraltriangular cross-sectioned helical tube indicated that theparameters of the coil diameter and pitch of helical coilhave important effects on the heat transfer coefficient. TheNusselt number increases with the increase of Reynoldsnumber and coil diameter at constant pitch of the helicalcoil. Also, Nusselt number increases with the increaseof Reynolds number and Pitch of helical coil at constantcoil diameter tube. A comparison between the presentexperimental data with a previous work with circularcross-sectioned helical tubes have the same test conditionswas achieved. From this comparison, it is clear that theaverage enhancement of Nusselt number for equilateraltriangular cross-sectioned helical is about 1.121.25times the circular cross-sectioned helical for all testedconditions.

A general correlation of the average Nusseltnumber as a function in Re, D/aandP/a ratios is obtainedto describe the forced convection from the equilateraltriangle cross sectioned coiled tube.

Keywords: Forced convection; Helical coiled tubes; Coil diameter ratio; Pitchratio.

181. Motion Synchronization Enhancement of Hydraulic Servo Cylinders for Mould Oscillation

Saad Kasseml, Taller Salab El-Din' and Siegfried Helduser3

International Journal of Fluid Power, 3(1): 51-60(2012)

A cross coupling control technique (CCC) with a fuzzy logic controller (FLC) is proposed in this work to improve motion synchronization of the two hydraulic servo cylinders used tooscillate the heavy mould of a continuous casting machine. A mathematical model is presented for the system frequently used in industry in which each servo controlled cylinder is driven independently in an accurate closed loop control system. The model validity is verified by comparing results of numerical simulations for mould oscillations using the model, with actual measurements recorded in a steel plant. Effect of disturbances on motion synchronization is depicted theoretically using the mathematical model. A fuzzy logic controller which reduces synchronization errors in cylinders positions to practically acceptable values is proposed and theoretically verified. Measurements carried out on a continuous casting machine in a steel plant confirmed the merits of using the proposed CCC in reducing the synchronization errors resulting from different disturbances.

Keywords: Synchronization; Hydraulic; Servo; Cylinder; Cross; Coupling; Control; Fuzzy; Logic; Simulation; Plant; Measurements.

182. Analysis of the Effects ofthe Sample Inclinationon Results of Vickers Hardness Testing

Gouda Mohamed, Magdi Ibrahim, Ali Abu El ezz, Mahmoud Adly and Ali Khatab

Canadian Journal ofpure and Applied Sciences, 6: (2012)

The objective of this paper is to analyse the influence of the specimen inclination on Vickers hardness measurements. Aprimary Vickers hardness testing machine (PVHM), and hardness reference test blocks with different hardness levels areused a different values of inclination angles for the tested specimens are obtained through a calibrated test rig.Theoretical and experimental analyses were conducted to evaluate the hardness tested samples tilting effects. The testsresults were validated by analysis of variance (ANOVA). The results show that there is significant effect due tospecimen inclination where the surface area of contact was found to be higher for tilted indentation and henceunderestimates of hardness. Inclination is partially depending on the hardness level where the effects of inclination angleare reduced at higher levels of hardness values.Empirical formula was obtained to correlate between inclination angle and Vickers hardness error.

Keywords: Vickers hardness; Tilting effects; Indenter inclination.

183. Comparsion of Vickers Hardness Standard between Nis (Egypt) and Ptb (Germany)

Gouda Mohamed, Magdi Ibrahim, Ali Abu El Ezz, Mahmoud Adly and Ali Khatab

Global Journal of Pure & Applied Science and Technology - Gjpast,8-16 (2012)

This paper details the results of a bilateral comparison carried out between the national Vickers hardness standard machines of Egypt and Germany. The results indicate that the uncertainty claims of the two laboratories can, in general, be supported.

Keywords: Hardness; Vickers; Machines; Intercomparison.

184. Using Nsga-Ii to Optimise Tool Life and Production Time for Turning under Minimum Quantity Lubrication

Tarek M. El-Hossainy, Abdulaziz M. El-Tamimi and Tamer F. Abdelmaguid

International Journal of Manufacturing Research, 7: 290-310 (2012)

Metal Working Fluids (MWFs) are known to improve machining performance, yet they have poor ecological and health side effects. Therefore, eliminating or reducing their quantity in machining operations is crucial. The Minimum Quantity Lubrication (MQL) is a new sustainable manufacturing technique that can achieve significant reduction in the MWF used compared to traditional wet flooding, while maintaining high performance. This paper provides an experimental investigation to study the characteristics of the flow of the MWFin a turning process utilising the MQL technique and to analyse the effect of the WMF's behaviour on cutting force, surface roughness and tool wear. Several experiments are conducted considering different

workpiece materials and cutting parameters. Based on the experimental results, the Response Surface Methodology (RSM) is used to provide mathematical models that relate the main cutting parameters, the workpiece material properties and the MWF viscosity and flow rate with cutting force, surface roughness and tool wear. A non-linear, multi-objective optimization problem is formulated for a case study with the objectives of minimising production time and maximising tool life. It is demonstrated that the second version of the Non-dominated Sorting Genetic Algorithm (NSGA-II) is an efficient technique for generating a set of well-spread Pareto front solutions, which helps in determining the most appropriate values of MQL and cutting parameters.

Keywords: Machinability; Mql; Minimum quantity lubrication; Multi-Objective optimisation; Nsga-Ii; Non-dominated sorting genetic algorithm.

185. Towardsan Optimized Process Planning of Multistage Deep Drawing: an Overview

A.S. Wifi and T.F. Abdelmaguid

Journal of Achievements in Materials and Manufacturing Engineering, 55: 7-17 (2012)

Purpose: to present a concise literature review on theoptimization techniques used for the single stage and multistage deep drawing process, and to identify directions for future research. A perspective on a comprehensive optimized computer aided process planning is provided for multistage deep drawing processes. This is an integrated rule basedynamicprogrammingfinite element a pproach that minimize the total number of stages and heat treatment needed.**Designmethodology/approach**: Relevant research is classified according to the major process parameters and the optimization techniques used. Main features and major outcome of the applications are presented.**Findings**: There is a lack in the literature in providing a comprehensive approach for optimizing the multistage deep drawing process.**Research/limitations/implications**: Directions for future research towards integrative models for optimizing the multistage deep drawing process that take into consideration economic as well as operational objectives are identified.**Originalityvalue**: This paper provides a guide for researchers in the field of deep drawing and identifies some directions for future research that can be pursued. It also gives some insights to practitioners in that field on how integrated models can improve the economics and the quality of the process planning decisions for multistage deep drawing.

Keywords: Multistage deep drawing; Process planning; Optimization techniques; Integratedapproach; Finite element analysis.

186. Impact Behavior ofA356 Albite Sic Composites Subjected toCyclic Thermal Fatigue

N. E. Elzayady, R. M. Rashad and A. Elhabak

International Journal of Engineering Research and Development, 1: 6-17 (2012)

The present investigation aims to study the effects of Albite and SiC ceramics on thermal cyclic fatigue ofA356 composites containing reinforcement of weight fraction (3%) as well as the unreinforced alloy. The compositeswere fabricated by rheocasting in which the particles were added into the molten alloy in semi-solid state (SSM) withmechanical stirring at rotating speed of 700 r.p.m. The investigation emphasized on studying the impact toughness eitherbefore or after different stages of thermal cycling. Thermal cycling tests were performed on specimens between 40 and4500C for 1000 cycles. The results of study revealed that casting A356 alloy in SSM exhibited impact toughness in thisalloy (25J) as for Charpy un-notched sample. Adding 3% of Albite particles to the alloy raised its toughness to become28J. While degradation in impact toughness has been occurred when 3% SiC was added to the alloy to reach 12J. Theresults of impact test after applying the thermal cycling for all samples indicated significant improvement in theirtoughness for both the A356 alloy and A356/3% Albite MMC, which showed absorbed energy of 29J and 34Jrespectively, after repeated 1000 thermal cycles. An improvement in (A356/3% SiC) MMC toughness has been inducedafter applying thermal cycling up to 500 cycles to reach 22J, afterwards, degradation in its value has been occurred toreach 12J at 1000 thermal cycle. In addition, other phenomena involving the modification of matrix microstructure wereobserved after conducting thermal cycling.

Keywords: Aluminum alloy; Albite; Sic; Mmcs; Microstructure; Mechanical properties; Thermal fatigue.

187. Simulation and Experimentation of Multibody Mechanical Systems with Clearance Revolute Joints

A.F. Haroun and S.M. Megahed

International Journal of Mechanical and Aerospace Engineering, 6: 367-376 (2012)

Clearance in the joints of multibody mechanicalsystems such as linkage mechanisms and robots is a main source ofvibration, and noise of the whole system, and wear of the jointsthemselves. This clearance is an inevitable matter and cannot beeliminated, since it allows the relative motion between jointcomponents and make them assemblage. This paper presents anexperimental verification of the obtained simulation results of a slider– crank mechanism of one clearance revolute joint. The simulationresults are obtained with the aid of CAD and dynamic simulationsoftwares, which is an effective method of simulation multibodysystems with clearance joints and have many advantages. Thecomparison between both simulation and experimental results showsthat the simulation results are so close to the experimental ones whichproves the accuracy and efficiency of this method of modeling andsimulation of mechanical systems with clearance joints.

Keywords: Cad anddynamic simulator softwares; Clearance Joints; Experimental results; Slider; Crank mechanism.

Dept. of Mechanical Power Engineering

188. Design and Construction of Q-Switched Nd:Yag Laser System for Libs Measurements

Khaled Elsayed, HishamImam, AmroHarfoosh, YasserHassebo, YasserElbaz,Mouayed Aziz and MohyMansour

Optics & Laser Technology, 44: 130-135 (2012) IF: 1.515

A passive, Q-switched pulsed, Nd:YAG laser system was designed and built, which can provide a potential compact robust laser source for portable laser induced breakdown spectroscopy systems.The developed laser system operates at 1064 nm. Each laser shot contains a train of pulses havingmaximum total output

energy of 170 mJ. The number of pulses varies from 1–6 pulses in each laser shot depending on the pump energy. The pulse width of each pulse ranges from 20 to 30 ns. The total duration of the output pulse train is within 300 ms.
The multi-pulse nature of the laser shots was employed to enhance the LIBS signal. To validate the system, LIBS measurements and analysis were performed on ancient ceramic samples collected from Al-Fustat excavation in Old Cairo. The samples belong to different Islamic periods in Egypt history. The results obtained are highly indicative that useful information can be provided to archeologists for use in restoring and repairing of precious archeological objects.

Keywords: Libs technique; Nd;Yaglaser; Passive q-Switch.

189. The Stabilization Mechanism of Highly Partially Premixed Flames in a Concentric Flow Conical Nozzle Burner

Mohy S. Mansour, A.M. Elbaz and Mohamed Samy

Experimental Thermal and Fluid Science, 43: 55-62 (2012)
IF: 1.414

Many practical combustion systems are based on the mode of partially premixed flames where the interaction between lean and rich pockets improves the flame stability. In our recent work a highly stabilized concentric flow conical nozzle burner has been designed and developed for partially premixed flames. Flow field, temperature and OH radical measurements were conducted outside the cone.
The early region of the flame within the cone affects the stability of the flame. So, the aim of the present work is to study the stabilization mechanism inside the cone based on two dimensional measurements of the flow field and temperature field.
Five turbulent partially premixed flames have been investigated at Reynolds numbers range between 8.3 103and14.5 103and equivalence ratio ranges between 2.5 and 4. The turbulent flow field inside and outside the conical quartz nozzle were obtained using a three-dimensional PIV system.
The flow filed at the near region inside the cone shows a recirculation zone suggesting air entrainment along the cone wall. This stream of air is likely to be heated by the flame and thus improves the flame stability. Thus, the stabilization mechanism of the conical nozzle burner is mainly affected by the flow pattern inside the cone.
This flow field structure improves the stability significantly as compared to similar partially premixed flames without cone. The mean temperature field indicated two distinctive regions at early axial distances, the first of a lower central flame temperature and a second region of a higher flame temperature, which located at a shifted radial distances. These two regions are associated with four distinctive regions of temperature fluctuations. The jet equivalence ratio has a limited effect on flow fields and has relatively milder effect on the temperature field.

Keywords: Partially premixed flames; Flame stabilization; Piv; Flow field; Temperature field; Turbulent flow.

190. Ventilation ofthe Archaeological Tombs ofthe Valley of Kings, Luxor, Egypt

Essam E. Khalil

International Journal of Air Conditioning and Refrigeration, 20 (1):1-7 (2012)

The cultural heritage left by the Egyptian pharaohs in the tombs of the Valley of the Kings represents some of the key elements of the Egyptian cultural wealth and standing monuments demonstrating the wealth and technology of the pharaohs. As the pharaohnic civilization is one of the oldest civilizations, the dedicated preservation of its remaining monuments and collections should be the focus of sincere international efforts.
A major heritage of this civilization, i.e., the tombs of the Kings, is intact in the Valley of the Kings, Luxor, Egypt.
These tombs were prepared to bury the Kings' mummies and artifacts for eternal life. Many of the wall paintings identifying the various ancient rituals and life style are in good conditions as the tombs were only recently opened to the public. However, tourists' activities in these tombs have resulted, in many instances, in the dramatic deterioration of wall paintings due in part to excessive humidity.
The current indoor air flow conditions and air quality in the tombs are quite alarming; hence, appropriate measures should be taken to preserve the tombs and their contents.
This dilemma invokes the need for a proper ventilation system that stabilizes the air conditioning as well as addresses comfort levels of visitors. Deterioration can be from lighting effects, high temperature and relative humidity. Pest infections, shock and vibration are also potential causes among pollution and visitors' traffic.

Keywords: Cfd;Numerical;History.

191. Holistic Approach to Smart Buildings from Construction Material to Services, Ojee, Open Journal of Energy Efficiency

Essam E. Khalil

Open Journal of Energy Efficiency, 1: 1-8 (2012)

This paper presents a recent status quo of HVAC air side design for the air-conditioned spaces under holistic approach. The present review summarizes the current status, future requirements, and expectations.
It has been found that, the experimental investigations should be considered in the new trend of energy investigations, not to merely to validate the numerical tools, but also to provide a complete database of the airflow characteristics in the air-conditioned spaces.
Based on this analysis and the vast progress of computers and associated software, the artificial intelligent technique is sought as a prominent competitor candidate to the experimental and numerical techniques. Finally, the researches that relate between the different designs of the HVAC systems and energy consumption should concern with the optimization of air side design as the expected target to enhance the indoor environment.

Keywords: Energy; Air conditioning.

192. Flow Regimes and Thermal Patterns in A Subway Station, American Journal of Fluid Dynamics

Essam E. Khalil and Esmail EL-Bialy

American Journal of Fluid Dynamics, 2(6): 95-100 (2012)

As underground railway systems can generate enough heat from their operations to raise station and vehicle temperatures substantially[1,2]. This may lead to passenger discomfort and complain in warm weather conditions if the underground railway environment is not cooled.

This paper presents modifications that can be made on air conditioning systems in subway stations by discussing and analyzing air flow and thermal patterns in a typical one.As CFD is now a popular design tool for engineers from different disciplines for pursuing an optimum design due to the high cost, complexity, and limited information obtained from experimental methods[3-5]. The pre-processor Gambit is used to create the geometric model with parametric features. Commercially available simulation software "Fluent 6.3" is incorporated to solve conservation of mass, momentum and energy in the processing of air distribution, and to analyze turbulence affection combined heat transfer on air distribution.

In this paper work, the so-called standard.k-εturbulence model, one of the most widespread turbulence models for industrial applications, was utilized. Basic parameters included in this work are air temperature, air velocity, relative humidity and turbulence parameters are used for numerical prediction of indoor air distribution.

The CFD model was validated by comparing the simulation results with measurements of air velocity, and in a plane perpendicular to the supply diffuser and another plane in the vicinity of the advertisement lamp box. Thermal comfort was used in this paper to judge the impact of any modification. The thermal comfort prediction through this work was based on the PMV (Predicted Mean Vote) model and the PPD (Percentage Predicted Dissatisfied) model, the PMV and PPD were estimated using Fanger's model.

Keywords: Energy; Air conditioning.

193. Energy Efficient Hospitals Air Conditioning Systems

Essam E. Khalil

Open Journal of Energy Efficiency, 1: 1-8 (2012)

Energy Efficiency and Indoor Air Quality in the healthcare applications and particularly in surgical operating theatres are important features in modernized designs. The various reasons for deviation from obtaining optimum IAQ and energy efficient buildings are listed.

The air conditioning systems serving the operating rooms require careful design to minimize the concentration of airborne organisms. Numerical approach is an appropriate tool to be utilized to adequately identify the airflow patterns temperatures and relative humidity distributions and hence energy efficient designs.

Keywords:CFD; Hospitals; Air conditioning; Energy efficiency.

194. Cfd History and Applications

Essam E. Khalil

Cfd Letters, 4(2): (2012)

CFD techniques were developed over the years with the hard way of trial and error, refine and many validation and assessment procedures.

In the early 1973 the CFD group at Imperial College embarked on an ambitious and attractive program to predict simple shear flows, free and confined jet flows. The work was very intuitive and with modest attempts to predict flow pattern with two and then three dimensional flow configurations.

These mainly relate to simple parabolic flow with no recirculation and using stream function –vorticity solution algorithm, hence yielding some non-measurable flow characteristics that made the application rather uncomfortable to compare to real engineering problems.

Later that year the newly proposed SIMPLE Semi Implicit solution algorithm partially paved the way with primitive variables velocity U and Pressure P as main parameters . This enables the solution of the Navier Stokes Momentum Equations in a straightforward manner. Grid sized started by 20x20 and up to 10000 orthogonal nodes to converge in 1000 iterations for simple confined symmetrical pipe flow. Necessarily, a model to represent the turbulent characteristics of the flow at high Reynolds numbers was developed by Launder and Spalding in 1974. That was the birth of what is commonly known today as the Standard k-ε turbulence model; also known as two equation turbulence model.

Keywords: Cfd;Numerical;History.

195. Analysis of Indoor Air Quality in Surgical OperatingRooms using Experimental and Numerical Investigations

N. El Gharbi, A. Benzaoui, Essam E. Khalil and Ramiz Kameel

Mechanics & Industry, 1-7 (2012)

The present work fosters experimental measurements and mathematical modeling techniques to primarily determine the thermal and the relative humidity characteristics in the air-conditioned surgical operating theater.

The present work also demonstrates the effect of the various designs of surgical operating theaters and operational parameters on the flow pattern and temperatures characteristics. The present work is a part of a more comprehensive investigation of the more important factors affecting the air environments in surgical operating theater.

Measured and predicted temperatures and relative humidity profiles are shown to be in good agreement. The present paper introduces several recommendations regarding the optimum design requirements of operating theaters to provide hygiene and comfort environment. Low humidity affects comfort and health. The present work offers examples of measured relative humidity profiles in an operating theater in (New Kasr El-Aini Teaching Hospital, 1200 beds Cairo University Egypt). These experimental results were carried out to verify the proposed numerical procedure and particularly in the vicinity of the supply outlets and operating table.

196. Experimental and Computational Investigation of Flow Regimes and Thermal Patterns in A Subway Station

Essam E. Khalil and Esmail M.El-Bialy

Ashrae Transactions: (2012)

The definition of a good indoor climate is important to the success of a passenger rail coach, not only because it will decide its energy consumption and thus influence its sustainability but also because good comfort for long journeys is essential. The intention is to use the results to optimize the control of the ventilation system to provide an indoor climate that passengers will find comfortable. The results of this study show how passengers' thermal comfort was affected by changing the supplied air conditions.This paper primary discusses and analyzes the simulation of the air flow and thermal patterns in a Subway station. Numerical simulation of a typical model is presented. Modifications were applied to the numerical model to show the improvement of the thermal comfort level.The pre-processor Gambit is used to create the geometric model with parametric features. Commercially available simulation software "Fluent 6.3" is incorporated to solve conservation of mass, momentum and energy in the processing of air distribution, and to analyze turbulence affection combined heat transfer on air distribution. In this thesis work, the so-called standard k-ε turbulence model, one of the most widespread turbulence models for industrial applications, was utilized. Basic parameters included in this work are air temperature, air velocity, relative humidity and turbulence parameters are used for numerical prediction of indoor air distribution.Measurements of air velocity, and temperature were undertaken in a plane perpindicular to the supply diffuser. These values were then compared to the obtained results from the simulated cases.The thermal comfort prediction through this work was based on the PMV (Predicted Mean Vote) model and the PPD (Percentage Predicted Dissatisfied) model, the PMV and PPD were estimated using Fanger's model.

197. The Role of Solar and Other Renewable Energy Sources on the Strategic Energy Planning: Africa's Status & Views, Ashrae Transactions

Essam E. Khalil

Ashrae Transactions, 64-72 (2012)

All countries face the challenge of assuring secure, reliable energy services in the coming decades. Almost all countries in Africa have experienced interruption of some form of energy supply in recent years. Tension in oil and gas markets, changing rainfall patterns, expanding demand, as well as internal technical, managerial and financial problems, have caused crisis in the availability of fuels or electricity. Furthermore, the challenges of climate change are putting increasing pressure on energy sector development in Africa. A large majority of African countries are heavily dependent on energy imports. Even the African countries that are major exporters of energy – petroleum, gas, and electricity or biomass fuels – must import at least one crucial element of their energy mix. The improvement of economic governance and the investment climate are essential elements to build Africa's economic strength and allow Africa to move away from continuous donor support and find its place in global markets. Integrating national systems into regional networks will foster sustainable economic growth and development andimprove energy security. The international economic crisis has highlighted the importance of regional integration as a means to aid those countries that rely on a limited range of energy supplies. Solar, wind and other RES as well as the thermal and electrical energy are explored in our continent and the present work briefly outlined the scope, goals, methodologies and applications. Samples and case studies are shown.

Keywords: Energy; Air conditioning;Egypt;Africa.

198. Energy Efficiency, Air Flow Regime and Relative Humidity in Air-Conditioned Surgical Operating Theatres, Ashrae Transactions,

Essam E.Khalil

Ashrae Transactions, (2012)

This paper reviews the previous attempts to evaluate the Indoor Air Quality (IAQ), investigates previously proposed IAQ factors and analyses the evaluation methods of these factors. The present work introduces, also, a new hypothesis of the optimum HVAC airside system design of the surgical operating theatres to achieve the comfort and hygiene levels. The present work is devoted to propose andformulate a new scale capable of adequately evaluating the airflow pattern in the surgical operating theatres. The proposed new scale is proposed to cover the local and overall air quality evaluations. A new Neuro fuzzy technique was applied to derive measures for indoor air quality indices. Indoor Air Quality (IAQ) is more critical in healthcare facilities due to the dangerous microbial and chemical agents present and the increased susceptibility of the patients. Hospitals and other healthcare facilities are complex environments that require ventilation for comfort and to control hazardous emissions. Surgical operating theatre is the most important and complex zone in the hospital, and requires more careful control of the aseptic conditions of the environment. Most of the previous researches aiming at evaluating the IAQ were based on the evaluation of the air distribution depending on the residence and leaving age of the air supplied to the enclosure. Other attempts were also reported to indicate the effectiveness of contaminant removal by the entire airflow pattern as an indication to the IAQ.This paper recommends some designs of the supply air outlets to provide the vertically downward airflow as a practical solution. The near ceiling and near floor extract ports are to be used instead of the hypothetical complete floor extract as a practical solution.

Keywords: Energy; Air Conditioning.

199. Feasibility of Fuzzy Logic Control for Steam Turbine Systems: Analysis, Modeling and Control

Ahmed Aboul Magd, Ashraf Sabryand Yasser Zeyada

Book Published By Lap Lambert Academic Publishing, (2012)

Fuzzy Logic Control (FLC) is an important alternative method to the conventional Proportional, Integral, and Derivative (PID) control method for use in nonlinear systems. This book, therefore, highlight the feasibility and effectiveness of fuzzy logic control in application to mathematical models of two basic types of steam turbines; straight expansion and single-automatic extraction turbines. The derived performance of the developed mathematical models, in terms of input/output duty variables without mean of control, is found to be in a good agreement with the actual

performance of typical steam turbines with practical technical data and operating conditions. Model components exhibit nonlinear behavior. A comparison is made between the efficiency of Fuzzy Logic Control and the conventional PID control for the dynamic responses of the closed loop drive system. In case of straight expansion steam turbines, the control task is either speed or backpressure control. In case of single extraction steam turbines, the control task is to maintain both speed and extraction pressure of the turbine constants. This is done in presence of severe changes in load and/or steam demand conditions.

Dept. of Mining, Petroleum and Metallurgy

199. Effect of Aging Time at Low Aging Temperatures on the Corrosion of Aluminum Alloy 6061

Kamal El-Menshawy, Abdel-Wahab A. El-Sayed, Mohammed E. El-Bedawy, Hafez A. Ahmed and Saed M. El-Raghy

Corros Sci, 54: 167-173 (2012) IF: 3.734

The effect of heat treatment in the underaged, peak aged and overaged conditions in the temperature range 140–225 C on the corrosion characteristics of Al–Mg–Si–Cu alloy (AA6061) was investigated. Potentiodynamic polarization testing in neutral NaCl solution and immersion testing in acidified NaCl solution were applied to investigate the corrosion behavior of the alloy. The results showed significant dependence of the dominant corrosion form and the electrochemical corrosion parameters on the aging conditions. Maximum changes were noted for the peak aged condition. The results were discussed in terms of changes in precipitate type, size, volume fraction and distribution.

Keywords: Aluminium; Polarization; Pitting Corrosion; Passivity.

200. Surface Morphology and Electrochemical Characterization of Electrodeposited Ni–Mo Nanocomposites as Cathodes for Hydrogen Evolution

R. Abdel-Karima, J. Halima, S. El-Raghy and M. Nabila, A. Waheed

Journal of Alloys and Compounds, 530: 85-90 (2012) IF: 2.289

Ni–Mo nanocomposite coatings (18–32 nm) were prepared by electrodeposition of nickel from a nickel salt bath containing suspended Mo nanoparticles. All the coatings have been deposited under galvanostatic conditions using current densities in the range 5–80 mA/cm2. According to structural investigation carried out by X-ray diffraction, the obtained coatings consisted of crystalline Mo phase incorporatedinto Ni matrix. The molybdenum content diminished with increasing the deposition current density and ranged between~6 and~17% Mo. The crystallite size and the surface roughness increased by raisingthe current density. A remarkable deterioration in the corrosion resistance of Ni–Mo composites was observed with the increase of Mo content due to crystallite size-refining and surface roughness effect.Electrocatalytic effect for hydrogen production was improved mainly as a result of increasing the surface.

Keywords: Nanocrystalline films nickel; Molybdenum composites electroplating hydrogen evolution reaction.

201. Influence of Al2o3 Nano-Dispersions on Microstructure Features andMechanical Properties of Cast and T6 Heat-Treated Al Si Hypoeutectic Alloys

I. El-Mahallawi, H. Abdelkader, L. Yousef, A. Amer, J. Mayer and A. Schwedt

Mat Sci Eng A-Struct, 556: 76-87 (2012) IF: 2.003

Cast light metal alloys have retained their importance and unique characteristics as first candidates when cost–function relationship is considered. Hypoeutectic aluminum silicon alloys as (A356) exhibitseveral specific and interesting properties that qualify them to be used in many automotive and aeronautical applications. Evidence of significant enhancement in the properties of Al–Si cast alloys byincorporating Al2O3 nano-particles have been recently presented. The present study aims at developing Al2O3 nano-dispersed Al–Si alloys with suitable casting methods that assure the dispersion of the nanoparticles.In this work a number of cast samples of A356 were prepared by rheo-casting in a specially designed and built furnace unit allowing for the addition of the Al2O3 nano-particles into the molten Al–Si alloy in the semi-solid state with mechanical stirring. The microstructural features and the mechanical properties of the cast and T6 heat treated samples were investigated. The results obtainedin this work showed enhancement in the mechanical strength of the Al2O3 nano-dispersed alloys, accompanied by significant increase in the elongation percentage, supported by evidence of refined dendrite arms length, and inter-lamellar spacing.

Keywords: Aluminium silicon hypoeutectic alloys; Al2o3 NanoDispersions; Strength; T6; Grain refinement; Sem micro-analysis.

202. Compressibility Factor Model of Sweet, Sour, andCondensateGases using Genetic Programming

Eissa M. El-M. Shokir, Musaed N. El-Awad, Adulhrahman A. Al-Quraishi andOsama A. Al-Mahdy

Chem Eng Res Des, 90: 785-792 (2012) IF: 1.968

Gas compressibility factor (z-factor) is necessary in most petroleum engineering calculations. The most common sources of z-factor values are experimental measurements, equations of state (EOS) and empirical correlations. There are more than twenty correlations available with two variables for calculating the z-factor from fitting Standing–Katz chart values in an EOS or just through fitting techniques. However, these correlations are too complex, which require initial value and longer computations, and have significant error. This work presents a new model for estimating z-factors of sweet gases, sour gases and gas condensates using genetic programming (GP). The z-factor model was developed using pseudo-reduced pressure, and pseudo-reduced temperature. Moreover, two new models of pseudocritical pressure and temperature were built as a function of the gas composition (mol percent of C1–C7+, H2S, CO2,and N2) and the specific gravity of the C7+. The developed new GP-based model yields a more accurate prediction of gas z-factor compared to the commonly used correlations and EOS's.

Keywords: Gas compressibility factor; Sour gas; Condensate gas; Genetic programming.

203. Hydrogeological Characterization of Gold Valley: an Investigation of Precipitation Recharge in an Intermountain Basin in the Death Valley Region, California, Usa

Abdulaziz M. Abdulaziz, José M. Hurtado, Jr. and Abdalla Faid

Hydrogeology Journal, 20: 701-718 (2012) IF: 1.387

Gold Valley is typical of intermountain basins in Death Valley National Park (DVNP), California (USA). Using water-balance calculations, a GIS-based analytical model has been developed to estimate precipitational infiltration rates from catchment-scale topographic data (elevation and slope). The calculations indicate that groundwater recharge mainly takes place at high elevations (>1,100m) during winter (average 1.78mm/yr). A resistivity survey suggests that groundwater accumulates in upstream compartmentalized reservoirs and that the groundwater flows through basin fill and fractured bedrock. This explains the relationship between the upstream precipitational infiltration in Gold Valley and the downstream spring flow in Willow Creek. To verify the ability of local recharge to support high-flux springs in DVNP, a GIS-based model was also applied to the Furnace Creek catchment. The results produced insufficient total volume of precipitational infiltration to support flow from the main high-flux springs in DVNP under current climatic conditions. This study introduces a GIS based infiltration model that can be integrated into the Death Valley regional groundwater flow model to estimate precipitational infiltration recharge. In addition, the GISbased model can efficiently estimate local precipitational infiltration in similar intermountain basins in arid regions provided that the validity of the model is verified.

Keywords: Groundwater recharge; Water budget; Groundwater-surface-water relations; Statistical modeling; USA.

204. Electrodeposition and Characterization of Nanocrystalline Ni-Mo Catalysts for Hydrogen Production

J. Halim, R. Abdel-Karim, S. El-Raghy, M. Nabil and A. Waheed

Journal of Nanomaterials, (2012) IF: 1.376

Ni-Mo nanocrystalline deposits (7–43 nm) with a nodular morphology were prepared by electrodeposition using direct current from citrate-ammonia solutions. They exhibited a single Ni-Mo solid solution phase. The size of the nodules increased as electroplating current density increased. The molybdenum content—estimated using EDX analysis—in the deposits decreased from about 31 to 11wt% as the current density increased from 5 to 80mA/cm2.The highest microhardness value (285 Hv(corresponded to nanodeposits with 23%Mo. The highest corrosion resistance accompanied by relatively high hardness was detected for electrodeposits containing 15%Mo. Mo content values between 11 and 15% are recommended for obtaining better electrocatalytic activity for HER.

Keywords: Nanocoatings; Electrodeposition; Ni; Mo Alloys.

205. Flow of Materials in Rod Mills as Compared to Ball Mills in Dry Systems

Abdel-Zaher M. Abouzeid and Douglas W. Fuerstenau

Int J Miner Process, 102-103:51-57 (2012) IF: 1.304

The rod mill product is characterized by its narrow size distribution if it is compared with that of a ball mill operating under the same conditions in open circuit. This is partly due to the bridging action of the rods over the coarse particles avoiding the fine sizes (the grinding kinetics aspect), and partly due to the nature of material flow through the mill with its rod load (the material transport aspect).

This article will stress mainly on the nature of material transport within the rod mill. It was found that the presence of rods minimizes the particulate segregation which is caused by differences in particle size and/or material density of the flowing components in the system. Segregation due to differences in particle shape (spherical versus natural particle shapes) and/or surface roughness was less affected in the presence of rods as stirring media in the system.

The geometric restrictions on the axial and radial movement of the rods inside the drum, in addition to the restricted particle–rod interactions affected the axial and radial dispersion of the material flowing through the rod mill. on the other hand, particulate segregation in the ball mill is almost eliminated among all material components different in size, density, shape, and/or surface roughness. Its product displays very good mixing under all operating and material conditions.

Keywords: Rod mills; Ball mills; Material transport in tumbling mills; Axialdispersion; Mixing andsegregation.

206. Monitoring Land-Use Changes Associated Land Development using Multitemporal Landsat Data and Geoinformatics in Kom Ombo Area, South Egypt

Abdalla M. Faid and Abdulaziz M. Abdulaziz

Int. Journal of Remote Sensing, 33: 7024-7046 (2012) IF: 1.117

Due to the progressive increase in population, sustainable development of desert land in Egypt has become a strategic priority in order to meet the increasing demands of a growing population for food and housing. Such obligations require efficient compilation of accurate land-cover information in addition to detailed analysis of archival land-use changes over an extended time span. In this study, we apply a methodology for mapping land-cover and monitoring change in patterns related to agricultural development and urban expansion in the desert of the Kom Ombo area. We utilized the available record of multitemporal Landsat Thematic Mapper (TM) and Enhanced Thematic Mapper Plus (ETM+) images to produce three land-use/land-cover maps for 1988, 1999 and 2008. Post-classification change-detection analysis shows that agricultural development increased by 39.2% through the study period with an average annual rate of land development of 8.7 km2/year. We report a total increase in urbanization over the selected time span of approximately 28.0 km2 with most of this urban growth concentrated to the east of the Nile and occurring through encroachment into the former old cultivated lands. The archival record of the length of irrigation canals showed that the estimated length of irrigation canals was 341.5 km, 461.8 km, and 580.1 km in the years 1988, 1999, and 2008 respectively, with a 70% increase in the canal lengths from 1988 to 2008. Our results not only accurately quantify the land cover changes but also delineate their spatial patterns, showing the efficiency of Landsat data in evaluating landscape dynamics over a particular time span. Such information is critical for making effective policies for efficient and sustainable natural resources management.

Keywords: Change Detection; Land Use; Land Cover; Egypt.

207. Influence of Silica-Compatibilizer-Polypropylene InteractionsonMechanical Behaviouroftheir Composite

Ayman A. El-Maidany and Suzan S. Ibrahim

Tenside Surfactants and Detergents, 49: 288-294 (2012)
IF: 0.638

The minerals application in polymer industry is one of the solutions towards the modification of polymer properties. In this study, the micronized silica was used as filler into the polypropylene (PP) matrix to enhance its mechanical properties. Two compatibilizers; namely: styrene-ethylene/ butylene-styrene (SEBS) triblock copolymer and its grafted maleic anhydride (SEBS-g-MA) were used and evaluated using statistical design of experiments.
The results showed that the addition of silica to the PP matrix substantially improves the mechanical properties of the composite with a drop in strain measures.
On the other hand, the addition of the compatibilizer enhances the interfacial bonding and smoothen the stresses transfer between filler particles and the polymeric matrix. Consequently, a remarkable improvement in impact strength and strain was noticed. The statistical analysis showed that the interaction between silica and compatibilizer plays a crucial role in determining the mechanical properties of the final composite.

Keywords: Silica; Polymers; Polypropylene; Mechanical Properties; Fillers.

208. Effective Processing ofA Low-Grade Iron Ore through Gravity and Magnetic Separation

Ahmed A. S. Seifelnassr, Eltahir M. Moslim and Abdel-Zaher M. Abouzeid

Physicochemical Problems of Mineral Processing, 42(2): 567-578 (2012) IF: 0.5

This study investigates the effectiveness of gravity and magnetic concentration techniques for the beneficiation of a Sudanese iron ore, the newly discovered Wadi Halfa iron ore deposit. It is a low-grade type of ore with high silica content, more than 45% SiO2, and an average iron content of about 35% Fe. Based on the fact that there are appreciable differences in specific gravity and magnetic susceptibility between the desired iron minerals and the gangue minerals, it was suggested that gravity separation and/or magnetic separation may be useful to concentrate this type of ore. These two techniques were adopted for the beneficiation of the Wadi Halfa low-grade iron ore.
As a result of the fine dissemination of the iron minerals and the most abundant gangue mineral, quartz, the optimum degree of grinding is around 150 micrometers. The rougher tests of both the gravity separation and magnetic separation produced concentrates of about 44% Fe. Each of these two concentrates was cleaned in a second stage of processing using high intensity magnetic separator. Final iron concentrates, assaying about 64% Fe at a recovery of about 70%, were achieved.

Keywords: Wadi halfa iron Ore; Low-Grade iron Ore; Gravity concentration; Magnetic concentration; Combined gravitymagnetic concentration.

209. Gravity Concentration of Sudanese Chromite Ore using Laboratory Shaking Table

Ahmed A. Seifelnasr, Tarig Tammam and Abdel-Zaher M. Abouzeid

Physicochemical Problems of Mineral Processing, 48(1): 271-280 (2012) IF: 0.5

The main raw material for chromium metal is chromite. Geologically, chromite deposits are associated, by their nature of formation, with specific gangue minerals such as serpentine, olivine, and chlorite.
These associated minerals are of lower densities than chromite. This criterion of density difference between chromite and the associated minerals suggests the use of gravity separation techniques for concentrating the low-grade chromite ores.
This paper presents the results of an investigation on the concentration of a low-grade (30% to 35% Cr2O3) chromite ore from Chickay Mine, East of Sudan, using a shaking table. The studied parameters were the table tilt angle and the feed size distribution. The optimum table tilt angle was 6?,and the best performance of the table was obtained when the feed was split into two size fractions, -1.168 + 0.18 mm and – 0.18 mm, without desliming. The concentrate assay, under these conditions, was 47.2% Cr2O3 at a recovery of 75 percent.

Keywords: Concentration of Low-Grade chromite Ores; Gravity separation; Shakingtables; Table tilt angle; Feed size distribution.

210. Development of A Simulator for Multi-Stage Multi-Zone Carbonate Matrix Acidizing

I. M. Mohamed, M.Abu El-Ela, A. S. Dahab and I. S. Abou-Sayed

Oil Gas European Magazine,142-148 (2012) IF: 0.246

Although hydrochloric acid (HCI) has been used for more than 60 years in the matrix acidizing treatment for carbonate reservoirs, the process is still as much art as science. The modeling of the acidizing processes in carbonate formations is complex because of formation heterogeneity and the use of multi-fluid in the treating processes. Prediction of the acid treatment parameters and design of the acid treatment program in the carbonate rock is the main goal of the present study.A computer simulation program using fortran 77 was developed to predict the design parameters and simulate the performance of the acidizing treatment in th e carbonate rocks. The developed simulator can be used to predict the optimum acid rate which gives the best treatment results, determine the surface and bottom-hole pressures during carbonate rock acidizing treatment, determine the distribution of the treatment fluids between formation zones, calculate the wormhole length formed in the formation, estimate the improvement in the formation skin factor due to formation treatment, and evaluate the formation productivity enhancement. The developed simulator can be used for all types of carbonates using multi-zone and multi-stage pumping. The developed simulator was validated and applied to several case studies. This paper presents the structure of the developed simulator and its application to a case study of Arab-D reservoir; Saudi Arabia. The results show a good match with the actual recorded data. This work presents also a comparison between the results of the developed simulator and the results of the commercial matrix simulator (JIP – Joint Industry Project simulator) that is actually used in the industry.

Keywords: Carbonate matrix acidizing;formation damage; stimulations operations.

211. Modifications of Commonly Used Equations for Predicting the Changes in Pressures of Gas Flow in Pipelines –Application to an Egyptian Gas Pipeline

A. Morssy, M. H. Sayyouh and A. Abdel Wally A. Osman

Oil Gas European Magazine, 2:OG1-OG4 (2012) IF: 0.246

Gas pipeline design depends on the amount of pressure drop anticipated during different phases of natural gas transportation. The outlet pressure can be computed by the common as pipeline equations such as Weymouth, Panhandle, Colebrook, and AGA formulas at the desired flow rate and pipe size. A commercially available software (PIPESIM) was used to simulate the actual data of a long gas pipeline. This software does not permit modification of any of these equations to match the actual data of the gas pipeline system to estimate the pressure drop distribution along the gas pipeline and to upgrade the gas pipeline system. Therefore, a methodology is presented in this study, which includes six different gas flow equations besides the equation of state through a software package. This package possesses features such as adding, modifying, and upgrading gas flow equations, all the independent and dependant variables, and so forth. Our methodology and software program, however, modify the flow equations to match the actual data. A comparison between the developed program and the PIPESIM was performed on actual data of a long gas pipeline including the variable inlet pressures, flow rates, and temperatures. The results of the developed program show that the modifications of the gas flow equations are obtained with an average error of the calculated outlet pressures of less than 0.2. Based on these modified equations, the developed program is able to simulate the gas flow behavior in the cases where the commercial software cannot do so.

Keywords: Gas Flow in Pipeline; Gas Equations.

212. Approach Assesses Waterflooding Benefits in Egyptian Oil Field

Mahmoud Abu El Ela

Oil Gas J., (2012) IF: 0.147

A complete and comprehensive reservoir management approach showed the benefits of waterflooding Ferdous field in the North Bahariya concession of Egypt's Western Desert. The field is about 130 km west of Cairo and is operated by North Bahariya Petroleum Co., a national joint- venture company.A pilot waterflood in the field started in August 2010. The waterflood study concluded that the Upper Bahariya formation is a vertically isolated-stratified reservoir with five units. The main producing units of the Upper Bahariya are UB-2 and UB-3. These units have the estimated potential of recovering an additional 2 million bbl of oil under a full-scale waterflood. Estimated original oil in place (OOIP) is about 5 million bbl in UB-2 and about 11.9 million bbl in UB-3.

Keywords: Reservoir management; Waterflooding.

213. Egyptian Fields Have Large Potential for Enhanced Oil Recovery Technology

Mahmoud Abu El Ela

Oil Gas J., 84-93 (2012) IF: 0.147

A number of fields in Egypt are expected to undergo one or more enhanced oil recovery methods in the near future. This article summarizes an investigation on the applicability of EOR methods in Egyptian fields.Preliminary screening is initially carried out using specialized software (EOR Graphical User Interface-EORgui) to nominate and recommend the most suitable technologies. Then, results of the preliminary screening are analyzed based on the outcomes of successful worldwide EOR projects coupled with experimental results from previous and current research.Based on these criteria, carbon dioxide miscible flooding and micellar-polymer technology seem to be the most appropriate EOR methods for the fields under the current study. Such study is an original contribution to achieve successful EOR applications in Egyptian oil fields and could greatly increase Egypt's oil reserves.

Keywords: Enhanced Oil Recovery; Improve Oil Recovery; Eor Projects.

214. Gold Recovery from Sulphide Minerals: A Bioprocessing Approach

Hussin A.M.Ahmed and Ayman A. El-Midany

Afinidad,557:62-68 (2012) IF: 0.138

Sometimes gold recovery from its ores represents a challenge. This is due to fine dissemination and interlocking of the gold within the associated sulfide minerals. Many approaches were tried to solve this problem, they included roasting, oxidation in addition to bioprocessing. In the last approach, application of bacteria enhances sulfides bio-oxidation and consequently facilitates their leaching. Therefore, this paper aims at investigating gold biorecovery from Alhura area gold ore, located at Kingdom of Saudi Arabia. Investigated parameters included Feed Size, mm; Dose of bacteria, ml ; Retention time, day; Steering speed, rpm; Bacteria nutrient addition rate, K2SO4, kg/t; Bacteria nutrient addition rate, (NH4)3PO4, kg/t. Statistical screening of these parameters showed that the most significant ones are: ore feed size, dose of bacteria and K2SO4 nutrition in addition to retention time. However at optimum conditions, (10 ml bacterial dose, 6 days retention time, and 6.5 Kg/t K2SO4 as bacteria nutrient) a gold concentrate containing up to 107 g/t gold from an ore containing 1.14 g/t gold was obtained.

Keywords: Gold ores; Sulfides; Bioprocessing; Leaching.

Dept. of Public Works

215. The Start-Up of Aerated Submerged Fixed-Bed Biofilm Reactors for Steady State Nitrification

Abdelsalam Elawwad, Hisham Abdel-Halim and Heinz Koeser

International Journal of Environmental Pollution and Remediation, 1: 20-30 (2012

The effects of two different start-up regimes on the operation performance and population dynamics of nitrification were evaluated in aerated submerged fixed-bed biofilm reactors (SFBBRs) operated at 20 °C on a medium-strength ammonium wastewater at the bench scale. The reactors were operated in parallel at start-up with two reactors under the maximum nitrogen loading rate condition (NLR) designed for the system, andfor the other two reactors, the NLR was increased stepwise over a period of 22 days. The dominant microorganism among the ammonia-oxidising bacteria (AOB) in the seeding sludge was Nitrosomonas oligotropha. There was an observed growth of Nitrosospira and Nitrosomonas europaea/eutropha when the reactors were started

up. Nitrosospira vanished during the course of reactor operations, while N. communis was observed to flourish in the second low-load stage of the SFBBR cascade. Nitrospira was the dominant nitrite-oxidising bacteria (NOB) genus present throughout the investigation. Reactors gradually loaded showed higher nitrification rates during the start-up. However, there was no significant difference in the total time required to reach steady state between the two start-up regimes. The AOB required 30 days and the NOB required an additional 8 days on average to reach steady state because NOB development was inhibited by free ammonia (FA). Proposals with respect to pH control, seeding sludge and sludge recycling were developed to shorten the start-up period in SFBBRs. The specific nitrification rates of the attached biomass in SFBBRs were compared to previous studies as well. The results from these experiments will aid in process design.

Keywords: Nitrification; Start-Up; Biofilm; Sfbbr; Aob; Nob.

Dept. of Structural Engineering

216. An Integrated Tool for Optimizing Rehabilitation Programs of Highways Pavement

Mohamed Marzouk, Ehab Awad and Moheeb El-Said

Baltic Journal of Road and Bride Engineering, 7(4): 297-304 (2012) IF: 1.61

Modeling pavement performance and optimizing resources represent two challenges for decision makers responsible for maintenance and rehabilitation of road networks pavement. This paper presents the developments made in a stochastic performance prediction model and optimization model as two major parts of an integrated pavement management system. Markov modeling is used to create a transition process model that is implemented to predict pavement condition throughout the life time of road networks. With the use of the Pavement Condition Index (PCI), the steps of performing the prediction of deterioration are presented, showing the process of creating the elements of Markov matrix. The obtained results are used to set the priorities for maintenance planning and budgeted cost allocations on the network level. The proposed model advises decision makers on the status of network level with the guidelines to keep road conditions in acceptable level of performance according to the predefined strategies. Genetic algorithms technique is adopted to build optimization model. Three objective functions are constructed for budgeted cost of maintenance and rehabilitation program, quality of work performed, and selected area for program implementation. A brief description of the developed pavement management systems, including the prediction and the optimization models, are presented. A numerical example is worked out to illustrate the practical use of both models.

Keywords: Pavement management system; Markov modeling; Multi-objective optimization; Pareto front; Genetic algorithms.

217. Agent-Based Simulation of Urban InfrastructureAsset Management Activities

Hesham Osman

Automation In Construction, 28: 45-57 (2012) IF: 1.5

This paper presents a case for adopting agent-based modeling (ABM) as a framework for representing the complex interactions that occur within the context of urban infrastructure management. A generic ABM isproposed with four key agents namely; assets, users, operators and politicians. for each agent a set of generic attributes, actions and behaviors are defined. A detailed behavioral model is adapted from the service quality domain to represent customer perceptions and actions related to infrastructure level of service.

An illustrativeexample of 20 assets and 50 user agents is simulated to demonstrate emergent agent behavior. The simulation highlights how varying user social and psychological behavior influences their response to consuming municipal infrastructure services. The model is evaluated by contrasting with a tradition Markov Decision Process framework.Results demonstrate how socio-technical aspects can be included within the complex decision making process of urban infrastructure management.

Keywords: Infrastructure management; Complex system; Simulation.

218. Progressive Collapse Assessment of Framed Reinforced Concrete StructuresAccording to Ufc Guidelines for Alternative Path Method

Huda Helmy, Hamed Salem and Sherif Mourad

Eng Struct, (2012) IF: 1.351

A structure is subjected to progressive collapse when a primary vertical structural element fails, resultingin failure of adjoining structural elements which, in their turn, cause further structural failure leadingeventually to partial or total collapse.

The failure of a primary vertical support might occur due toextreme loadings such as bomb explosion in a terrorist attack, gas explosion and huge impact of a carin the parking area. Different guidelines such as the General Services Administration (GSA) and the UnifiedFacilities Criteria (UFC) addressed the structural progressive collapse due to the sudden loss of a mainvertical support.

In the current study, a progressive collapse assessment according to the UFC guideline iscarried out for a typical 10-story reinforced concrete framed structure designed according to (ACI 318-08). Fully nonlinear dynamic analysis for the structure was carried out using Applied Element Method.

The investigated cases included the removal of a corner column, an edge column, an edge shear wall,internal columns and internal shear wall. The numerical analysis showed that for economic design, theslabs should be taken into consideration due to their significant effect on structural integrity after supportremoval. The simplification of the problem into 3D bare frames would lead to uneconomic design.

It was found for the studied case that, reinforced concrete structures designed according to ACI code doesnot meet the UFClimits and that they a have a high potential for progressive collapse for cases of loss ofeither the corner column or edge shear wall. A modification for the ACI code was proposed to meet theUFC limits.

Keywords: Progressive collapse; Ufc; Els; Aem; Catenry actions; Rotation limits; Collapse area.

219. Experimental Investigation of Bond Fatigue Behaviorof Concrete Beams Strengthened with NsmPrestressed Cfrp Rods

Noran Wahab, Khaled A. Soudki and Timothy Topper

Journal of Composites for Construction, 16: 684-692 (2012) IF: 1.021

Bond tests were conducted on 10 concrete beams strengthened with near-surface mounted (NSM) prestressed carbon fiberreinforced polymer (CFRP) rods under different fatigue load levels. In the NSM technique, grooves are cut on the tension side of the beams.The CFRP rods are then placed inside the grooves and prestressed. Then an epoxy adhesive is placed inside the groove to provide a bondbetween the concrete and the CFRP rod. The test variables included the type of CFRP rod (spirally wound or sand-coated) and the fatigue loadlevel. The beams were tested in four-point bending. Unlike the bond failures for beams strengthened with nonprestressed CFRP rods, bondfailure forbeams strengthened with prestressed CFRP rods and tested under fatigue loading was by slipping between the CFRP rod andthe epoxy that started at the support and propagated inward toward the loading point. The sand-coated rods showed a better bond fatigueperformance than the spirally wound rods, where at a given load level the beams strengthened with sand-coated rods had longer fatigue livesthan the beams strengthened with spirally wound rods. Also, for a given number of cycles, the beams strengthened with prestressed CFRProds failed in bond at a lower applied load range than the beams strengthened with a nonprestressed CFRP rod. At onset of excessiveslip (failure), the force distribution in the CFRP rod in the end region was the same for a given rod type. Thus, the shear stress value and distribution in the region close to the support was the same at onset of excessive slip (failure) for a given rod type regardless of the applied loadlevel.

Keywords: Bond; Nsm Cfrp rods; Prestressed concrete; Slip; Fatigue load; Shear stress; Spirally wound; Sandcoated.

220. Buckling of Insulated Irregular Transition Flue Gas Ducts under Axial Loading

H.M. Ramadan

Structural Engineering and Mechanics, 43: (2012) IF: 0.*863*

Finite element buckling analysis of insulated transition flue ducts is carried out to determine the critical buckling load multipliers when subjected to axial compression for design process. Through this investigation, the results of numerical computations to examine the buckling strength for different possible duct shapes (cylinder, and circular-to-square) are presented. The load multipliers are determined through detailed buckling analysis taking into account the effects of geometrical construction and duct plate thickness which have great influence on the buckling load. Enhancement in the buckling capacity of such ducts by the addition of horizontal and vertical stiffeners is also investigated. Several models with varying dimensions and plate thicknesses are examined to obtain the linear buckling capacities against duct dimensions. The percentage improvement in the buckling capacity due to the addition of vertical stiffeners and horizontal Stiffeners is shown to be as high as three times for some cases. The study suggests that the best location of the horizontal stiffener is at 0.25 of duct depth from the bottom to achieve the maximum buckling capacity. A design equation estimating the buckling strength of geometrically perfect cylin¬drical-to-square shell is developed by using regression analysis accurately with approxi¬mately 4% errors.

Keywords: Ducts Buckling; Plate Buckling; Stiffeners; Finite Element.

221. Health Effects Associated with Passenger Vehicles: Monetary Values of Air Pollution in Egypt

Mohamed Marzouk and Magdy Madany

Archives of Environmental & Occupational Health, 67: 145-154 (2012) IF: 0.846

Air pollution is regarded as one of the highest priorities in environmental protection in both developed and developing countries. High levels of air pollution have adverse effects on human health that might cause premature death. This study presents the monetary value estimates for the adverse human health effects resulted from ambient air pollution. It aids decision makers to set priorities in the public health relevance of pollution abatement. The main driver of policymaker is the need to reduce the avoidable cardiopulmonary morbidity and mortality from pollutant exposures. The monetary valuation involves 2 steps: (i) relate levels of pollutants to mortality and morbidity (concentration-response relationships) and (ii) apply unit economic values. Cost of air pollution associated with passenger vehicles running over a major traffic bridge (6th of October Elevated Highway) is presented as a case study to demonstrate the use of monetary value of air pollution. The study proves that the cost of air pollution is extremely high and should not be overlooked.

Keywords: Air pollution; Cost ofair Pollution; Environmental Engineering.

222. Construction Based Model for Assessing Maturity Level of Enterprises

Mohamed Marzouk, Tarek Attia and Nasr Eldin El-Bendary

Simul-T Soc Mod Sim, 2: 14-19 (2012) IF: 0.793

Maturity models allow organizations to assess and compare their own practices against best practices or those employed by competitors, with the intention to map out a structured path to improvement. This research explores the aspects of the Maturity Models that are relevant to distinguish them from one to another. The different Project Management maturity models for define maturity differently and measure different things to determine maturity. Because of this, organizations should give careful consideration to select appropriate maturity model. The main reason behind this research lies on the modification to the existing Organizational Project Management Maturity Model (OPM3) by adding four knowledge areas, dedicated to construction industry as best practices. These are Safety, Environment, Financial and Claim Management. This Model contains (Yes/No) questions; all of these questions must be answered before the user reviews the results that describe the overall maturity and areas of strength and weakness of an organization. The research presents the implementation of the proposed Model Construction Enterprises Maturity Model (CEM2). All the components of the developed Model have been implemented in Microsoft Access. CEM2 helps Construction Enterprises to assess their Maturity Level and know Areas of Weaknesses for future improvement. The easy to use Yes/No user interfaces help enterprises' employees to assess the

maturity level of their enterprises. The Model maintains users' responses in its database; as such, many employees from different enterprise divisions can be involved during assessment phase in several sessions.

Keywords: Construction organization; Maturity models; Construction best practices.

223. Enhanced Modeling of Steel Structures for Progressive CollapseAnalysis using the Applied Element Method

Ahmed Amir Khalil

Journal of Performance of Constructed Facilities, 26: 766-779 (2012) IF: 0.45

This paper studies performing progressive collapse analysis for steel structures using the requirements of recent codes released bythe U.S. Department of Defense and the General Services Administration. Based on a review of the code requirements, the nonlinear dynamicprogressive collapse analysis resulted in a more uniform factor of safety than the linear static analysis. The applied element method in the structuralanalysis is proposed as an efficient alternative for performing progressive collapse analysis.Acase study is undertaken where the results ofthe progressive collapse analysis using traditional finite-element-method simplifications are compared with the results from the applied elementmethod in the analysis of a moment-resisting steel frame. The case study shows that simplifications that are usually done in finite-element analysiswhen studying traditional load cases can be overconservative when performing progressive collapse analysis. The results show that the useof the nonlinear dynamic applied element method, while taking into account the effect of secondary members such as slabs and secondarybeams, can lead to considerable savings in the total weight of the steel frame.

Keywords: Progressive collapse; Steel structures; Structural failures.

224. Optimizing Inspection Policies for Buried Municipal Pipe Infrastructure

Hesham Osman; Ahmed Atefand Osama Moselhi

Journal of Performance of Constructed Facilities, 26: 345-352 (2012) IF: 0.45

Condition assessment is an integral component in any infrastructure asset management system. Without condition information,asset managers lack the ability to make appropriate decisions regarding needed maintenance, rehabilitation, and replacement ofinfrastructure. Existing and emerging technologies for assessing the condition of water and sewer pipes provide a better picture of thestate of these buried assets. Unfortunately, many of these technologies are costly and provide results that are not always highly reliable. This paper presents a methodology to assist asset managers in balancing the value of information revealed by a condition assessment technology with the cost of obtaining this information. The paper describes the computational platform of the developed methodologyand focuses primarily on the optimization process that utilizes the partially observable Markov decision process (POMDP) and geneticalgorithms. This policy determines the most appropriate condition assessment technology and interval between inspections. The developedmethodology takes into consideration direct and indirect costs of infrastructure failure. Optimization models are developed at boththe asset and network levels. A case study of the water distribution network for the city of Hamilton, Canada, is presented to demonstratethe use and capabilities of the developed methodology. At the asset level, results allow the asset manager to select the most suitablecondition assessment technology and inspection interval for a particular pipe. At the network level, results enable the proper allocation of a condition assessment budget across all pipes in the system.

Keywords: Water network; Optimization; Condition assessment.

225. Multiobjective Genetic Algorithm to Allocate Budgetary Resources for Condition Assessment of Water and Sewer Networks

Ahmed Atef, Hesham Osman and Osama Moselhi

Can J Civil Eng, 39: 978-992 (2012) IF: 0.334

This paper presents a framework for optimizing condition assessment policies by balancing the revealed value of information with the cost of obtaining such information. The computational platform is based on augmenting the asset condition state with an expected level of accuracy. Inaccuracies due to condition assessment reliability are evaluated using the partially observable Markov decision process. The single objective genetic algorithm is used to select the most cost-effective assets to assess considering information inaccuracy under a fixed budget. The model is extended using multiobjective geneticalgorithms and fuzzy set theory to include minimizing the risk exposure based on asset consequence of failure. This methodology takes into consideration direct and indirect costs of sudden infrastructure failure and reduced level of service costs. A case study is presented using the City of Hamilton, Canada, water network to demonstrate the capabilities of the model.

Keywords: Condition assessment; Value ofinformation; Genetic algorithm; Risk exposure; Budget constrains; Optimization.

226. Improved Applied Element Simulation ofRcand Composite Structures under Extreme Loading

Said A. EL-Kholy, Mohamed S. Gomaa and Adel Y. Akl

Arab J Sci Eng, (2012) IF: 0.243

During the past decade, increasing attention has been focused on the design of buildings to resistprogressive collapse. To obtain full knowledge of the total behavior of structures under extreme loading conditions,it is essential to simulate the collapsing process and the trace of yielding, damage and deformation ateach structural member. Reliable numerical models are highly required as a cost effective method of obtaininga comprehensive knowledge of themain parameters that affect the response of structures. Simulation of the collapsemechanism requires an advanced technology to accurately predict member instability, failure evaluation,rupture ofmember joints and ipact force of the falling debris. Recently, the improved applied element method(IAEM) has been introduced to simulate the total behavior of large-scale steel towers with high accuracy andlow computational effort. However, its application was limited to structures with homogeneous material. Inthis paper, a new improvement to the IAEM is introduced to develop a novel numerical simulation analysis offailureand collapse of RC and composite structures under hazardous loads. With the new

method, structureswith homogenous and nonhomogenous materials such as steel, RC and composite can be simulated with highaccuracy. The proposed technique takes into account geometric and material nonlinearities. The reliability ofthe code is investigated by comparing its results with existing experimental and numerical results. Resultsshow that a good agreement between the analytical and the experimental results can be obtained in a lesscomputational time.

Keywords: Progressive collapse; Improved applied element Method; Multi; Layered elements; Crack propagation; Failure.

227. Construction Based Model for Assessing Maturity Level of Enterprises

Mohamed Marzouk, Tarek Attia and Nasr Eldin El-Bendary

Journal of Construction Engineering and Project Management, 2: 14-19 (2012)

Maturity models allow organizations to assess and compare their own practices against best practices or those employed by competitors, with the intention to map out a structured path to improvement. This research explores the aspects of the Maturity Models that are relevant to distinguish them from one to another. The different Project Management maturity models for define maturity differently and measure different things to determine maturity. Because of this, organizations should give careful consideration to select appropriate maturity model. The main reason behind this research lies on the modification to the existing Organizational Project Management Maturity Model (OPM3) by adding four knowledge areas, dedicated to construction industry as best practices. These are Safety, Environment, Financial and Claim Management. This Model contains (Yes/No) questions; all of these questions must be answered before the user reviews the results that describe the overall maturity and areas of strength and weakness of an organization. The research presents the implementation of the proposed Model Construction Enterprises Maturity Model (CEM2). All the components of the developed Model have been implemented in Microsoft Access. CEM2 helps Construction Enterprises to assess their Maturity Level and know Areas of Weaknesses for future improvement. The easy to use Yes/No user interfaces help enterprises' employees to assess the maturity level of their enterprises. The Model maintains users' responses in its database; as such, many employees from different enterprise divisions can be involved during assessment phase in several sessions.

Keywords: Construction organization; Maturity models; Construction best practices.

228. Parametric Cost Estimate Model for Pump Stations Projects

Mohamed Marzouk and Rasha Ahmed

Arab Water World, 36(4): 25-28(2012)

The importance of cost estimation in preliminary steps in the life cycle of any project is obvious and to a large extent the quality of the decisions taken will depend on the quality of the estimate. The main objective of this paper is to provide reliable cost estimating at early stages of pump station construction projects utilizing case-based reasoning. The paper presents a parametric-cost model, dedicated for pump station projects. The proposed model is considered useful for preparing early conceptual estimates when there are little technical data or engineering deliverables to provide a basis for using more-detailed estimating. The various cost drivers of pump station projects have been identified and collected from literature, instructed interviews and surveys.

Keywords: Cost estimating; Case based Reasoning.

229. Applications of Building Information Modeling in Cost Estimation of Infrastructure Bridges

Mohamed Marzouk and Mohamed Hisham

Int. J. of 3-D Information Modeling, 1(2): 17-29 (2012)

Bridge Information Modeling (BrIM) is considered an innovation in bridge engineering and construction industry. This paper presents a methodology for using BrIM as an assisting tool in performing detailed cost estimates. The methodology depends on integrating visualization feature of BrIM with specific attributes of the BrIM model intelligent components. A program developed using C# language is used to extract the visualization conclusions and other components' attributes to MS Excel spreadsheet. This sheet assists in performing detailed cost estimate, and reviewing the estimate. The paper also presents a methodology for generating cash flow and required payments. This methodology depends on integrating the developed program with 4D feature of BrIM.

Keywords: Bridge construction; Bridge information modeling (Brim); Cash flow; Cost estimating; Visualization.

230. Accuracy Enhancement of Hybrid/Mixed Models for Thin-Walled Beam Assemblages

A. S. Gendy and T. I. El-Fayomy

International Journal for Computional Methods in Engineering Science and Mechanics,13(4) :227-238 (2012)

Aiming to increase the accuracy and computational efficiency of shear flexible thin-walled beam assemblages with arbitrary cross section, two Co-finite element models for three-dimensional analysis are developed based on the hybrid/mixed variational principle. To eliminate the shear/warping locking in these **C**$_0$-elements; the Hellinger-Reissner-variational principle is adopted. In this, both displacement and stress fields are approximated independently. To enhance the accuracy and performance of these models, the stress parameters are chosen to satisfy the equilibrium within the element level in addition to the conventional requirements; i.e., avoid all kinematic deformation modes, and enable the resulting element to handle applications with constrained problems. Such stress parameters are of the interelement-independent type, and are, therefore, can be eliminated on the element level by applying the relevant stationary conditions, thus, leading to the standard form of the stiffness equations for implementation. Further, the underlying generalized beam theory employed accounts for all coupled significant modes of deformations including stretching, bending, shear, torsion, as well as warping. The formulation is also valid for both open- and closed-type thin-walled sections; and this is accomplished by using kinematic descriptions accounting for both flexural and warping torsional effects. Despite the effort in selecting the stress field to satisfy equilibrium within the element level, the present models achieved better accuracy, robustness, and fast convergence.

Keywords: C0-Finite elements; Warpingeffect; Independent displacement Stressfunctions; Equilibrium withinelement domain.

231. A New Tool for Structural Designers: Boundary Element Modeling Software Developed for Building Systems

Youssef F. Rashed and Mostafa E. Mobasher

Concrete International, 54-55 (2012)

In today's design office, building slabs and mat foundations are generally analyzed and designed using software based on the finite element method (FEM). A typicalcommercial FEM software program allows designers to model the domain of a slab using plate bending elements, for example, and it allows columns or piers to be modeled using beam elements. Automatic mesh generators can simplify modeling, but the analysts may still need to manually adjust the mesh to adequately model slab penetrations or slabs with irregular geometries. The meshing (discretization) of the slab, combined withcenterline modeling of beam elements, however, can lead to geometrical differences between the numerical model and the physical structure. Also, peaking of moments near nodes at idealized supports or connections of plate elements to beam elements makes it necessary to average the results in automated design routines. Similar issues arise when a concentrated force must be applied at an FEM node. The boundary element method (BEM) is an alternative numerical method that overcomes problems presented byFEM. With BEM, domain meshing is no longer required, and actual geometries can be accurately modeled.1, 2Until recently, however, commercial BEM applications were largely focused on analysis of mechanical or aerospace systems. This article provides a brief introduction to a commercially available BEM software program devoted to building design.

Keywords: Boundary elements; Software; Plpak.

Dept. of Systems and Biomedical Engineering

232. New Optimum Humanoid Hand Design for Prosthetic Applications

El-Sheikh MA, Taher MF, Metwalli SM

Int. J.of Artificial Organs, 35: 251-262 (2012) IF: 1.861

To address the need for a commercially feasible prosthetic hand, the current work presents the design of a new humanoid hand actuated using shape memory alloy (SMA) artificial muscle wires. The hand has three compliant fingers and a thumb attached to the palm. The palm structure is a novel design, which is based on the natural arches of the human hand to provide better grasping capabilities. A compact actuator module is proposed to house and cool the SMA wires. Design parameters of the hand were selected to maximize the work density. The hand is lightweight, low cost, and operates silently. It has functional opening and closing speeds and fingertip force.

Keywords: Compliant finger; Prosthetic hand; Artificialpalm; Sma actuator; Thermoelectric device.

233. Classification of Papulo-Squamous Skin Diseases using Image Analysis

H. M. Mashaly, N. A. Masood and Abdalla S. A. Mohamed

Skin Research and Technology, 18: 36-44 (2012) IF: 1.71

Papulo-Squamous skin diseases using image analysis H.M. Mashaly1 ,N. A. Masood2, and Abdalla S. A. Mohamed31 Department of Dermatology, Faculty of Medicine, Cairo University, Cairo, Egypt2 Department of Medical Engineering, Faculty of Engineering, Menia University, El Menia, Egypt.3 Department of Systems & Biomedical Engineering, Faculty of Engineering, Cairo University, Cairo, Egypt. AbstractPapulo-squamous skin diseases are variable but are very close in their clinical features.

They present with the same lesions, erythematous scaly lesions. Clinical evaluation of skin lesions is based on common sense and experience of the dermatologist to differentiate features of each disease.To evaluate a computer-based image analysis system as a helping tool for classification of commonly encountered diseases.

The study included 50 selected images from each of psoriasis, lichen planus, atopic dermatitis, seborrheic dermatitis, pityrasis rosea, and pitryasis rubra pilaris with a total of 300 images.The study included 50 selected images from each of psoriasis, lichen planus, atopic dermatitis, seborrheic dermatitis, pityrasis rosea, and pitryasis rubra pilaris with a total of 300 images.

The study comprised three main processes performed on the 300 included images: segmentation, feature extraction followed by classification.Rough sets recorded the highest percentage of accuracy and sensitivity of segmentation for the six groups of diseases compared with the other three used techniques (topological derivative, K-means clustering, and watershed). Rule-based classifier using the concept of rough sets recorded the best percentage of classification (96.7%) for the six groups of diseases compared with the other six techniques of classification used: K-means clustering, fuzzy c-means clustering, classification and regression tree, rule based classifier with discretization, and K-nearest neighbor technique.Rough sets approach proves its superiority for both the segmentation and the classification processes of papulo-squamous skin diseases compared with the other used segmentation and classification techniques.

Keywords: Papulo; Squamous skin diseases; Segmentation; Feature extraction; Classification; Rough sets; Roc.

234. Fdtd Analysis of a Noninvasive Hyperthermia System for Brain Tumors

Sulafa M Yacoob and Noha S Hassan

Biomedical Engineering Online, 1-22 (2012) IF: 1.405

Hyperthermia is considered one of the new therapeutic modalities forcancer treatment and is based on the difference in thermal sensitivity betweenhealthy tissues and tumors. During hyperthermia treatment, the temperature of thetumor is raised to 40–45°C for a definite period resulting in the destruction of cancercells. This paper investigates design, modeling and simulation of a new non-invasivehyperthermia applicator system capable of effectively heating deep seated as well assuperficial brain tumors using inexpensive, simple, and easy to fabricate componentswithout harming surrounding healthy brain tissues.

Methods: The proposed hyperthermia applicator system is composed of an air filledpartial half ellipsoidal chamber, a patch antenna, and a head model with anembedded tumor at an arbitrary location. The irradiating antenna is placed at one ofthe foci of the hyperthermia chamber while the center of the brain tumor is placedat the other focus. The finite difference time domain (FDTD) method is used tocompute both the SAR patterns and the temperature distribution in three differenthead models due to two different patch antennas at a frequency of 915 MHz.

Results: The obtained results suggest that by using the proposed noninvasivehyperthermia system it is feasible to achieve

sufficient and focused energydeposition and temperature rise to therapeutic values in deep seated as well assuperficial brain tumors without harming surrounding healthy tissue.

Conclusions: The proposed noninvasive hyperthermia system proved suitable forraising the temperature in tumors embedded in the brain to therapeutic values bycarefully selecting the systems components. The operator of the system only needsto place the center of the brain tumor at a pre-specified location nd excite theantenna at a single frequency of 915 MHz. Our study may provide a basis foraclinical applicator prototype capable of heating brain tumors.

Keywords: Bioheat Equation; Specific Absorption Rate (Sar); Computational Modeling; Patch Antenna; Ellipsoidal Chamber.

235. Low-Interference Dual Resonant Antenna Configurations for Multistandard MultifunctionHandsets and Portable Computers

Mohamed Sanad and Noha Hassan

Int. J.of Antennas and Propagation, :1-9 (2012) IF: 0.468

Low-interference dual resonant antenna configurations are developed for multistandard multifunction mobile handsets andportable computers. Only two wideband resonant antennas can cover most of the important wireless applications in portable communication equipment. The frequency bands of the dual antenna configuration can be adjusted according to the wirelessapplications that are required to be covered.

The bandwidth that can be covered by each antenna is about 80% without using matching or tuning circuits. Three sample dual antenna configurations with different frequency bands are presented.

The interference between the low-bandand high-band antennas of these three configurations is investigated, and the ways of reducing this interference are studied. The most effective factor on the interference between the low-bandand high-band antennas is their relative orientations.

When the low-bandand high-band antennas of each configuration are perpendicular to each other, the isolation between them significantly increases. This eliminates the need for any special tools or techniques to suppress the mutual coupling between them. The new antennas have very small cross-sectional areas, and they are made of a flexible material. They donot require any additional components or ground planes. They can be used as internal, external, or partially internal and partially external antennas.

Keywords: Antennas; Low Interference.

236. Effect of Human Body on Microstrip Antennas in Biomedical Applications

Noha Hassan

Int. J.on Communications Antenna andPropagation,2: 61-67 (2012)

Electromagnetic coupling effects of the human body on microstrip antennas are numerically investigated using the moment method. A 3-D shaped homogeneous human body model is simulated to be used at different frequency bands for biomedical applications. The parameters that control the interaction between the human body and microstrip antennas are studied. These parameters include the distance between the human body and the microstrip antenna, the size and the orientation of the ground plane and the dielectric constant of the substrate material. In some biomedical applications, an isolating superstrate is added above the radiating patch such that the metallic radiating element will not touch the human skin even if the antenna is in a direct contact with the human body. The effect of these superstrates on the interaction between microstrip antennas and the human body is also investigated. The whole study is made for microstrip antennas in general and not for a specific application. Thus, the obtained results and conclusions are valid for any biomedical application that uses microstrip in any configuration and at any frequency.

Keywords: Interaction between the Human body and Microstrip antennas; Microstrip antennas in biomedical applications.

237. A Novel Internal Dual-Polarized Ebg Antenna for Indoor Reception of Uhf Terrestrial Digital Tv Broadcasting

Mohamed Sanad and Noha Hassan

Int. J.of Microwave Science and Technology, 1-9 (2012)

A novel internal antenna has been developed for indoor reception of UHF terrestrial digital TV broadcasting. The overall size of some configurations of the new antenna is less than 2 cm3, and its weight is less than 1 gm. It is made of a flexible material that can be bent or folded and shaped in any form. It is an unbalanced resonant antenna that does not need a matching circuit. The newantenna can be fully embedded inside TV sets or portable computers. It has a bandwidth of about 68%. Thus, it can also cover the bands of GSM and CDMA, which is advantageous in case of portable computers. The new antenna is linearly polarized. It can be easily modified to be dual polarized by combining two orthogonal antennas with one or two feed points. The overall efficiency of some configurations of the new indoor digital TV receiving antenna is more than 80%, and its peak gain is about 2 dBi over the whole UHF band. The peak gain can be increased to more than 5 dBi by adding EBG (electromagnetic bandgap) structures. The EBG structure also increases the efficiency to around 90%.

Keywords: Dual-Polarized Ebg Antenna.

238. Detrended Fluctuation AnalysisFeatures for Automated SleepStaging of Sleep Eeg

Amr F. Farag and Shereen M. El-Metwally

Int. J.of Systems Biology and BiomedicalTechnologies, (2012)

An accurate sleep staging is crucial for the treatment of sleep disorders. Recently some studies demonstratedthat the long range correlations of many physiological signals measured during sleep show some variationsduring the different sleep stages. In this study, detrended fluctuation analysis (DFA) is used to study the electroencephalogram (EEG) signal autocorrelation during different sleep stages. A classification of these stagesis then made by introducing the calculated DFA power law exponents to a K-Nearest Neighbor classifier.The authors' study reveals that a 2-D feature space composed of the DFA power law exponents of both thefiltered THETA and BETA brain waves resulted in a classification accuracy of 93.52%, 93.52%, and 92.59%for the wake, non-rapid eye movement and rapid eye movement stages, respectively. The overall accuracy ofthe proposed system is 93.21%. The authors conclude that it might be possible to build

an automated sleepassessment system based on DFA analysis of the sleep EEG signal.
Keywords: Accuracy; Detrended Fluctuation Analysis (Dfa); Electroencephalogram (EEG); Features Extraction; K-Nearest Neighbor (Knn); Sleep.

Faculty of Regional and Urban Planning

Dept. of Regional Design

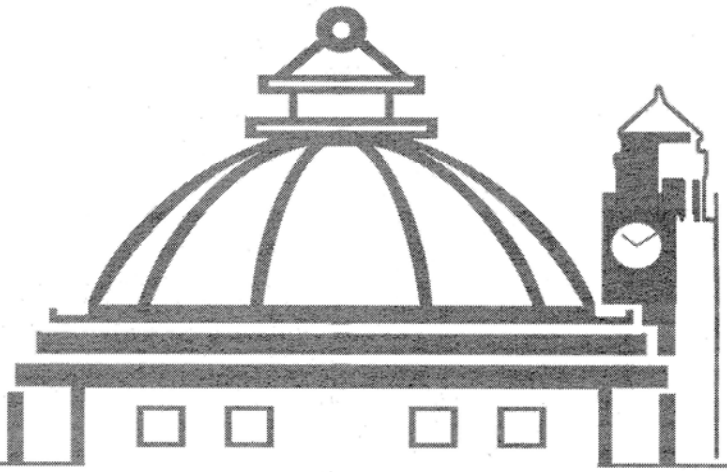
239. External Perforated Window Solar Screens, the Effect of Screen Depth and Perforation Ratio on Energy Performance in Extreme Desert Environments

A. Sherif, A. El-Zafarany and R. Arafa

Energy and Buildings, Energy and Buildings: 1-10 (2012)
IF: 2.386

In hot arid desert environments, the solar radiation passing through windows increases the cooling loads and the energy consumption of buildings. Shading of windows can reduce these loads. Unlike the woven solar screens, wooden solar screens have a thickness that provides selective shading properties.Perforated wooden solar screens were traditionally used for windows shading. Developing modern types of these shading systems can lead to significant energy savings.The paper addresses the influence of changing the perforation percentage and depth of these screens on the annual energy loads, hence defining the optimum depth/perforation configurations for various window orientations. Series of experiments were performed using the EnergyPlus simulation software for a typical residential building in the Kharga Oasis, located in the Egyptian desert. A range of perforation percentages and depths were tested.Conclusions prove that external fixed deep perforated solar screens could effectively achieve energy savings up to 30% of the total energy consumption in the West and South orientations. Optimum range of depths and perforation percentages were recommended. These are: 80–90% perforation rate and 1:1 depth/opening width ratio. These lighter and deeper solar screen configurations were found to be more efficient in energy consumption in comparison with the traditional ones.

Keywords: Solar screen; Desert; Shading; Window; Perforation; Depth; Energy; Egypt.



(2)
Future &Multi-disciplinary Sciences Sector

2-1 Institute of African Research and Studies

2-2 National Institute Laser & Enhancement Sciences

National Institute of Laser Enhanced Sciences

Dept. of Engineering Applications of Lasers (EAL)

240. Accurate Detection of Blood Vessels Improves the Detection of Exudates in Color Fundus Images

Doaa Youssef, Nahed H. Solouma

Comput Meth Prog Bio, 108: 1052-1061 (2012) IF: 1.516

Exudates are one of the earliest and most prevalent symptoms of diseases leading to blindness such as diabetic retinopathy and macular degeneration. Certain areas of the retina with such conditions are to be photocoagulated by laser to stop the disease progress and prevent blindness. Outlining these areas is dependent on outlining the lesions and the anatomic structures of the retina. in this paper, we provide a new method for the detection of blood vessels that improves the detection of exudates in fundus photographs. the method starts with an edge detection algorithm which results in a over segmented image. then the new feature-based algorithm can be used to accurately detect the blood vessels. This algorithm considers the characteristics of a retinal blood vessel such as its width range, intensities and orientations for the purpose of selective segmentation. Because of its bulb shape and its color similarity with exudates, the optic disc can be detected using the common Hough transform technique. the extracted blood vessel tree and optic disc could be subtracted from the over segmented image to get an initial estimate of exudates. the final estimation of exudates can then be obtained by morphological reconstruction based on the appearance of exudates. This method is shown to be promising since it increases the sensitivity and specificity of exudates detection to 80% and 100% respectively.

Keywords: Fundus image; Exudates; Diabetic retinopathy; Snakes; Mathematical morphology.

241. Accurate Detection of Microaneurisms and Hemorrhage for the Planning of Laser Treatment

Nahed Solouma and Amro El-Dib

International Journal on Graphics, Vision Nd Image Processing, 12, (1): 15-21 (2012)

Retinal disorders are among the most dangerous diseases because many of them may lead to blindness if not early diagnosed and managed. Medical screening is very important as it allows the early diagnosis of the disease. Only ophthalmologists who have enough experience can differentiate between normal and abnormal retinas at the early stages of the disease. So, screening routines of the retina are very expensive and rarely to be done. in this work we provide a computer-aided screening system for the retinal disorders. the system could be used easily by the young physicians as it can automatically detect the early symptoms of abnormalities such as microaneurysms, hemorrhage and exudates. Using newly proposed image processing algorithms, we implemented a screening method based on the experience of the ophthalmology experts.

Keywords: Computer-aided diagnosis; Hemorrhage; microaneurysm detection.

Dept. of Laser Applications in Metrology, Photochemistry and Agriculture (LAMPA)

242. Laser Spectrochemical Characterization of Semen

Z. Abdel-Salam and M.A.Harith

Talanta, 140-145 (2012) IF: 3.794

The overall objective of this paper is to use a fast, more sensitive and less costly spectrochemical analysis laser techniques for estimation of seasonal variation of elements present in seminal plasma as well as for semen sperm count. for these two tasks we used Laser Induced-Breakdown Spectroscopy (LIBS) as an elemental analysis technique and Laser Induced Fluorescence (LIF) as a molecular analysis technique for sperm count estimation. the samples investigated via both techniques were buffalo semen from the artificial insemination center at the faculty of agriculture.

The obtained LIBS data helped to assess indirectly the semen quality, sperm motility and spermatozoa count, relevant to the studied elements in different seasons.

In addition it has been demonstrated that LIF can be adopted directly in centers of artificial insemination as a simple and fast method for the essential step of semen counting instead of the lengthy and inaccurate conventional techniques.

Keywords: Libs lif buffalo Semen seminal plasma artificial insemination (Ai).

243. Laser-Induced Modifications of Gold Nanoparticles and their Cytotoxic Effect

Shimaa Abdelhamid, Hazem Saleh, Mahmoud Abdelhamid, Adel Gohar and Tareq Youssef

Biomedical Optics, 17 (6): (2012) IF: 3.157

As nanotechnology continues to develop, an assessment of nanoparticles' toxicity becomes very crucial for biomedical applications. the current study examines the deleterious effects of pre-irradiated gold nanoparticles (GNPs) solutions on primary rat kidney cells (PRKCs).

Spectroscopic and transmission electron microscopic studies demonstrated that exposure of 15 nm GNPs in size to pulsed laser caused a reduction both in optical density and mean particle diameter. GNPs showed an aggregation when added to the cell culture medium (DMEM).

This aggregation was markedly decreased upon adding serum to the medium. Under our experimental conditions, trypan blue and MTT assays revealed no significant changes in cell viability when PRKCs were incubated with non-irradiated GNPs over a period of 72 h and up to 4 nM GNPs concentration. on the contrary, when cells were incubated with irradiated GNPs a significant reduction in PRKCs viability was revealed.

Keywords: Laser; Gold nanoparticles; Cytotoxicity; Primary rat kidney cells.

244. X-Ray Fluorescence and Laser-Induced Breakdownspectroscopy Analysis of Roman Silver Denarii

L. Pardini, A. El Hassan, M. Ferretti, A. Foresta, S. Legnaioli, G. Lorenzetti, E. Nebbia, F. Catalli,M.A. Harith Diaz Pace F. Anabitarte Garcia Scuotto and V. Palleschi

Spectrochimica Acta Part B: atomic Spectroscopy, 74-75 (2012): 156-161 (2012) IF: 2.876

In this paper we present the results of a study performed on a large collection of silver Roman republican denarii, encompassing about two centuries of history. the joint use of Laser-Induced Breakdown Spectroscopy (LIBS) and X-Ray Fluorescence (XRF) spectroscopy allowed for an accurate determination of the coins' elemental composition; the measurements, performed mostly in situ at the 'Monetiere' in Florence, revealed a striking connection between the 'quality' of the silver alloy and some crucial contemporary events. This finding was used to classify a group of denarii whose dating was otherwise impossible. the comparison with other contemporary denarii disproves a recent theory on the origin of the so called 'serrated' denarii (denarii showing notched chisel marks on the edge of the coin).

Keywords: Spectroscopy; Libs; Xrf; Archeometry; Numismatics.

245. Evaluation of Photodynamic Treatment Using Aluminum Phthalocyanine Tetrasulfonate Chloride as A Photosensitizer: New Approach

Rehab M. Amin, Carmen Hauser, Ingrid Kinzler, Angelik Rueck and Claudia Scalfi-Happ

Photochemical & Photobiological Sciences, 11, (1156): (2012) IF: 2.584

Photodynamic therapy (PDT) has been the subject of several clinical studies. Evidence to date suggests that direct cell death may involve apoptosis. T(24) cells (bladder cancer cells, ATCC-Nr. HTB-4) were subjected to PDT with aluminum phthalocyanine tetrasulfonate chloride (AlS(4)Pc-Cl) and red laser light at 670 nm. Morphological changes after PDT were visualized under confocal microscopy. Raman microspectroscopy is considered as one of the newly established methods used for the detection of cytochrome c as an apoptotic marker. Results showed that PDT treated T(24) cells seem to undergo apoptosis after irradiation with 3 J cm(-2). Cytochrome c could not be detected from cells incubated with AlS(4)Pc-Cl using Raman spectroscopy whereas AlS(4)Pc-Cl seems to interfere with the Raman spectrum of cytochrome c.

Keywords: Photodynamic therapy; Aluminum phthalocyanine tetrasulfonate chloride; Raman; Cytochrome C.

246. Assessment of DNA Damage After Photodynamic therapy Using A Metallophthalocyanine Photosensitizer

A. El-Hussein, M. Harith and H. Abrahamse

International Journal of Photoenergy, 1-10 (2012) IF: 1.769

Photodynamic therapy (PDT) is a chemotherapeutic approach that utilizes a bifunctional reagent, a photosensitizer (PS) that localizes to the target tissue relative to the surrounding tissue and is toxic when exposed to laser light. PDT rapidly induces cell death, inflammatory and immune reactions, and damage of the microvasculature. DNA damage results froma variety of factors including UV-light, X-rays, ionizing radiation, toxins, chemicals, or reactive oxygen species. the aim of this study was to determine the effect of PDT as well as the influence of presensitization leading to the adaptive response (AR) on the integrity of DNA. Lung (A549), breast (MCF-7), and esophageal (SNO) cancer cells and Zn sulfophthalocyanine as PS with irradiation conditions of 10 J/cm2 at 636nm were used. Subcellular localization of PS, cell morphology, and viability after PDT and DNA damage were determined. A significant decrease in viability andmarked DNA damage was observed in all 3 cancer cell types in response to PDT while the adaptive response was demonstrated to significantly decrease the effectiveness of the PDT.

Keywords: DNA; Photodynamic therapy; Photosensitizer.

247. Extreme Ultraviolet and Soft X-Ray Laser Emission from Ni-Like Nd Ions

Wessameldin S. Abdelaziz

Journal of Russian Laser Research, 33, (1): (2012) IF: 0.746

We use the energy levels, transition probabilities, and effective collision strengths for the states1s2 2s2 2p6 3s2 3p6 3d10 and 1s2 2s2 2p6 3s2 3p6 3d9 4l (l = s, p, d, and f) of a nickel-like Nd ion to de- termine reduced population for 55 fine-structure levels over a wide range of electron density values(from 1020 to 4 • 1022 cm?3) at various electron plasma temperatures in the range of 1–2 keV. We findthe gain coefficients for those transitions with the positive population inversion factor and show theirdependences on the electron density.

Keywords: Xuv; Soft X-Ray; Laser emission; Gain coefficient.

248. Search for Laser Lines in Sodium Like Fe Plasmas

Wessam Eldin Abd-Elaziz , Mai E. Ahmed, Tharwat M. El-Sherbini, Mohammed Alshaik Ahmed and Ali. Khalil

Optics and Photonics Journal, 2,: 314-317 (2012)

Energy levels, transition probabilities and effective collision strength for 1s2 2s2 2p6 3l, 4l, 5l (l = 0, 1, 2, 3, 4) states of sodium like Fe are used in the determination of the reduced populations for 21 fine structure levels over a wide rang of electron density values (1018 to 1020 cm–3) and at against electron plasma temperatures. Gain coefficients are evaluated and plotted against the electron density.

Keywords: Xuv; Soft X-Ray; Laser emission; Gain coefficient.

249. The Gain Distribution According to the Theoretical Structure and Decay Dynamics of Sodium like Cu

Wessam Eldin AbdEl-aziz, Mai Ahmed, Ali Khalil, Mohammed Alshaik AhmedandTharwat . El-Sherbini

Optics and Photonics Journal, 2: 358-366 (2012)

Level structure, oscillator strengths, transition probabilities and radiative life times are evaluated for 1s2 2s2 2p63l, 4l, 5l (l = 0, 1,

2, 3, 4) states in sodium like Cu18+ the calculations are carried out using COWAN code. the calculations were made are compared with other results in literature where a good agreement is found, we also report on some un-published energy values and oscillator strengths. Our results are used in the calculation of reduced population of 21 fine structure levels over a wide rang of electron density values (1018 to 1020) and at various electron plasma temperature. for those transitions with positive population inversion factor, the gain coefficients are evaluated and plotted against the electron density.

Keywords: Level structure; Oscillator strengths; Sodium like Cu.

250. Biotinylated Boronic Acid Fluorophore Conjugates: Quencher EliminationStrategy for Imaging and Saccharide Detection

Franc¸ois D'Hooge, Souad A. Elfeky, Stephen E. Flower, Sofia I. Pascu, A. Toby A. Jenkins, Jean M.H. van den Elsen, Tony . James and John S. Fossey

Rsc Advances, 2: 3274-3280 (2012)

A biotinylated boronic acid fluorophore conjugate bound to a diol-quencher via a boronic esterlinkage demonstrated a fluorescence increase upon exposure to model saccharides. the sensing motifwas attached to SuperAvidin microspheres where the sensing regime was imaged by fluorescencemicroscopy.

Keywords: Biotinylated; Boronic; Acid; Fluorophore; Conjugates.

251. Investigate the Oxygen Absorptionof UsedContact Lenses by Libs

Ashraf Eldakrour, Hisham Imam, Raeesa A. Ahmed and Amr A.Eldib

I. J. of theoretical and Applied Physics, 2, (II): 105-116 (2012)

To detect the variation of absorbed oxygen in contact lens by Laser Induced BreakdownSpectroscopy, (LIBS) in order to study the changes in the contact lenses' absorption behavior alongthe central optical axes of a contact lens when worn over a period of time. Laser Induced BreakdownSpectroscopy (LIBS) provides accurate results both quantitative and qualitative, not only in thechanges in the contact lens absorption behavior for the oxygen content of the whole lens but also in aparticular spot on the lens's surface. Nd:YAG laser (Quantel-Berlight),1.06 6m wavelength, 5 nsecpulse width and 15 mj energy, was used to produce plasma by focusing laser beam with 10 cm focallength convex lens on the center of the contact lens. Two fresh pairs of yearly, monthly and dailycontact lenses were used as a reference.

Forty yearly used colored, and non-colored contact lenses(extended wear) collected from female medical students (Age range: 18-20 years old) were analyzedimmediately after being received from the subjects (all lenses investigated in this research were usedfor a complete one year).

The study showed that the left yearly used contact lenses' absorption ofoxygen is less than that of the right used contact lenses, but in the yearly fresh contact lenses the ratioof oxygen absorption shows no change. Oxygen content of the contact lens increased rapidly with theincreasing used time, and there was noticeable variation of absorbed oxygen between right and leftlenses for the same user.

Keywords: Lens; Oxygen absorption; Libs.

Dept. of Laser Sciences and Interactions (LSI)

252. Spectroscopic Study of Transparency Current in Mid Infrared Quantum Cascade Lasers

Dmitry G. Revin, Randa Hassan, Andrey Krysa, Yongrui Wang, AlexeyBelyanin, Kenneth Kennedy, Chris N. atkins and John W. Cockburn

Optics Express, 20 :(17) (2012) IF: 3.587

We report measurements which give direct insight into theorigins of the transparency current for λ 5 μm In0.6Ga0.4AsIn0.42Al0.58Asquantum cascade lasers in the temperature range of 80-280 K. Thetransparency current values have been found from broadband transmissionmeasurements through the laser waveguides under sub-threshold operatingconditions. Two active region designs were compared. The active region ofthe first laser is based on double-LO-phonon relaxation approach, while the second device has only one lower level, without specially designed resonantLO-phonon assisted depopulation. It is shown that transparency currentcontributes more than 70% to the magnitude of threshold current at hightemperatures for both designs.

Keywords: Semiconductor lasers; Quantum cascade; Spectroscopy; Infrared.

253. Red, Violet and Upconversion Luminescence of Eu/Sm Codoped Sol Gel Sio2–Tio2

I.M. Azzouza, Lisa C. Kleinb

Optical Materials: (2012) IF: 2.023

Rare earth (Eu/Sm) doped silica–titania composite systems were sensitized by sol–gel method in solid and powder forms. the crystalline phase has been identified for the annealed samples at 1000 1C by X-ray diffraction (XRD). the bonding formation of the host matrix was examined by Fourier transform infrared (FTIR). the fingerprint transition lines of Eu3+ ions, with the main emission line at 616 nm, are recorded for the samples. Improvement in Eu3+ luminescence has been recorded by adding Sm3+ and by samples. Violet emission is observed under UV irradiation. Violet–blue upconversion luminescenceis recorded at room temperature.

Keywords: Europium Samarium Photoluminescence.

Dept. of Medical Applications of Lasers (MAL)

254. Propranolol Treatment of Infantile Hemangioma: Clinical and Radiologic Evaluations

Ahmed A. Talaat,Mahmoud S. Elbasiouny, Doaa S. Elgendy and Tarek F. Elwakil

Journal of Pediatric Surgery, 47(4): 707-714 (2012) IF: 1.45

There is no way to predict the size that proliferative infantile hemangiomas (IHs) can reach and to expect the occurrence of complications. Moreover, there are no well-known characteristics that can affect the rate of involution of IHs and to predict its completion. Accordingly, intervention is frequently indicated. Different modalities have been reported for treatment of IHs. the possible mechanisms of action of propranolol on IHs are complex.

Methods: Fifty infants presented with 80 IHs treated by oral propranolol at a dose of 2 mg - kg body weight per day. Treatment outcomes were clinically and radiologically evaluated.
Results: the first noticeable effects on propranolol treatment were the changes in color and softening of IHs, followed by regression of their sizes. the clinically elicited color changes of superficial IHs and superficial components of compound IHs have been objectively proven by statistically significant color clearance (P .001) and resisting index (P.01) (?50% increase) as a good indicator of lower vascular activity within IHs. Moreover, the softening of lesions followed by the clinically elicited regression of sizes of deep IHs and deep components of compound IHs has been objectively proven by statistically significant changes at lesions' thickness (P .01) (?50% regression) and resisting index (P.01) (50% increase).
Conclusions: Collectively, high efficacy and tolerance of propranolol treatment have been elicited. However, propranolol treatment of IHs is still an issue suitable for more studies to confirm the safety and efficacy of the drug and to investigate whether there are some hemangiomas that are, perhaps, nonresponsive to propranolol treatment.

Keywords: Infantile hemangioma; Treatment; Pharmacotherapy; Propranolol; Adrenergic antagonist.

255. Comparative Study of Management of Inferior Turbinate Hypertrophy Using Turbinoplasty Assisted by Microdebrider or 980 Nm Diode Laser

A. N Kassab, M. Rifaat and Y .Madian

The Journal of Laryngology and Otology: (2012) IF: 0.6

Objective: This study aimed to compare the outcomes of turbinoplasty assisted by microdebrider and by diode laser (980 nm wavelength).
Methods: Forty patients suffering from bilateral nasal obstruction were randomly divided into two equal groups. One group was managed with microdebrider-assisted turbinoplasty and the other with diode laser assisted turbinoplasty. The patients were followed up for six months post-operatively.
Results: After six months, total success rates were 90 per cent for the microdebrider group and 85 per cent for the diode laser group. There were no significant differences between the two groups regarding success rate, post-operative complications or operative time.
Conclusion: these two techniques are equally safe, reliable, successful and non-invasive.

Keywords: Turbinate; Nasal cavity; Diode lasers; Rhinitis; Hypertrophy; Otorhinolaryngologic Surgical procedures.

256. Safety Considerations for Magnetic Nanoparticles

Taher A. Salah, Hazem M. Salehand Mahmoud H. Abdel Kader

Magnetic Nanoparticles: from Fabrication to Clinical Applications, (2012)

This chapter will focus on major points concerning the safety of magnetic nanoparticles (MNPs) from a toxicological point of view and will provide key references to help the reader to delve further into the subject. It is important to know that toxicology as a discipline has been relatively new, since Archiv fur Toxicologie, the first journal expressly dedicated to experimental toxicology, started publication in Europe in 19301. The Society of Toxicology, the pre-eminent toxicology organisation, was not found until 19612. The reader is referred to more reviews on the history of toxicology3 and regulatory toxicology4. Assessing the potential hazards of nanomaterials is an emerging area in toxicology and health risk assessment.

Institute of African Research and Studies

Dept. of Natural Resources

257. Effects of Salinity on Seashore Paspalum Cultivars at Different Mowing Heights

Mohamed A. Shahba, Saad F. Alshammary and Mohamed S.Abbas

Crop Science, 52: 1358-1370 (2012) IF: 1.641

the objective of this research was to evaluate the effects of salinity on turf quality, clipping yield, root mass, canopy photosynthetic rate (Pn), total nonstructural carbohydrate content (TNC), shoot reducing sugar content (RSC), proline content, and K+/Na+ in shoots and roots of seashore paspalum (Paspalum vaginatum Swartz) cultivars (Salam, Excalibur, and Adalayd). these cultivars were evaluated at different mowing heights using a hydroponics system in the greenhouse. Salam achieved 11.9, 24.2, 36.5, and 55.7% more clipping yield than Adalayd at 0, 16, 32, and 44 dS m?1 salinity levels, respectively, under the highest mowing level. at the highest mowing height, the root mass of Salam, Excalibur, and Adalayd increased by 162.9, 170.0, and 204.0%, respectively, as salinity increased from 0 to 44 dS m?1. the values of Pn in Salam were the highest (16.66, 19.89, and 25.85 mol CO2 M2 S1 at 25-, 35-, and 45-mm mowing heights, respectively) at 44 dS m1. the TNC decreased by 44.2, 29.2, and 25.5% in Salam while RSC increased by 49.3, 44.3, and 40.3% at 25-, 35-, and 45-mm mowing heights, respectively, as salinity incresed from 0 to 44 dS m1. in Salam, as salinity levels increased from 0 to 44 dS m?1, proline content increased by 417.7, 429.5, and 438.7% at 25-, 35-, and 45-mm mowing heights, respectively. Paspalum had its highest selectivity of K+/Na+ when maintained at 45-mm mowing height. Salinity tolerance of seashore paspalum cultivars can be enhanced by increasing mowing height.

Keywords: Paspalum; Turf; Salinity; Canopy photosynthetic; Root mass; Clipping yield;Mowingheight.

258. Improving Salinity Tolerance of Acacia Saligna (Labill.)Plant by Arbuscular Mycorrhizal Fungi and RhizobiumInoculation

Amira Sh. Soliman, Nermeen T. Shanan, Osama N. Massoud and D.M. Swelim

Afr J Biotechnol, (2012)

This study was carried out to investigate the alleviation of salt stress (0, 6.25, 12.50 and 25 dS/m) ongrowth and development of Acacia saligna, grown in sandy loam sterile soil by using arbuscularmycorrhizal fungi (AMF) and Sinorhizobium terangae (R), individually or in combination (AMF+R).Growth and nodulation parameters, leaf osmotic adjustment and chemical analysis were used asparameters. Salt stress increases the percentage of sodium (Na) and calcium (Ca) contents as well asproline; meanwhile, it reduces the leaf osmotic potential,

growth parameters, nodulation parameters,Nitrogen, phosphorus, potassium (N. P. K.) contents, total carbohydrates percentages and chlorophyllcontents. Co-inoculated (AMF+R) stressed plants were able to maintain a higher osmotic potential ofcells leading to the significantly rapid growth, enhanced nodulation parameters, N, P, K, Ca, totalcarbohydrates percentages and chlorophyll contents as well as proline in leaves, and significantlyreduced the Na percentage. in conclusion, Co-inoculated (AMF+R) enabled the plants to maintainosmotic adjustments and enhanced the plants tolerance against salinity.

Keywords: Acacia saligna; Salinity; Arbascular mycorrhizal Fungi; Rhizobium.

259. Effect of Microbial Inoculation and Edta on the Physiology and PhytoremediationEfficiency of Delonix Regia Plants Growing in Polluted Soil

M.M. Kamel, H.A. Khater, Amira Sh. Soliman and Nermeen T. Shanan

American-Eurasian J. Agric. & Environ. Sci., 12 (6): 719-728 (2012)

A pot experiment was conducted to evaluate the growth parameters, photosynthetic pigments,activity of antioxidant enzymes, proline and the concentration of some heavy metals (Pb, Cd and Zn) of Delonixregia plants growing in polluted soil, treated with arbuscular mycorrhizal fungus (AMF) and ethylenediaminetetraacetic acid (EDTA).

The results showed that the growth parameters values were lower in the polluted soilthan those in the unpolluted one. AMF with heavy metals has a superior effect on the growth parameter valueseither than EDTA or control treatments. Pigment values were lower in polluted soil than those in the unpollutedone. EDTA with heavy metals has a superior effect on pigment content values than those with AMF.

The effectof the later in polluted soil exceeded that of EDTA or the control in increasing the proline content due todecreased heavy metals induced oxidative stress and toxicity. the results showed also that the effect of AMFwith heavy metals was greater than that of EDTA on antioxidant enzymes activities. in the time of EDTAincreased the concentration of Fe, AMF was superiority in increasing the P concentration.

Plants grown inpolluted soil had higher concentrations of Pb, Cd and Zn than that in the unpolluted soil. Also, in polluted soil,the plants grown with EDTA exceeded these concentrations than with AMF. Roots had the highestconcentrations of these nutrients than leaves and stems.

The uptake of these nutrients was increased by theplant as a result of increasing the dry matter by different treatments.It was also noticed that using AMF is moreefficient than EDTA in remediating Pb polluted soil. As the plants extracted normal amount of Zn and excisesamounts of Cd, this means the studied plants are non hyperaccumulator for Cd and Zn. Raising AMF level insoil caused a steady decrease in the extractable values of Pb, Cd and Zn of the treated soil.

Keywords: Delonix regia; Polluted soil; Arbuscular mycorrhizal fungus (Amf); Ethylenediamine tetraacetic acid (EDTA); Phytoremediation.

260. Monitoring of Pesticide Residues in Strawberry and Soil from Different Farming Systems in Egypt

Samir Ghabbour, Z.H. Zidan, Hassan M. Sobhy, Wafai Z.A. Mikhail and M.T. Selim

American-Eurasian J. Agric. and Environ. Sci., 12 (2): 177-187 (2012)

A total of 144 Kg of strawberry and 38 soil samples, representing two types of farming production e.g. conventional (C), organic (O), was collected from (Bilbeis and AL-Salhia, New AL-Sharqiya governorate) Egypt. Pesticides residues were determined by gas chromatography with mass selective detector (GC-MSD). This method used to determine 86 pesticide residues with a broad range of physico-chemical properties in fresh fruits related to Organophosphorous, Organochlorines, Pyrethroids and Carbamates mainly used in agriculture. Sample extract was cleaned up using official methods, for soil samples. Residues of some organochlorine pesticides (OCPs), such as endosulfan, aldrin, O,P-DDD, P,P-DDE; organophousphorus (OPPs), such as pirimiphos-me and dimethoate; carbamet as propamocarb; and pyrthroide such as carbaryl and deltamethrin were monitored.Result showed the highest residues with exceeded MRL then the other detected pesticides as P,P-DDE (8.33% and 12.5%) samples from Conventional and Organic respectively and pirimiphos-me 33.33%. Generally, the conventional strawberry revealed the highest amount of total pesticides (15.55 mg/kg), followed by organic strawberry (0.132 mg/kg). on the other hand, the total detected amount of pesticide residues in conventional soil were 6.702, 6.225 and 4.551 ppm) and ranked in descending order (surface, 20cm and 10cm)respectively. While in organic soil we didn't find residues in surface soil samples but the total detected residues were 0.192 and 0.093 ppm) at 10cm followed by 20cm. in conclusion, the study throws light on the problem of pesticide residues in conventional and organic farms such as strawberry.

Keywords: Residues; Pesticides; Strawberry; Soil; Conventional Agriculture; Organic agriculture Gc- 0Ms.

261. Diversity of Functional Groups of Soil Fauna in Egyptian Habitats

Safwat H. Shakir Hanna, Samir I. Ghabbour, Wafai Z. A. Mikhail, Hassan M. Sobhy and Gehane Sultan

Int. J. of Environmental Science and Engineering, 3: (2012)

In the 1970's, under the International Biological Program (IBP), long-term intensive whole ecosystem studies wereundertaken in the Mediterranean coastal strip west of Alexandria, the Mariut region (150-200 mm rainfall/year,xero-Mediterranean climate), and in Wadi Allaqi, east of Lake Nasser in the hyper arid Nubian Desert (0-1 mmrainfall/year). Short visits were made to other regions in Egypt to collect soil fauna and examine their populations.the results of these studies can be now undertaken for a more generalized synthesis to compare populations asregards eco-geographical location, climate, soil type, land use, etc. the distribution of species can be ascribed to theinteraction of several factors. the emphasis here is on ratios of functional groups in the various habitats of Egypt.Results show that more aridity and increasing temperatures, from north to south, give lower populationsizes of soil fauna. the regional biodiversity showed that northwestern region, of a mild winter and relatively higherrainfall is more diverse than the southeastern region.

Additionally, on the regional level, the diversity of soilfauna may be affected by the degree of human interference such as agriculture. Some groups, such as Carabidae,disappear from desert regions in the southeast of the country. in some hyper-arid sites, the predator/prey ratio.

Keywords: Biodiversity; Soil; Fauna; Functional; Groups; Land-Use; Climate change.

262. Potential Impacts of Climate Change on Soil Fauna: Case of the Xero-Mediterranean Omayed Biosphere Reserve (Obr), Egypt

Samir I. Ghabbour

International Journal of Environmental Science and Engineering, 3: 71-83 (2012)

The area of the Omayed Biosphere Reserve on the northwesternMediterranean coast of Egypt, at about 80 kms west of Alexandria,was and still is a site of long-term ecological research (LTER) onalmost all ecosystem components since 1974. Inevitably, prospects ofthe expected climate change have imposed themselves on theapproaches of this research. While changes in vegetative cover can berelatively easy to monitor, the impacts on soil fauna are more difficultto monitor, or to predict their outcome. Yet, the wealth of informationon this fauna is poised to allow a preliminary assessment of such anoutcome.

Since the biotopes of the area run in linear alignmentparallel to the coast, and that rainfall decreases sharply from 150mm/yr at the coast to 30 mm/yr only 80 kms inland, it is too easy topredict that innermost soil fauna populations will gradually replacethose in its near proximity, with decreasing rainfall and increasingtemperatures.The complexity of the multitude of factors involvedprecludes such a simple conclusion.

Different species have differentcapabilities of adaptation to higher temperatures and less humidity.therefore it is not to be expected that the whole biocoenoses willmigrate in an orderly fashion, as if they were regiments in an army.Hence not only species will be arranged in different communities, butalso the equilibrium between the main three functional groups of soilfauna (detritivores, herbivores, and carnivores), will be muchdisturbed.

Keywords: Biosphere soil fauna Xero-Mediterranean biocoenoses climate change.

263. An Efficient in Vitro Propagation Protocol of Cocoyam [Xanthosoma Sagittifolium (L) Schott]

Anne E. Sama, Harrison. Hughes, Mohamed Abbas and Mohamed A. Shahba

The Scientific World Journal, (2012)

Sprouted corm sections of “South Dade” white cocoyam were potted and maintained in a greenhouse for 8 weeks. Shoot tips of 3–5mm comprising the apical meristem with 4–6 leaf primordial, and approximately 0.5mm of corm tissue at the base. these explants were treated to be used into the culture medium. A modified Gamborg’s B5 mineral salts supplemented with 0.05 M 1- naphthaleneacetic acid (NAA) were used throughout the study. Thidiazuron (TDZ) solution containing 0.01% dimethyl sulfoxide (DMSO) was used. Erlenmeyer flasks and test tubes were used for growing cultures. the effect of different media substrate, thidiazuron, and the interaction between TDZ and Benzylaminopurine (BAP) on cocoyam culture were tested. Results indicated that cocoyam can be successfully micropropagated in vitro through various procedures. All concentrations tested (5–20 ?M BAP and 1–4 ?M TDZ) produced more axillary shoots per shoot tip than the control without cytokinins. Greater proliferation rates were obtained through the use of 20 ?M BAP and 2?M TDZ, respectively, 12 weeks from initiation. Shoots produced with BAP were larger and more normal in appearance than those produced with TDZ, which were small, compressed, and stunted. the use of stationary liquid media is recommended for economic reasons.

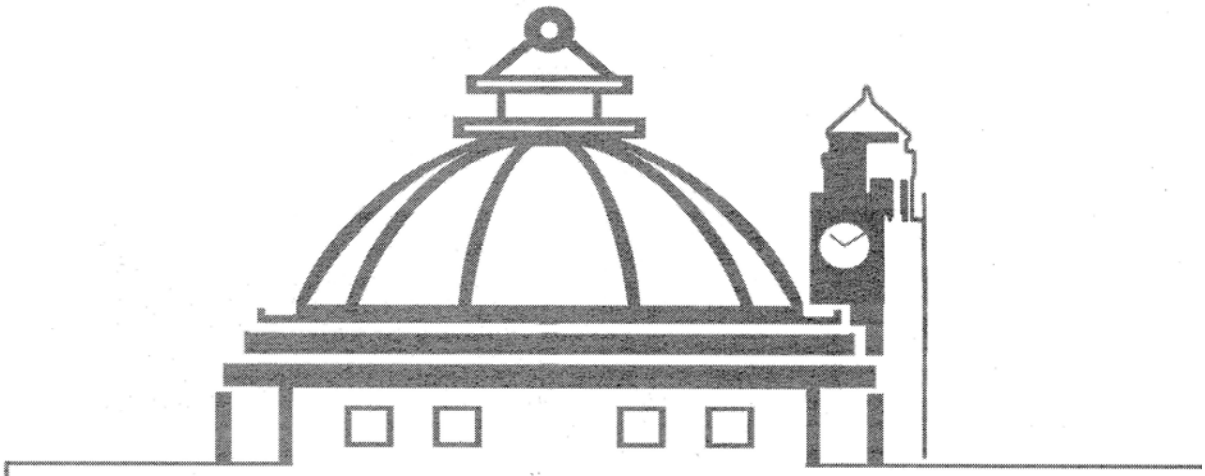
Keywords: Cocoyam; Micropropagation; Tissue culture; Thiadiazuron; Benzylaminopurine.

264. Effect of Rhizobia on Growth of Acacia Nilotica in Egypt: Effect of Rhizobia on Acacia in Egypt

Amira Sh. Soliman

Book Published By Lap Lambert Academic Publishing, (2012)

This study was carried out at the Experimental Laboratory of Natural Resources Department, Institute of African Research and Studies, Cairo University, Ornamental Horticulture Department, Faculty of Agriculture, Cairo University, and the Experimental Laboratory of the Microbiology Department, Soils, Water and Environmental Research Institute, Agricultural Research Center (ARC), Giza, during the two successive seasons of 2005/2006 and 2006/2007.The objectives of this work were to isolate and study the characteristics of rhizobia isolated from Acacia saligna against reference strains in order to evaluate their efficiency for nodulation associated with Acacia nilotica subsp. tomentosa, select suitable local carrier materials to prepare an inoculant, and investigate the response of inoculated plants to irrigation water salinity and irrigation intervals The obtained results can be summarized as follows: 1. Inoculation with perlite-based inoculants gave significantly higher number, dry weight and nitrogenase activity of nodules comparing with control (uninoculated seedlings). 2. The survival percentage of plants was not affected by the effect of inoculant treatments and/ or irrigation water salinity levels or irrigation intervals.3. Vegetative growth characteristics were significantly increased when plants were inoculated with the mixture of local isolates (ASH 1 + ASH 51) whereas; it was reduced with increasing salt concentrations or irrigation intervals compared with control. 4. Number, dry weight and nitrogenase activity of nodules/plant were significantly increased in plants inoculated with the local inoculant whereas; it was reduced steadily with increasing salt concentrations or irrigation intervals. 5. Pigment content was increased when plants were inoculated in general while; increasing salt concentrations or irrigation intervals were decreased pigment content.6. Total carbohydrates percentage in the leaves was increased with inoculant treatments and/ or irrigation water salinity levels or irrigation intervals.7. Minerals percentage (N, P, K, and Ca) were increased whereas, the content of Na, Cl, and proline were decreased when plants were inoculated with the mixture of local isolates. 8. Nitrogen, phosphorus and potassium percentages in the leaves were decreased with increasing salt concentrations or irrigation intervals. 9. Sodium, chloride, calcium percentages were increased with increasing salt concentrations whereas, it was decreased with increasing irrigation intervals. 10. The content of proline in fresh leaves was increased with increasing salt concentrations or irrigation intervals whereas; it was decreased when plants were inoculated with the mixture of local isolates.



(3)
Social Sciences Sector

Faculty of Commerce

Dept. of Accounting

265. Loan Loss provisioningandincome Smoothingin Us Banks Pre and Post the Financial Crisis

Heba Abou El Sood

International Review of Financial Analysis, 25: 64-72 (2012)

Prior research shows that banks have strong incentives to use loan loss provisions to smooth income. Using a sample of 878 US bank holding companies over the period 2001–2009, I find strong evidence of income smoothing behavior. Additionally, bank holding companies accelerate loan loss provisions to smooth income when (1) banks hit the regulatory minimum target, (2) are in non-recessionary periods, and (3) are more profitable. I also find that bank internally set regulatory capital ratios are relatively more significant than regulatory?set ratios to trigger income smoothing behaviour using loan loss provisions. Comparing the pre-crisis boom of 2002–2006 with the crisis period of 2007–2009, I find that banks use loan loss provisions more extensively during the crisis period to smooth income upward. Collectively, the results of this paper are relevant to current concerns of accounting standard setters and bank regulators on the current model of loan loss provisioning.

Keywords: Loan loss provisions; Income smoothing; Financialcrisis; Bank holding companies.

266. Theincremental Usefulness of Other Comprehensive income Items to the Egyptian investor'

Elbayoumi, A. F and E. A. Awadallah

International Journal of Economics and Accounting, 3: 295–321 (2012)

We examine whether the incremental usefulness of the othercomprehensive income (OCI) items relative to net income changed or not after the issuance of the Egyptian Accounting Standard number 1 (post-EAS 1). We also seek to depict inferences concerning which component(s) of OCI is more useful to the Egyptian investor. for the non-financial firms in the post-EAS 1 period, the aggregated OCI has a significant usefulness in explaining the following period's cash flows.
Regarding financial firms in the period before the issuance of the Egyptian Accounting Standard number 1 (pre-EAS 1) and non-financial firms in the post-EAS 1, it was observed that foreign currencyadjustments has significant usefulness in explaining the following period' cash flows.
Regarding the financial firms, foreign currency adjustments component is significantly useful in explaining stock returns. Marketable securities adjustments are significantly useful in explaining stock returns for the non-financial firms in the post-EAS 1 period.

Keywords: Comprehensive income; Other comprehensive income Items; Oci Items; Statement ofFinancial accounting standards No. 130; Sfas 130; Egyptian accounting; Egypt.

267. An interpretive Analysis of How Audit Quality is Perceivedin Economies in Transition'

Emad A. AWadallah and Ahmed F. Elbayoumi

The Gstf Journal on Business Review, 145-151 (2012)

With the movement of many international accounting firms into Egypt, and the growth of local audit firms, it is particularly interesting, and relevant for governmental legislators, to study how the providers of the audit service perceive the quality of what they do. in this sense, the purpose of this paper is to report the perceptions of professional auditors in Egypt concerning how they perceive the quality of the service they provide. the paper also analyzes differences between perceptions of the Big 4 audit firms and other local audit firms. Based on 28 semi-structured interviews, it was revealed that the interviewees generally believed that the audit quality is preserved high in the presence of four factors: (1) high ethical standards to guide and regulate the profession; (2) a well planned and conducted audit; (3) a more knowledgeable audit team; and (4) having a good relationship with the client management.

Keywords: Audit quality; Auditor independence; Closeness to client management; Egypt.

268. Macro and Micro Earnings Manipulation: the Role of Accounting Standard Setting Process

Ahmed F. Elbayoumi and Emad A. Awadallah

The Gstf Journal on Business Review, 2: 24-32 (2012)

Preparers of financial statements are in a position to influence the view of economic reality presented in those statements to interested parties. The term 'macro-manipulation' is used to describe the lobbying of preparers against regulators (accounting standards setters) to persuade them to produce regulation that is more favorable to the interests of preparers. the aim of this paper is to introduce a suggested tool that could be used to ascertain why some financial accounting standards turn out to the benefit of one of the stakeholders involved in the process of accounting standards setting. This paper utilizes the construct of power to reveal the influences from parties involved in the process of accounting standards setting. The comprehensive income reporting standard is used in this paper as an example of these types of standard that may involve 'macro-manipulation'.

Keywords: Comprehensive income; Statement offinancial accounting standards No. 130; Macro earnings manipulation; Micro earnings manipulation; Accounting standard setting process.

269. The Usefulness of Different Accounting Earnings Measures: the Case of Egypt'

Ahmed F. El Bayoumi and Emad A .Awadallah

The Gstf Journal on Business Review, 2: 15-23 (2012)

The objective of this paper is to investigate which measure of accounting income (comprehensive income, operating income, or net income) is more useful to equity investors in explaining future earnings, future cash flows, and stock returns. This study proposes that different measures of income are more useful for different uses. the research is undertaken within the Egyptian environment that allows considerable asset revaluations and holds

the reporting of extraordinary items. Therefore, such environment provides a rich ground for testing the expected effects of reporting comprehensive income and its components on the Egyptian investors. the results do not support the superiority of comprehensive income measures in explaining the following period's net income compared to net income. None of the four tested measures of earnings is able to explain the following period's cash flows. Operating income is superior to the other three measures of income in explaining stock return.

Keywords: Net income; Comprehensive income; Operating income; Statement offinancial accounting standards No. 130; Egyptian accounting standards.

Dept. of Business Administration

270. Customers as Resource integrators: Toward a Model of Customer Learning

Sally Hibbert, Heidi Winklhofer and Mohamed Sobhy Temerak

Journal of Service Research, 15 (3): 247-261 (2012) IF: 2.732

It is widely accepted that customers derive value through resource integration, by integrating their own resources with thoseprovided by organization and other network actors. This perspective implies that customers must acquire the necessary skillsand knowledge to be effective resource integrators as they engage in activities that facilitate or create value. Supporting customer learning, then, is a pressing new challenge for firms that recognize customers engage in resource integration in the course of their value-creating processes. This article builds on an interactive model of self-directed learning to develop a model of customer learning for resource integration that identifies the characteristics of learning contexts, interactive elements of the learning process and links learning to customers' effectiveness in resource integration activities. A future research agenda is set out, organized around the elements of our conceptualization that can generate much required managerial insights into the interactive processbased nature of customer learning and customers' effectiveness as resource integrators. for practitioners who recognize the resource integration roles customers play, the authors raise a set of questions that will assist in developing marketing programs that support customer learning.

Keywords: Customer education; Customer learning; Customer participation; Resource integration; Value creation; Cocreation.

271. The Impact of Corporate Social Responsibility initiatives on Consumers' Behavioral intentions in the Egyptian Market

Salma Karem Kolkailah, Ehab Abou Aishand Noha El-Bassiouny

Int. J. of Consumer Studies IJCS, 36: 369-384 (2012) IF: 0.661

The scarcity of research on the public's responses towards corporate social responsibility(CSR) in developing countries has inspired this research. the research is aimed at studyingthe consumers' awareness of, their attitude and behavioural intentions towards sociallyresponsible companies in the Egyptian market. the relevant CSR literature was recapitulatedinto a conceptual framework, and an empirical study was conducted through a mixedresearch design. Exploratory qualitative interviews were conducted with corporate managersof a sample of five companies in the Egyptian market. then, a descriptive quantitativeresearch was conducted through a survey on a non-probability sample of consumers. Theresults revealed that consumers in Egypt are actually aware of the CSR concept and eventend to develop positive attitude towards socially responsible companies. Yet, when itcomes to the evaluative purchasing criteria that consumer's value the most, economiccriteria are apparently still given a priority over the social criteria.

Keywords: Corporate social responsibility; Consumer.

272. An Exploratory investigation of the Marketing Practices Conducted by Islamic Banks in Egypt

Wael Kortam and Ehab Abo Aisha

African Journal of Business and Economic Research, (2012)

This empirical paper attempts to understand the marketing practices followed by Islamic banks in Egypt.
Designmethodologyapproach: using in-depth interviews with marketing practitioners working in Islamic banks, the major marketing practices are assessed. These marketing practices are related to segmentation techniques, major elements of integrated marketing communications applied in their campaigns, and the evaluation tools adopted to assess the success of such campaigns. Further investigations related to communication strategies adopted are tackled as well. Seven in-depth interviews, with marketing professionals working in major Islamic banks in Egypt, were implemented during May and June 2010.Findings: some of the Islamic banks interviewed are implementing aggressive integrated marketing communication campaigns and they are fully aware of relevant marketing practices and knowledge. However, the major challenge is that Egyptian consumers are not aware of their presence nor of the basic difference between conventional and Islamic banks. This is attributed to the lack of trust in Islamic bank operations in Egypt and the limited marketing activities implemented by Islamic banks as compared to conventional banks. Further, the channels and mediums chosen by Islamic banks to send their messages to consumers are not adequate. Another major challenge is the lack of governmental support to Islamic banks. Thus for Islamic banks to grow in Egypt, they need to implement fierce awareness campaigns to educate consumers about their presence and about the Islamic products offered.
Research limitationsimplications: the sampling technique adopted is non-probability convenience sampling and that is due to the difficulty of having a banks database and the difficulty in setting appointments with marketing professionals without prior knowledge or recommendation. This is due to cultural constraint and lack of available information. The same reasons were attributed to implementing only 7 interviews although the number of Islamic banks in Egypt is 14 (3 are fully Islamic and the rest are conventional with Islamic branches or products).

Keywords: Islamic banking; Communication strategies; Islamic marketing; Egypt.

273. The Life Cycle theory of Dividends: Evidence from Egypt

Osama El-Ansary and Tasneem Gomaa

Int. Research J. of Finance and Economics, 97: 73-79 (2012)

According to life cycle theory of dividends, dividends tend to be paid by maturefirms while young ones face relatively abundant

investment opportunities with limitedresources so that retention dominates distribution. We test this theory in the Egyptianmarket using a sample of the most active 100 companies during the period 2005-2010. Weuse a random-effects panel data model after controlling for the firm's characteristics. Wefind that returned earnings to total equity ratio has highly significant and positive effect ondividend and that total equity to total asset ratio has no effect. Accordingly, the only part ofthe shareholder equity that affects dividend is the retained earnings indicating that earnedcapital not contributed is the main determinant of dividend. This provides evidence for theexistence of the life cycle theory of dividends in Egypt. in addition, profitability has asignificant positive effect on dividend, the higher the profitability of the company thehigher the dividend distributed. Ownership structure has no effect on dividend exceptpublic companies and private holding which have a positive and significant effect ondividend.

Keywords: Dividends; Earned equity; Contributed capital;Life cycle theory of dividends.

274. The Effect of Stock Trading Volume on Return inthe Egyptian Stock Market

Osama El-Ansary and Mona Atuea

International Research Journal of Finance and Economics: (2012)

This study examines the relationship between trading volume and stock return toshed more light on the structure of the Egyptian stock exchange and the information arrivalpattern, aiming to reach recommendations which will achieve benefits to the stockexchange, investors and other stakeholders.the study found that there is a contemporaneous relationship between tradingvolume and return, besides the historical data of trading volume especially for the last fivedays helps improve the prediction of future return. Even though one should not only rely ontrading volume to predict return as it explains a very small part of change in stock return.Also, the Egyptian stock exchange is informationally inefficient as the information arrivesto the market sequentially not simultaneously and that there is much noise and speculativetrading.the study recommends that the number of transactions is a better measure oftrading volume in the Egyptian stock market. these results are important to the EgyptianExchange management, investors, and technical analysts.

Keywords: Stock trading volume; Stock return; Egyptian stock exchange.

275. Causality Relationships between Components, Antecedents and Consequences of Marketing Strategies Making (Msm): Evidencesfrom Egypt

Mansour S. M. Abdel-Maguid Lotayif and Marwan Mohamed Abdeldayem

Research Journal ofinternational Studies,24: 43-58 (2012)

The current study aims at identifying the causality relationships between components, consequences, and antecedents of marketing strategies making MSM. The experiences of213 Egyptian executives were utilized to achieve these objectives. Throughout multivariateanalytical technique (e.g. multiple regression) andbivariateanalytical techniques (e.g.correlations), significant relationships between MSM components, consequences, andantecedents were found.

Keywords: Marketing strategies making (Msm); Consequences; Antecedents.

276. Dma Model - Understanding Digital Marketing Adoption and Implementation by Islamic Tourism Organizations

Hatem El-Gohary and Riyad Eid

Tourism Analysis, 17: 523-532 (2012)

Islamic studies and Islamic research have gained a lot of interest and considerable attention fromresearchers, policy makers, and practitioners during the last few years as a result of the demandingdesire to know more about Islam. However, regardless of the dominant position held by Islamic studiesand Islamic research in today's research world, Islamic tourism is still very much less presentedin the literature. This article aims to explore, analyze, and develop a clear understanding about thedifferent factors affecting the adoption of digital marketing (D-marketing) by Islamic tourism organizations(ITOs) by building on the current body of knowledge in the field. The article systematicallyreviews the literature related to digital marketing adoption to understand its adoption by organizationsworking in Islamic tourism sectors. Based on this review and through linking digital marketing,technology adoption, technology diffusion, and Islamic Shariah theories, a conceptual model thatlinks five factors (namely: internal environmental forces, external environmental forces, digital marketingadoption, digital marketing implementation, and digital marketing performance) is proposedto provide a clear understanding about the different factors affecting the adoption of digital marketingby Islamic tourism organizations. Future research is encouraged to build on this framework to testhow internal and external environmental forces of Islamic tourism enterprises, along with its digitalmarketing implementation, influence its performance.

Keywords: Digital marketing adoption (Dma) model; Digital marketing adoption; Islamic tourism.

277. Students' Evaluations and Perceptions of Learning with in Business Schools in Egypt

Abeer A. Mahrous and Wael Kortam

Journal of Marketing for Higher Education, 22 (1): 55-70 (2012)

This paper seeks to understand the criteria which students use to evaluate teaching effectiveness. Using structural equation modeling with a sampleof business students from Egypt, the findings indicate that the above criteria comprise six factors: organization of the course, fairness of grading, workload difficulty, student-instructor interaction, instructor involvement, and perceived learning. in view of this, a students' evaluation instrument containing 25 items which has good psychometric characteristics has been proposed. Furthermore, since some criteria of students' evaluation of teaching are usually developed before others, and thus may influence them, the paper attempts to identify which among them exert such influence. Specifically, it examines the factors which affect students' perception of learning. the findings show that organization of the course, fairness of grading, workload difficultly and instructor involvement positively influences the students' perception oflearning, but the factor of student-instructor interaction does

not. The paper provides academics with useful insights into the development and management of students' evaluation of teaching.

Keywords: Students evaluation; Perceived learning; Higher education; Egypt.

278. Students' Evaluation for Market Orientation: Evidence from Egyptian Business Schools

Abeer A. Mahrous andWael Kortam

Business Education and Accredetation, 4(1): 1-15 (2012)

This paper aimed at revisiting the market orientation philosophy, through examining the impact oforganizational culture on market orientation within Egyptian business schools. Data were gathered from46 informants in three business schools in Egypt. the informal and implicit nature of the marketingphenomena under investigation and the need to gain scientific insight into them called for usingGrounded theory methodology. Grounded theory analysis helped to identify three distinct models inhigher education in Egypt. the models show distinct ways in which organizational culture affect marketorientation mechanism, which capitalizes on students' evaluation to fulfill the strategic agenda ofbusiness schools within their operating marketing environment.

Keywords: Market Orientation; Organizational Culture; Students' Evaluation; Egyptian Highereducation.

279. Levels of Facebook Use: Evidence from Egypt

Abeer A. Mahrous and Rania S. Hussein

International Journal of Management and Marketing Research, 5 (3): 43-55 (2012)

This study aims at exploring the factors that discriminate between different levels of social media use in Egypt. Facebook will be focused on in this research as the particular application of social media. the study will describe Facebook users based on three groups of factors namely- internet experience, psychographics and satisfaction, and will relate those factors to three levels of Facebook usage- heavy, moderate and light. A sample of 384 users was drawn from Facebook users in Egypt. Data were analyzed using Structural Equation modelling and the findings indicate that internet experience, internet lifestyle, and satisfaction are the significant determinants of one's level of use of Facebook.

Keywords: Social media; Facebook; Segmentation; Level of Use; Egypt.

280. Profiling the Non E-Shopper Segments: Evidence from the Egyptian Tourism industry

Ola Tarek, Abeer A. Mahrous and Wael Kortam

Book Published by Lap Lambert Academic Publishing, (2012)

As consumers become more technology savvy and online travel sales continue to boom, online retailers need to understand how to tap into this new and huge potential set of consumers and gain the benefits of its remarkable growth. Online shopping is, in general, still a new phenomenon in the Middle East. When a new technology-based product or process is still at an early stage of diffusion, only a small subset of consumers is likely to have adopted it. When non-adopters still comprise the majority of the target populations, describing all non-adopters (non-online shoppers) as a homogeneous population may be inaccurate and inappropriate. Therefor, this book provides a comprehensive framework, based on data from the Egyptian market that identifies the factors that classify and profile E-ticketing non-purchasers into two segments: prospective purchasers and persistent non-purchasers.
The book also provides practitioners with useful insights into the development and management of marketing strategies to deal with those segments.

281. Transdisciplinary Marketing Concepts and Emergent Methods for Virtual Environments

Hatem El-Gohary

Book Published by Igi Global (2012)

The ever evolving World Wide Web provides more opportunities and challenges than ever before. Understanding marketing concepts and new and emerging methods for this digital landscape is the key to online success.
Transdisciplinary Marketing Concepts and Emergent Methods for Virtual Environments provide a broad and comprehensive international coverage of subjects, issues, and current trends relating to all areas of online marketing.
Emphasis is highly placed on research articles, case studies, and book reviews that seek to connect theory with application, identifying best practices in online marketing. in this respect, this book links both theoretical and practical approaches of online marketing to make a proactive contribution to the field perfect for researchers, practitioners, entrepreneurs, policymakers, and educators.

Faculty of Economics and Political Science

Dept. of Economics

282. Strategic interaction between Governmants and Investors under Privatization Programs

Alaa El-Shazly

Managerial and Decision Economics, (2012)

This article analyses the strategic moves of governments and investors under privatization programs in a game-theoretic context. in sequential-move games of both perfect information and incomplete information, the best response of the strategic investors to observing a slow pace of privatization is to have a low participation in economic activity because of concerns over public policy credibility.
This is true even if the government chooses to randomize its action to send mixed signals to the investors while adopting a slow pace of privatization for budgetary reasons. However, the outcome is Pareto inferior to a situation of phased but fast implementation of privatization programs and high private-sector participation under plausible assumptions.

Keywords: Sequential games;information structure; Bounded rationality.

283. Empirical investigation of Twin Deficits Hypothesis in Egypt (1992-2010)

Hanan Nazier and Mona Essam

Middle Eastern Finance and Economics, 17: 45-58 (2012)

This paper investigates the effects of fiscal policy on the current account and thereal exchange rate in Egypt. Using an exactly identified SVAR model, we controlled forbusiness cycle effects on fiscal balances by identifying exogenous fiscal policy shocks. Theempirical results of the annual data between 1992 and 2010 revealed twin divergenceinstead of twin deficits, that is, when fiscal accounts worsen, the current account improvesand exchange rate depreciates. Further extensions and robustness tests confirmed thisresult. the divergence of the fiscal balance and the current account was evident despitecontrolling for cyclical shocks to output and/or productivity shocks. This could beattributed to a combination of factors, including an investment crowding out effect causedby an increase in the real interest rate, and a partial Ricardian movement in private savings.Moreover, sticky prices explain the result of real exchange rate depreciation.

Keywords: Real exchange rate; Current account; Government budget Deficit; Fiscal.

284. Environmental Impacts of Trade Liberalization: the Case of Egypt

Hanan Hussien Ramadan Nazier

Journal of Development and Economic Policies, (2012)

With rising globalization and advances in technology, the impact of trade on environment has increasingly become a vital issue across the world. This paper contributes to this discussion by evaluating the environmental impacts of trade liberalization in Egypt using time series data over the period of 1980-2007. in this context, cointegration analysis is utilized to examine the long-run relationship among the variables, as well as a vector error correction model to determine the short-run dynamics of the system. Results confirm the theoretical concept of the absence of a one-way relationship between trade and environment. for both air and land pollution, the result is rather ambiguous. there are two opposing forces affecting environmental quality in the long run. the ultimate trade effect on environment would be highly dependent on environmental regulations and their enforcement

Keywords: Trade andenvironment linkages; Pollution haven; Trade liberalization; Scale effect; Composition effect; Technique effect.

285. The Optimal Schooling Level in Egypt

Marwa Biltagy

International Journal of Social Science and Humanity, 2 (2): 117-122 (2012)

This paper focuses on specifying the determinantsof optimal level of schooling in Egypt, identifying the supplyand demand functions for optimal schooling level andestimating the optimal level of schooling in Egypt using ahuman capital model. the concept of human capital is firstintroduced by Mincer (1958) [1] and then elaborated by two ofthe Nobel Prize winners, Schultz (1961) [2] and Becker (1962)[3]. It means that, individuals acquire skills and knowledge inorder to increase their future earnings stream. Individualsacquire these skills through education, training and experiencethe models of investment in human capital ascertain that, theoptimal schooling level occurs when the marginal benefits ofschooling equal its marginal costs. the main objective of thispaper is to provide an economic analysis of a human capitalmodel in order to specify the optimal schooling level and itsdeterminants in Egypt.

The methodology of this paper is basedon studying and analyzing the topic of optimal level of schoolingbyclarifying the concept, identifying its determinants andformulating and estimating a model that help in determiningthe optimal schooling level in Egypt by using data of EgyptLabor Market Panel Survey 2006 (ELMPS 06), which waspresented by Central Agency for Public Mobilization andStatistics (CAPMAS) in cooperation with Economic Researchforum.

The results imply that, there is a positive relationshipbetween the number of years of schooling and the private rateof return to schooling. It is estimated that, the optimal level ofschooling for the sample is 12.6 years on average. Moreover, themain determinants of optimal level of schooling in Egypt are:the father's and mother's level of schooling, which representsthe income of the family, the ability differences and the qualityof education.

Actually, there are two main policy implicationsof this paper; the first policy is to decrease the number of yearsof schooling from 16 to 13 years in order to apply the empiricalresults of this paper. The alternative policy that should beadopted is to pay more attention to the variables that areincluded in the model so as to increase the optimal level ofschooling in Egypt.

Keywords: Human capital theory; Human capital investment models; Optimallevel ofschooling; Egypt.

286. Quality of Education, Earnings and Demand Function for Schooling in Egypt: an Economic Analysis

Marwa Biltagy

Procedia - Social and Behavioral Sciences, 69: 1741-750 (2012)

This paper focuses on the concept of quality of education. the issue of quality of education has become important in manycountries that are interested in expanding enrollments in order to achieve Education for All by 2015. the main objective of thispaper is to provide an economic analysis of the concept of quality of education by clarifying the determinants of educationalquality and to specify the earnings and the demand functions for schooling in Egypt.

The methodology of this paper is based onstudying and analyzing the topic of quality of education by clarifying the concept, identifying its determinants and formulating aregression model in order to estimate the earnings and the demand functions for schooling in Egypt. the results imply that, themain independent variables that are contained in the individual's demand function for schooling are the number of years ofschooling, Sj, the ability differences, Aj and the quality of education, Qj.

Keywords: Quality ofeducation; Earnings function; Rate ofreturn to schooling; Demand functions forschooling; Egypt.

Dept. of Political Science

287. Copts in Egypt and their Demands Between inclusion and Exclusion

Mai Mogib

Journal of Contemporary Arab Affairs,5: 535–555(2012)

This Study tries to analyze and explain the relation between inclusion and exclusion policies and the nature of the previous political system in Egypt. This relation is influenced by a number of external and internal factors. the collapse of the former Soviet Union and the appearance of many countries on religious and ethnic basis and also the uni-polar system led by the United States are external factors that affected this relation specially under the grip of the globalization era and the universal calls for Human Rights. As for the internal factors, the thesis explains the nature of the economic, social and political factors that led to many obvious social and economic imbalances and resulted in social alienation and the appearance of new social movements that oppose the state and its policies. the nature of the hybrid regime led to divisions on all levels: religious (Muslim-Christian) , sexual (male-female), or social (rich-poor) which affects the Egyptian citizen's social integration and pushes him towards his primitive affiliations vis-à-vis the state. This analysis comes within the different theoretical frameworks that discuss the nature of state-society relationship and its privacy in the Arab and Islamic societies. Among these divisions, the study tried to analyze the factors that affected the societal- religious relations among Muslims and Christians in Egypt through the Copts as a case study to explain whether their demands – social, political or economic are civil demands or are addressed on religious basis as a reaction towards the state's infirmity to fulfill its tasks towards its citizens.

Keywords: Copts; Minorities; Religion and Politics.

288. The Transformation ofthe Arab-Israeli Conflict

Mustapha Kamel Al-Sayyid

Perspectives on West Asia, the Evolving Geopolitical Discourses, (2012)

This chapter traces the transformation of the Arab-Israeli conflict from one pitting Arabs against Israelis to an intraregional conflict. the author rejects the notion that the end of the cold war signaled decline of the Arab-Israeli conflict. To the contrary, the author demonstrates that the Arab-Israeli conflict is still a central issue in Middle East politics. This transformation resulted from two important developments: Israel's occupation of territories of three Arab countries since 1967 and the rise of the Islamist movement in nearly all countries of the Middle East. the author divided the history of the conflict into three distinct phases.

The first phase covered the period of the first three Arab- Israeli wars (1948-1967). the second period which followed the June war of 1967 coincided with the beginning of the recognition by Egypt of the state of Israel and ended with a peace treaty in 1979. the third period witnessed radicalization of the conflict with involvement of other non-Arab Middle Eastern countries in the conflict taking the side of the Palestinian people. This last phase coincided with the rise of Islamist parties to become ruling parties in some countries and major actor on the political scene in other countries of the region. the chapter explores the regional and international implications of the conflict arguing that the two state- solution remains the best prospect for restoring peace in the Middle East.

Dept. of Statictics

289. The Performance of Phase Ii Simple Linear Profile Approaches When Parameters Are Estimated

Mahmoud A. Mahmoud

Communication in Statistics-Simulation and Computation, 41: 1816-1833 (2012) IF: 0.387

Previous studies of statistical performance of Phase II simple linear profile approaches were reported only for the case of known profile parameters assumption.the main objective of this article is to evaluate and compare the performance of these approaches when the profile parameters are estimated from an in-control Phase I profile data set. Simulations establish that the performance of these approaches is strongly affected when the parameters are estimated compared to theknown parameters case. the in-control performance of the competing approaches significantly deteriorates if estimated parameters are used with control limits intended for known parameters, especially when only a few Phase I samples are used to estimate the parameters. the results show also that some profile monitoring approaches need much larger number of Phase I profiles than other approaches to achieve the expected statistical performance. Theyalso show that the profilemonitoring approach proposed by Mahmoud et al. (2010) has generally better out-of-control run length performance than the competing approaches when the estimated parameters are used in the charts design.

290. Estimation ofthe Bivariate Generalized Linear Failure Rate Distribution Parameters Under Random Censoring

Hanan M. Aly

Int. J. of Contemporary Mathematical Sciences,7: 821-837 (2012)

Recently a new distribution, named a bivariate generalized linear failure rate distribution has been introduced by Sarhan et al. (2011). in this paper, we obtained the moment generating function for the bivariate generalized linear failure rate distribution and the maximum likelihood estimates for the unknown parameters of this distribution and their approximate variance- covariance matrix in case of left random censoring. A numerical example is carried out to discuss the properties of the estimators.

Keywords: Maximum likelihood estimators; Random censoring; generalizedlinear failure rate distribution; Bivariate generalized linear failure rate distribution; Moment generating function.

Faculty of Law

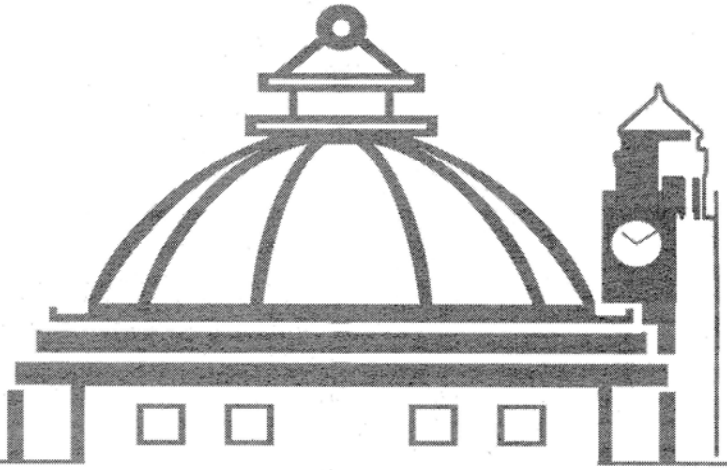
Dept. of Public International Law

291. The Arab Charter on Human Rights

Ahmed Abou-El-Wafa

Int. Human Rights Law and Personal Data Protection, (2012)

In various parts of the world, violations of human rights were, have been or will be committed. they have increased quantitatively and qualitatively all over the world in time of war or in time of peace. Accordingly, one can say that they are a normal phenomenon, in international as well as domestic legal systems. Perpetrators of theseviolations, particularly those which constitute international.



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Art & Humaities Sciences Sector

Faculty of Archaeology

Dept. of Conservation

292. A Preliminary Study on Using Enzymes in Cleaning Archaeological Wood

Safa Abd El-Kader Mohamed Hamed

*J.of Archaeological Science,*39(7): 2515-2520 (2012)IF: 1.914

The main goal of this study was to study and evaluate the effect of hydrolyzing enzymes on heanatomical structure and chemical composition of archaeological wood samples. Pine and beech woodsamples, which were taken from anonymous mashrabia, have been cleaned with three types of enzymesthen a scanning electron microscopy (SEM) and infrared pectroscopy (FTIR) study were undertaken, tosee if any significant structural or chemical differences could be detected between "untreated" and"treated" wood. No dramatic changes in functional groups on the wood surface, as monitored by infraredspectroscopy, occurred in the samples before and after enzymatic cleaning. SEM data, however, showthat protease and lipase enzymes may give good results in cleaning wood surface, but the enzymeresidues remaining on the cell walls of archaeological wood are another point to consider.

Keywords: Archaeological wood; Protease; Lipase; Amylase; SEM;Ftir.

293. A Study of 18Th Century Coptic Icons of Ibrahim Al-Nasekh Using Raman Microscopy and Gas Chromatography–Mass Spectrometry: indigo As An Organic Pigment in Egyptian Panel Paintings

M. Abdel-Ghani,B. Stern, H.G.M. Edward and R. Janaway

Vibrational Spectroscopy, 62: 98-109 (2012) IF: 1.65

Two Coptic icons were studied, these date from the 18th century and were painted by IbrahimAl-Nasekh and are currently to be found in Saint Mercurius Church, Saint Mercurius Monastery in Old Cairo, Egypt. the analytical techniques used were Raman microscopy, optical microscopy and gas chromatography–mass spectrometry in order to determine the stratigraphy of the artworks, to identify the pigments used and to determine the type of protective varnishes applied. Along with commonly used pigments in Egyptian artefacts such as orpiment (As2S3), vermilion (HgS), red lead (Pb3O4), white lead (2PbCO3•Pb(OH)2) and lamp black (C), the pigment indigo (C16H10N2O2) has been detected for the first time in Egyptian panel paintings. Gypsum (CaSO4-2H2O) was used as a white ground layer and the protective varnish applied is found to be Pinaceae resin.

Keywords: Coptic icons; Raman microscopy; Gas chromatography–Mass spectrometry; Pigments; Indigo.

294. Effect of Museum Conditions on Historical Dyed Silk Fabric with Madder Dye

Harby E. Ahmed and Sawsan S. Darwish

Journal of Polymers andthe Environment, 20: 596-606 (2012) IF: 1.349

Historical textiles suffer from deterioration as a result of exposure to uncontrolled environmental conditions in museums. To establish standard conditions for display of undyed and dyed silk fabrics in Egyptian museums, different artificial aging procedures (thermal, light and chemical) were applied to examine their effects on the physical, mechanical and chemical structure of the silk fiber. Samples of undyed silk and silk dyed with madder with different mordants, iron II sulphate; iron III chloride and copper sulphate were used for this purpose. these aged samples were examined for their surface morphology, color parameters (CIE Lab), mechanical properties, degree of crystallinity, secondary structure analysis and amino acids content.

Keywords: Archaeological textiles; Silk;Madder;Aging; Color measurement;Sem; Xrd;Ftir.

295. A Study on Using of Protease for Removal of Animal Glue Adhesive in Textile Conservation

Harby E. Ahmed and Fragiskos N. Kolisis

Journal of Applied Polymer Science, 124 (5): 3565-3576 (2012) IF: 1.289

Animal glue has been used to fix historical textiles on paper, wood panels, or other rigid support materials. It is often present in shrunk, cracked, rigid, and brittle form because of the aged condition artifacts and may not provide enough adhesion for effective support causing damage to historical textiles. the biotechnological application of enzymes seems to be a very promising approach in the restoration of historical objects. in this experimental work, undertaken with modern linen and silk fabrics, interesting results have been obtained for the removal of animalglue by using the protease enzyme from Aspergillus oryzae. An extensive study was done in the enzymatic activity and efficiency for the removal of the animal glue from the textiles, as well as the effects of this treatment on mechanical and optical parameters of the textile fibers. the effect of protease on fibers is measured by Fourier transform infrared spectral analysis, scanning electron microscope, the CIE-Lab values, ASTM method D5035, and XRD. the results showed that using protease in adhesive removal presented good results with a safe and a short treatment time when compared with the conventional methods. No significant changes on the linen and silk fabrics are observed.

Keywords: Conservation; Animal glue; Treatment;Enzyme; Hydrolyzes textiles;Protease.

296. Ancient Egyptian Black-Patinated Copper Alloys

W. Mohamed and S. Darweesh

Archaeometry, 54 (1): 175-192 (2012) IF: 1.183

This analytical study aims to investigate ancient Egyptian black-patinated copper alloys.Thestudy group was selected from the collections of the Egyptian Museum in Cairo and from theFaculty of Archaeology Museum in Cairo University. Examination and analysis were undertakenusing optical microscopy (OM), scanning electron microscopy (SEM), energy-dispersivespectroscopy (EDX), X-ray diffractometry (XRD), X-ray fluorescence analysis (XRF) andFourier transform infrared spectroscopy (FTIR).The analysis results indicated that the blackpatina contained mainly tenorite (CuO). The study presents evidence of thermal patinationand animal glue coating.

Keywords: Ancient egypt; Copper alloys; Black patination; Thermal treatment.

297. Microanalysis of Blue Pigments fromthe Ptolemaic Temple of Hathor (Thebes), Upper Egypt: A Case Study

Hussein H. Marey Mahmoud

Surface andinterface Analysis, 44: 1271-1278 (2012) IF: 1.18

The aim of the present work was to characterize blue pigment samples collected from the Ptolemaic temple of Hathor(thebes), the western bank of Luxor, Upper Egypt. the characterization of the examined pigments was carried out bymeans of optical microscopy, scanning electron microscopy equipped with an energy dispersive X-ray detector, micro X-rayfluorescence spectrometry and Fourier transform infrared spectroscopy.
on the basis of the chemical composition andmicrostructure of the samples, the blue pigments were identified as Egyptian blue (cuprorivaite, CaCuSi4O10). Moreover, themicro X-ray fluorescence analysis revealed significant quantities of lead in the glass phase suggesting that a leaded bronzescrap was used to produce the pigment. the optical examination of the paint layers showed that the pigments were appliedon a thin layer consisting of gypsum (CaSO4 2H2O) and dolomite (CaMg(CO3)2). in addition, some pigment samples showeddiscoloration mainly in the form of green and black hues. the obtained results helped in improving our knowledge aboutsome painting materials used during the Ptolemaic era of ancient Egypt.

Keywords: Temple of hathor; Thebes; Egyptian blue; Bronze scrap; Om; Sem; Eds; M-Xrf; Ftir.

298. Archeaometallurgical Finds from Barsinia, Northern Jordan: Microstructural Characterization and Conservation Treatment

Manar Bani-Hania, Ramadan Abd-Allah and Lamia El-Khouria

Journal of Cultural Heritage, 13: 314-325 (2012) IF: 1.079

Within the framework of an excavation project aimed to systematically characterize the various aspects of settlement and activities in Northern Jordan, a considerable collection of slag lumps and iron artifacts of different forms and typologies excavated from the archaeological site of Barsinia were collected. Excavations have revealed other metallurgical materials such as pottery tuyères and furnace-like structure. Studying those finds was important because of their archaeological and technological interests.
For the analytical and metallurgical study, X-ray diffraction was used to identify the mineralogical composition of samples. Inductively coupled plasma-optical emission spectrometer, energy dispersive x-ray and X-ray fluorescence spectrometer were used to determine the accurate elemental composition of these finds.Furthermore examinations by using metallographic, polarizing microscope and scanning electron microscopy were employed to diagnose the characteristic morphology and environmental effects of thesearcheaometallurgical finds. Microstructural investigations emphasized that iron production processes were performed locally at the archaeological site of Barsinia even if the iron ores were imported from other mining location in Jordan. Direct or "bloomer" was the main method used for smelting iron ores followed by smithing methods to locally produce iron artifacts. This, most probably, was the state of technology from the Bronze Age to the byzantine period. To ensure the stability of these deteriorated finds for future research, required treatment and conservation processes were successfully carried out.

Keywords: Barsinia; Iron; Metallurgy; Microstructure; Corrosion; Conservation.

299. Morphological, Chemical and Mineralogical Characterization of Deterioration Products from the Tomb of Kheruef (Tt192), (Luxor, Egypt)

Hussein H. Marey Mahmoud

Periodico Di Mineralogia, 81(1): 131-143 (2012) IF: 0.703

The present paper aims at characterizing some deterioration products formed on thedecorated walls of the tomb of Kheruef (TT192), El-Assasif district, El-Qurna necropolis(Luxor), Upper Egypt. Mainly, the deterioration phenomenon occurring in the area is closelyrelated to the crystallization of salts. the local supply of salt ions usually comes from theabundance of soluble salts in the bed-rock and ground layers. The morphology and themicroanalysis of the contained mineral phases in the damaged layers were carried out usingscanning electron microscopy (SEM) equipped with an energy dispersive X-ray detector(EDS). The mineralogical composition of the samples was determined using X-ray powderdiffraction analysis (XRPD), while the petrographic examination on the prepared thin-sectionswas carried out using polarized light microscopy (PLM).The results show that the limestoneconsists of fine-grained calcite crystals embedded in a micritic matrix rich in quartz and fossils(e.g. foraminifera). Also, the results allowed the determination of the main deteriorationmechanisms affecting in the tomb. Based on the results of these analyses, different saltminerals were identified as halite (NaCl), gypsum (CaSO4·2H2O), and bassanite(CaSO4·0.5H2O). The obtained results will be used in the onservation-restorationinterventions of the tomb.

Keywords: Tomb ofkheruef; Luxor; Salts; Sem-Eds; Xrpd; Petrographic examination.

300. A Technical Characterization of Roman Plasters, Luxor Temple, Upper Egypt

Hussein Marey Mahmoud, Nikolaos Kantiranis and John Stratis

Mediterranean Archaeology and Archaeometry, 12 (2): 81-93 (2012)

The present paper aims to characterize some Roman plasters from the reign of the Emperor Diocletian in the late 3rd century AD. These plasters were applied over Pharaonic walls from the reign of Amenhotep III (c.1402–1364 BC) at Luxor temple, Upper Egypt. for the characterization of theses plasters, several analytical techniques were applied such as optical microscopy (OM), scanning electron mi-croscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), X-ray powder diffraction analysis (XRPD), micro- Raman and Fourier transform infrared spectroscopies (?-Raman and FT–IR). Based on theresults of these analyses, the stratigraphic structure of the plaster layers was identified as fine coat ‘intonaco’ which is based mainly on lime and coarse coat ‘arriccio’ which consists of silica sand, phases of calcium carbonates and different pozzolanic additives. Moreover,the results revealed the green pigment as green earth (celadonite), the red pigment as red ochre, the yellow pigment as yellow ochre and the white pigment as calcium carbonate.

theobtained data helped in improving our knowledge of some materials used during the Roman age in Egypt.

Keywords: Roman plasters; Luxor temple; Xrpd; Sem; Eds; raman; Ft–Ir.

301. A Multi-Analytical Approach for Characterizing Pigments fromthe Tomb of Djehutyemhab (Tt194), Elqurna Necropolis, Upper Egypt

Hussein Hassan Marey Mahmoud

Archeometriai MuHely,205-214 (2012)

The present paper aims to characterize some ancient pigments from the painted reliefs of the tomb ofDjehutyemhab (TT194), (Ramesside Period, ca. 1298–1064 BC), Nobles tombs, El-Qurna necropolis (Luxor),Upper Egypt. the analytical techniques used in this study were: optical microscopy (OM), scanning electronmicroscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), X-ray diffraction analysis, micro-Raman and Fourier transform infrared spectroscopies (?-Raman and FT–IR). Based on the results of theseanalyses, the stratigraphic structure, the morphology and the chemical composition of the paint layers wereidentified.

The results revealed that the blue pigment is Egyptian blue (cuprorivaite, CaCuSi4O10), theturquoise-green pigment is Egyptian green (Cu-wollastonite) together with traces of cuprorivaite, the yellowpigment is yellow ochre, and the red pigment is red ochre. Moreover, the preparation layer was identified as amixture of gypsum and calcite. FT-IR analysis of he paint layers revealed the use of a proteinaceous binder(probably of animal glue). the obtained results will help in establishing a conservation plan of these murals.

Keywords: Pigments; El-Qurna necropolis; Nobles tombs; Sem-Eds; µ-Raman; Xrd; FT-IR.

302. Characterization of Coptic Plasters fromthe Monastery of St. Simeon (Deir Anba Hatre), Aswanand Upper Egypt

H.H. Marey Mahmoud and L. Papadopoulou

Restoration of Buildings and Monuments, 18 (2): 81-92 (2012)

The present study aims to characterize Coptic plasters from the monastery of St. Simeon (Deir Anba Hatre),Aswan, Upper Egypt. The haracterization was carried out by means of ptical microscopy (OM), petrographicexamination, scanning electron microscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), X-ray diffraction analysis (XRD) and Fourier transform infrared spectroscopy (FT–IR).

Theresults allowed the identification of the stratigraphic analysis of the plaster layers and their chemical composition.the results showed that the studied plasters were of low quality and hence perfectly comparable tothose from the Pharaonic, Ptolemaic and Roman ages.

The results helped in enriching our knowledge concerningsome materials dating back to the Coptic period in Egypt.

Keywords: Themonastery of St; Simeon; Aswan; Coptic plasters.

303. The Efficiency of Polymeric Coatings for the Conservation of Ancient Egyptian Wall Paintings, El-Qurna Necropolis, Upper Egypt

Hussein HassanMarey Mahmoud

Ge-Conservacion,3:89-104 (2012)

The present work aims at studying the long-term protection of damaged Egyptian wall paintings (tomb of Ameneminet, No. TT277, Ramesside Period), El-Qurna necropolis, Upper Egypt. To achieve this, the efficiency of some polymeric materials for the consolidation of laboratory samples similar to the ancient murals was evaluated. the climatic conditions of the area play an important role in accelerating the damages process of the paintings. Crystallization cycles of salts exert additional pressure by producing cracking, powdering and flaking, in addition to pulverization of the pictorial layers. Different commercial products based on acrylic and silicone consolidation materials were tested in this study. the evaluation of the consolidation process was performed using the visual observation, scanning electron microscopy (SEM), contact angle values, color measurements and determining the physical and mechanical properties. the results showed that the superior behavior of water repellency was obtained by the micro emulsion Wacker VP 1311. Moreover, the application of the stone strengthener Wacker OH and the acrylic co-polymer Paraloid B82 helped in improving the physical and mechanical properties of the treated samples. in conclusion, Wacker OH could be used to enhance the durability of the inner matrix; however, the application of the microemulsion Wacker VP 1311 as a protective layer will increase the material's water repellency in areas subjected to moisture or ground water attack.

Keywords: Wall paintings; El-Qurna necropolis; Polymeric coatings; SEM; Color measurements.

304. Analytical Characterization of Rococo Paintings in Egypt: Preliminary Results from El-Gawhara Palace at Cairo

Fatma Refaat, Hussein Marey Mahmoud and Atef A. Brania

International Journal, 265-274 (2012)

El-Gawhara palace (1813–1814 AD) is situated south of the Mosque of Muhammad Ali in theCairo Citadel. This palace is an important example of the best early 19th century rococodecorations in Egypt. The present study reports some of the results obtained from theapplication of different analytical techniques to characterize some rococo paintings at El-Gawhara palace at Cairo, Egypt. The characterization of the studied paintings was carriedout by means of optical microscopy (OM), scanning electron microscopy equipped with anenergy dispersive X-ray detector (EDS) and Fourier transform infrared spectroscopy (FTIR). The obtained results allowed the identification of the chemical composition,structure and the painting technique employed in these paintings. This methodology revealssome useful information on some rococo paintings dating back to the 19th century in Egypt

Keywords: El-Gawhara palace; Cairo; Rococo paintings; Gilding; Om; Bse eds; Ft–Ir.

305. Grouting of Multiple Leaf-Masonry Walls: Application on Some Islamic Historical Monuments in Cairo, Egypt

Sayed Hemeda

International Journal of Conservation Science (Ijcs), 3 (4): 275-288 (2012)

Present study summarizes an overview on the available experimental and practical data and results from laboratory testing (ungrouted and routed) three leaf masonry wallettes in ompression and in diagonal compression. on the basis of the experimental results, (A) the tructural behavior of the multiple leaf-masonry walls studied in details (b) the parameters that affect the behavior of ungrouted masonry are detected and commented upon, and (c) the behavior of grouted masonry studied in details. Particularly attention to be paid to large walls whose construction may comprise different kinds of materials. Such walls include cavity walls; rubble filled masonry walls and veneered brick walls which have poor quality core. Not only may the interior of the wall be less capable of carrying load but movement of the core material may also be a source of new stresses. As the experimental results show that the key parameter for the improvement of the mechanical properties of masonry is not the compressive strength of the injected grout,emphasis is given to ternary, as well as to hydraulic lime based grouts: those materials are expected to ensure durable interventions, they lead to a significant enhancement of the mechanical properties of masonry. on the basis of the experimental data on wallettes, as well as based on recent data from tests on groutedcylinders made of filling materials, simple formulae are drived, allowing for the strength of masonry to be calculated, and scientifically interventions processes and techniques had beenapplied to selected historical monuments in Cairo.

Keywords: Islamic monuments; Three Leaf-masonry; Grouting; Ternary grout; Hydraulic lime based grouts; Compressive strength.

306. Evaluating the Rate of Stone Art Deterioration in Wadi Maghara and Wadi Mukattab, Sinai, Egypt

Sayed Hemedaand Walid Alghareb

International Journal of Conservation Science (Ijcs), 3 (2): 79-86 (2012)

One of the key reasons for the status of Wadi Maghara and Wadi Mukattab as World Heritage Sites is the abundance of stone art present there. Unfortunately, in time, much of the stone art heritage in the two archaeological sites was lost, due to natural stone weathering processes, to static and dynamic actions and lately, due to the lack of preservation measures and to the action of people. That fragile art heritage is non-renewable and, therefore, it requires specialized management. Several stone facades in Wadi Maghara have embossed inscriptions of early rulers of Egypt, that document their expeditions to mine precious minerals, primarily turquoise and copper, that were found in the area. Wadi Mukattab (south of Wadi Maghara) is the valley of inscriptions. Over a distance of 3 km along this valley inscriptions can be found on the mountain rocks that have mostly been made by Nabateans (2nd and 3rd Century) but also by others, such as pilgrims, soldiers, merchants, throughout the centuries. in our case study, inscriptions from specific study areas were analyzed by using SEM, polarizing microscope, XRD, SEM with EDX, Grain Size Distribution, Pore Media Characterization and some stone samples were tested in the stone mechanics laboratory, to determine the physical and mechanical characteristics of the stone with carved inscriptions. Digital photographs were taken, with Geographic information Systems software. Older images were compared with more recent ones and in order to classify and quantify the amount of deterioration that occurred over time. Various methodologies were applied to classify the images, and it was found that manual digitizing provided the best means for quantifying the amount of deterioration. Results showed that the damage was primarily caused due to the instability of stone structures, because of the extensive jointing and rock fall gravity, due to dynamic actions and the granular disaggregation of the stone surface. the methodology used in this study can be utilized to evaluate the rate of decay of stone art and therefore a useful tool for determining priorities with regard to the conservation of the Wadi Maghara and Wadi Mukattab sites. in addition, the rate of deterioration is useful in evaluating and quantifying the contribution of stone weathering to landscape evolution.

Keywords: Stone art deterioration; Petrography and SEManalyses; Mechanical testing ofstone materials; Wadi maghara; Wadi mukattab.

307. Ground Penetrating Radar (Gpr) investigations for Architectural Heritage Preservation: the Case of Habib Sakakini Palace, Cairo, Egypt

Sayed Hemeda

Open Journal of Geology, USA, 2: 189-197 (2012)

A comprehensive Ground Penetration Radar (GPR) investigations and hazard assessment for the rehabilitation and strengthening of Habib Sakakini's Palace in Cairo is presented herein, which is considered one of the most significant architectural heritage sites in Egypt. the palace located on an ancient water pond at the eastern side of Egyptian gulf besiding Sultan Bebris Al-Bondoqdary mosque is a place also called "Prince Qraja al-Turkumany pond". That pond had been filled down by Habib Sakakini at 1892 to construct his famous palace in 1897. the integrated geophysical survey of the palace allowed the identification of several targets of potential archaeological and geotechnical engineering in-terest buried in fill and silty clay in the depth range between 100 - 700 cm. the methodological development focused on Multi-Fold (MF) Ground Penetrating Radar (GPR) imaging and subsurface characterization based on integrated veloc-ity and attenuation analysis. Eight hundred sqm of Ground penetration Radar (GPR) profiling have been conducted to monitor the subsurface conditions. 600 meters are made in the surrounding area of the Palace and 200 sqm at the base-ment. the aim is to monitor the soil conditions beneath and around the Palace and to identify potential geological dis-continuities, or the presence of faults and cavities. A suitable single and dual antenna are used (500 - 100 MHZ) is used to penetrate the desired depth of 7 meters (ASTM D6432). the GPR is used also detect the water table. at the building basement the GPR is used to identify the foundation thickness and soil-basement interface. As well as the inspection of cracks in some supporting columns, piers and masonry walls.the GPR also was used to investigate the floors and ceil-ings conditions and structural mapping. the results were validated by the geotechnical and structural surveys. All these results together with the seismic hazard analysis will be used for the complete analysis of the

palace in the framework of the rehabilitation and strengthening works foreseen in a second stage.

Keywords: Ground penetration radar (Gpr); Architectural heritage preservation; Site investigations; Geophysics; Restoration of monuments.

308. Discoloration of Ancient Egyptian MuralPaintings by Streptomyces Strains and Methods of its Removal

Akmal Ali Sakr, Mona Foad Ali, Mohamed Farouk Ghalyand Mahmoud El-Sayed Farrag Abdel-Haliem

Int. Journal of Conservation Science, 3 (4): 249-258 (2012)

Streptomyces isolated from mural paintings at Tell Basta and Tanis tombs were identifiedusing 16S rDNA sequencing method. These reptomyces strains caused discoloration ofmural paintings with irreversible red stains of arotenoid pigment. A mixture of n-hexan andacetone (92:8 v/v) was the best solvent for extracting and urification of red pigment frombiomass of Streptomyces. Dimethyl sulfoxide (DMSO) and N,N-dimethylformamide (DMF)were the most effective in treatment of these red stains without changing the paintings orstone surfaces.

Keywords: Carotenoid pigment; Dimethyl sulfoxide; N;N-dimethyiformamide; Melanin pigment; Streptomyces; Tanis; Tell basta.

309. Study and Conservation of the Painting "Paul Iii and Ranzio Farnese" by Parmigianino

Fatma Helmi, Osama El-Feky and Yasmeen Alam Eldin

E-Conservation,61-71 (2012)

The oil painting "Paul III and Ranzio Farnese" by Parmigianino belongs to the collection of the Al-Gezira Museum, Egypt. the panel painting presented several deterioration aspects such as insect infestation, warping, darkening, cracks and ground layer losses which justified its conservation. Prior to the intervention, light and electron microscopy, X-ray diffraction and infrared spectroscopy were used to characterize the painting. these techniques allowed the identification of the materials used: the wooden panel is poplar wood, the ground layer contains gypsum and animal glue and the medium is linseed oil. Concerning the pigments, cuprorivaite, massicot, hydrocerussite, cerussite, litharge, carbon and cupric oxide were identified. After the material characterization, both the painting and its frame were subjected to conservation

Keywords: Oil painting; Restoration; Conservation.

310. Investigations on the Chemical Degradation of Silver Gelatine Prints

Maha Ahmed Ali, Mona Fouad Ali, Mohammed Osama Saker, Abdel Azez El Bayoumi Abdel Aleem and Khaled Ibrahim El Nagar

Int. J.of Conservation Science, 3 (2): 93-106 (2012)

Photographs are considered composite objects with complex chemical and physicalstructures. Therefore they are more prone to damage as compared to other objects. Chemicaldegradation is by far the most common decay form found among photographic collections.This study investigates the chemical degradation of silver gelatin prints (DOP) and thereaction of the image, silver, gelatin, and paper to accelerated aging, to the action of light,and oxidizing gases, in terms of their physical and chemical nature. the test materials usedare properly washed and poorly washed grayscale, black-and-white processed images onphotographic paper (Black & White Photographic Paper BH 0 Bromofort 6P0661 Tropicalfrom forte Photochemical Company Vc, Hungary). After exposure, the results were studiedby means of visual inspection, amino acid analyzer, Fourier transform infrared andtransmission electron microscope. the results were compared with those of the controlsamples. Our study revealed that the image, silver, gelatin and photographic paper aregreatly affected by oxidizing agents and that the effect increased if the photographic printswere inadequately washed at the time of their processing. Furthermore, our results ndicatedthat an increased amount of ammonia and amino acid in the silver gelatin print is a reliableindicator of the degradation of its gelatine emulsion.

Keywords: Chemical degradation; Processed silver gelatine Prints; Acceleratedageing.

311. First Aid of Rare Ptolemaic Textile in Tuna El-Gebel Excavation, Egypt. as Case Study

Harby E. Ahmed

*E-Conservation theonline Magazine,*81-90 (2012)

Among the findings of the excavations of Tuna el?Gebel, Egypt several pieces of textiles were unearthed.these textiles were found in poor conservation state and risked further deterioration if left untreated.This article describes the analytical study and simple conservation interventions that were applied tothese textiles, here exemplified with the treatment of a single object. Prior to the intervention, scanningelectron microscopy was used to analyze the fibers to identify them and to characterize theirdeterioration. This case study provides a clear example of the type of damage that exists on the textilesrecovered in Tuna el-Gebel.

Keywords: Textiles; Conservation; Cleaning; Dirt.

312. Comparative Efficacy of Some Plant Extractsagainst Fungal Deterioration of Stucco Ornaments inthe Mihrab of Mostafa Pasha Ribate, Cairo, Egypt

H.A.M Afifi

American Journal of Biochemistry and Molecular Biology,2(1):40-47 (2012)

The demand for medical plants is expanding rapidly where plants are now recognized as a safe, efficient and in expensive fungicides for treatment of stucco ornaments. in this study, three different plants ectracts Anethum graveolens, Cymbopogon citratesand Juniperus oxycedrys occuring naturally in the plant essentials were evaluated to inhibite the fungal growth of the stucco ornaments in the Ribate of Mostafa Pasha that belonged to the Ayyubid Period. Three fungal species namely: Fusarium oxysporium, Aspergillus Niger, Alternaria alternate were isolated from different sites on the tested stucco ornaments. the toxicity of the three plant extracts concentration against fungal growth was tested.

Keywords: Stucco ornaments; Fungi; Mihrab.

313. Analytical Study of Ottoman Egyptian Ceramic Tiles from Abdel Baqi El Shorbagy Mosque, Alexandria

M. Abdel-Ghani

The Unknown Face oftheArtwork, (2012)

The present paper describes the analytical study performed on three different glazed ceramic tiles from Abdel Baqi El Shorbagy (Georbagy) mosque (Alexandria, Egypt) which dates back to1785 AD-1171 AH. the tiles were manufactured according to a distinguished local school of tile making which is known in Egypt as Maghrebi school and is influenced by the North African school of tile making. the materials used for the manufacture of the tiles were revealed using optical and polarizing microscopy, X-ray diffraction (XRD) and scanning electron microscopy–energy dispersive X-ray spectroscopy (SEM-EDS). It was revealed that the tiles were made of ferruginous, highly calcareous clay in an oxidizing atmosphere. Mineral phases such as; silica, haematite, gehlenite.lime and feldspars have been identified. Decorations were applied on tin opacified lead glazes. Copper andor cobalt were used in the green and blue glazes while Naples yellow was used in the yellow glazes. Manganese oxide was used to produce the brown glazes.

314. Technology, Materials and Conservation of Persian Lacquered Papier Mache Casket, Qajar Period

Y. Zeidan and M. Abdel-Ghani and O. Abdel-Aal

The Unknown Face ofthe Artwork, (2012)

The present paper describes the technology, materials and conservation of Persian lacquered papier mâché casket which dates back to1785 AD-1171 AH, Qajar period. It is displayed in the museum of the Faculty of Applied Arts, Helwan University (Giza, Egypt). the casket was manufactured from papier mâché layered up as sheets and made of cotton fibers with addition to filling materials such as chalk (CaCO3), kaolin (Al2O3, 2SiO2 , 2H2O), and barite (BaSO4). Haematite and a copper containing pigment were used to colour the fine papier mâché sheets used. the schematic structure of the casket was revealed by studying the cross-sections. the lacquer layer was made of shellac resin while gum Arabic was used as paint medium except in the red paint areas where shellac resin was used. the pigment palette used consists of cinnabar, red lead, haematite, lead white, lapis lazuli, indigo, orpiment and lamp black. the restoration intervention performed comprised; cleaning, deacidification, reattaching and securing separate layers, reconstruction of missing parts, retouching and varnishing.

315. Seismic Response Analysis and Protection of Underground Monumental Structures the Catacombs of Kom El-Shoqafa, Alexandria, Egypt

Sayed Hemeda

Advances in Geotechnical Earthquake Engineering - Soil Liquefaction and Seismic Safety of Dams and Monuments, (2012)

Alexandria is located in eastern part of the Mediterranean Basin (Northern Egypt) and it is a place of great historical and religious interest. Numerous Catacombs and cemeteries for Greek-roman were erected in Greek-roman and Christian era has been found. they represent actually a large complex of an underground necropolis. the aim of the presentstudy is the investigation and documentation of the existing stability conditions of the site ofCatacombs in order to define the instability problems to interpret the pathology and topropose the best retrofitting procedure.

316. Scientific Techniques for Analysis and Diagnosis of Painting Materials: Case Studies of Ancient Egyptian Wall Paintings

Hussein Marey Mahmoud

Book Published by Lap Lambert Academic Publishing, (2012)

The wall paintings inside the ancient Egyptian tombs and temples are decorated with a chromatic palette contains pigments of awide range of sources. The analytical investigations of the ancient painting materials bring us much information on developments in technologies of ancient cultures. For the conservation and restoration of wall paintings, it is indispensable to determine the structure, chemical composition and chromatic characteristics of the studied materials.

The present analytical approach was devoted to investigate some Egyptian wall paintings belong to different chronological times and to diagnose the main weathering forms.

Thereforeinvestigations were undertaken to gather mineralogical spectroscopic chemical and chromatic characteristics of the studied wall paintings.These measurements can therefore contribute to the answering of technical arthistorical questions, such as the deduction of the original appearance of the object, painting techniques, authenticity and the establishment of the chemical and physical conditions before conservation and restoration.

317. Biotechnological Processes in the Restoration of Historical Textiles: Principles and Practical Application

Harby E. Ahmed

Book Published by Lap Lambert Academic Publishing, (2012)

Historic textiles are containing many types of stains and dirt. Furthermore, adhesives can often found when they have been adhered to a solid surface due to conservation procedure. these adhesives present in cracked, rigid, shrunk from due to the aged conditions. Dirt, stains and aged adhesives cause heavy damage to textiles as a result of yellowness, hardening, and acidity of historical textiles. Some stains and adhesives are very attractive nutrient for a fungi and bacteria that will cause further damage. It is necessary to remove the stains and adhesives from textiles but often are difficult to remove it by conventional methods. This book presents an extensive study of use different type of enzymes to remove resistance stains and adhesives paste that we cannot remove it by conventional methods. Moreover, the effect of enzymes on the tensile strength, elongation, color change, crystalline index, structural changes, the morphology of the surface of linen, silk and cotton dyed fabric with focus on studying the removal of enzymes residues from textiles following the treatment. the book presents practical applications into removal of stains and adhesives from historical textiles.

Dept. of Egyptian Archaeology

318. A Unique Stela fromthe Fayoum in the Egyptian Museum Cg No: 22197

Abdel-Rahman Ali Abdel-Rahman

Aula Orientalis, 30: 211-219 (2012)

[This article deals with a unique round-topped stela of black granite that was found in the Fayoum area. It isactually exhibited in room 34 in the Egyptian Museum (J.E. no: 22262). It dates back to the Roman period. Thefigures and inscriptions are in sunken relief. The stela is fairly well preserved, except for the upper part of the figureon the left side, and the lower left corner which are broken. This stela has two characteristics, first: on its top aunique representation of the head of the deceased having Greco-Roman features. Second; there is a difference in thedistribution of the scenes on the surface of the stela where the hieroglyphic text is between two scenes. It seems thatthe stela is unfinished especially in the lower part representing the deceased offering to Osiris and Isis; if it had beencompleted we would have expected to find the name and titles of every figure represented on the stela. As for thetext, some of the writings are not deeply carved, so too hard to read and some signs are without determinatives andconfused with others signs.

Keywords: Fayoum Stela; Roman period; Osiris; Isis.

319. Nine Demotic Ostraca from Kom Abu-Radi Necropolis

Ahmad Galal and Mahmoud Ebeid

*Annales Du Service Des Antiquites De L'Egypte,*33-49 (2012)

Publication of nine demotic ostraca from Kom Abu-Radi necropolis which is situated on the west bank of the Nile, south of El-Wasta city in Beni-Suef governorate.these ostraca are now stored in the Beni-Suef Museum, and they will be moved to the new Great Egyptian Museum (GEM) afterwards.the personal names registered on the ostraca might be related to the priesthood of the Kom Abu-Radi Necropolis, or related to a nearby temple, or names of the mummies' owners.As for the date of these ostraca, the late Ptolemaic is a reasonable possibility according to the paleography.

Keywords: Kom Abu-Radi Necropolis; Demotic ostrac; Beni - Suef Museum; Late ptolemaic Period

Faculty of Arts

Dept. of English Language and its Literature

320. Aspects of War Neuroses in Pat Barker's Regeneration Trilogy: the Great War and Neuroses

Mona Radwan

Book Published by Lap Lambert Academic Publishing, (2012)

This book examines the traumatic effect of the Great War on the characters in a Trilogy by Pat Barker - a British novelist. the Trilogy is comprised of Regeneration (1991), the Eye in the Door (1993), and the Ghost Road (1995). the research focuses on the symptoms of war neuroses suffered by the characters as a result of their horrific experiences in this war. Barker fuses fact and fiction in this work. Some of these characters are real literary figures like Siegfried Sassoon and Wilfred Owen, as well as, the psychiatrists practicing during the war like William Rivers and Lewis Yealland. World War I was a corner stone in the progress of military, as well as, civilian psychiatry as it encouraged many researchers to study the worst psychological outbreak of war neuroses in the history of the world. Nowadays war neuroses are referred to as PTSD (Post Traumatic Stress Disorder).

Dept. of French Language and its Literature

321. Le Mythe Du Retour Aux Origines Dans Deux Œuvres Posthumes D'Albert Camus: Le Premier Homme et La Mort Heureuse

Mona Saraya

Inter-textes, (2012)

In this research, we focus on the myth of the return to the origin in two works of Albert Camus published after his death. He looks for an evasion from the absurdity by returning to the origin. We analyze the symbols such as the biblical themes, the concordance between collective history and personal history, the metaphorical space such as the maternal spaces like the tomb, the villa, the house, the transitory spaces such as the train, the hotel, the boat, the door, the window. We compare the images of the sun and the night as an allegory of the father and mother. we assert the importance of the smell in the mind of Camus. We analyze the time structure in it's relation to the meaning. are also studied the mythological meaning of the names.

Keywords: Myth; Origin; Camus.

322. Beyrouth À Travers Un Parfum De Paradis

Farida El-Saied

Lire Les Villes: Panoramas Du Monde Urbain Contemporain, (2012)

This research aims to "read" the city of Beirut, as it's presented by Elias Khoury in his novel entitled White Masks. in this novel, the center of the Lebanese capital witnesses a murder of one of its inhabitants. from the investigation concerning a simple crime and conducted by a journalist, the narration reveals the tragedy lived by a whole country. in fact, it's "the novel of Beirut" which is narrated by Khoury. A city transformed into ruins as an inevitable consequence of this state of civil war that spreads through space and time, modifying the urban, and transforming the urban "reading" itself.

323. Une Tradition Didactique Appliquée À L'Arabe: Les Dialogues Pétis De La Croix – Savary

Madiha Doas

Autour De La Langue Arabe: Études Présentées À Jacques Grand'henry À L'occasion De Son 70E Anniversaire, (2012)

This paper deals with two methods for teaching Arabic, Savary's Grammaire de l'arabe vulgaire et littéral 1813, and Pétis de la Croix's 1673. Each of these two methods offer a description of Middle Arabic varieties and contain dialogues which were a common tool in the Western tradition of language teaching, known since the 5th century for the instruction of Latin, but which was later applied on vernaculars.

324. Le Paysan Éloquent, Du Conte Pharaonique Au Cinéma

Salma Adel Mubarak

Le Froid at Le Chaud Ou Les Glaces D'Haïtiautour De René Depestre, Horizons D'Un Lyrisme Francophone, (2012)

En 1970, un conte égyptien du Moyen Empire a revu le jour grâce à une adaptation cinématographique. Connu pour être l'un des chefs d'oeuvres de la littérature pharaonique, Le Paysan éloquent, appelé également Les Plaintes du Paysan, Le Fellah Plaideur ou Le Conte de l'Oasien, a été ressuscité par Chadi Abd El Salam dans son court métrage de fiction: Chakawi Al Falah Al Fassih (Les plaintes du paysan éloquent). L'étude que je propose part de cette adaptation pour mener une réflexion comparée sur le passage de l'oeuvre littéraire à l'oeuvre cinématographique.

Dept. of German Language and its Literature

325. Wie Das Land, So Das Sprichwort

Mona Noueshi

Studie Nzur Deutschen Sprache, (2012)

Mit der kontrastiven Untersuchung von Phraseologismen, bzw. Sprichwörtern,greift die Untersuchung eine thematik auf, die in der neueren Linguistikgroße Beachtung gefunden hat. Die Übersetzbarkeit der Sprichwörter ist einin der Translationswissenschaft viel diskutiertes Problem.
Eigentlich ist dieÜbersetzung selbst als wissenschaftliches Problem bisher nicht umfassendund befriedigend gelöst. in der Untersuchung geht es um die kontrastive Phraseologie und dabei im Besonderen um das Problem und die Schwierigkeiten der Übersetzbarkeit von arabischen Sprichwörtern ins Deutsche. Ziel ist es, Gemeinsamkeiten und Unterschiede von Sprichwörtern in den konfrontierten Sprachen – anhand von Beispielen aus ägyptisch-arabischen Texten der Prosaliteratur der Gegenwart und deren Übersetzungen ins Deutsche – sichtbar zu machen. Die arabischen Werke stammen von verschiedenen zeitgenössischen Autoren.
Es wird versucht, die Frage zu beantworten, bis zu welchem Grad die verschiedenartigen Sprichwörter der arabischen Originale in ihrem kommunikativen Wert in der deutschen Zielsprache äquivalent wiedergegeben werden können und dabei ihre Funktionen in der Zielsprache wahren können. Im Vordergrund steht auch die Frage, inwiefern Kultur, Sitten und Gebräuche einenEinfluss auf die Sprichwörter ausüben und inwieweit das Eigene und dasFremde miteinander übereinstimmen. Somit werden die wesentlichen sprachlichen Charakteristika der Sprichwörter betont.Sprichwörter sind Erscheinungsformen der Phraseologismen, die in der Untersuchung– in Anlehnung an Černyševas Klassifikation (vgl. Černyševa1979, S. 73ff.; 1981, S. 424ff.) – zu jener Gruppe der phraseologischen Ausdrückegehören, die als phraseologische Fügungen in form eines Satzes verstandenwerden.

326. Sprache Und Massenkommunikation Zur Sprachlichen Widerspiegelung Des Medialen Ereignisses «Krieg» in Deutschen Printmedien

Mona Noueshi

Higher Humanities Education inthe 21St Century Camapa, (2012)

This paper aims at giving us a view about the language of the German printingpress concerning the subject of «the war». The study begins with a theoreticalpart, which focuses on the definition of the main terms in this research. This isfollowed by a linguistic analysis of a number of reports on the above mentionedsubject selected from the German magazine «Der Spiegel». The topic of thisresearch is reaching an answer to the main question: Which language elementsare used in the printing reports pressing the description of the war.

327. Überlegungen zur Komparatistik als Ansatz einer interkulturellen Auslandsgermanistik

Hebatallah Fathy

Cross-Cultural Communication, 22: (2012)

From the perspective of germanistic studies abroad, specifically in the egyptian context, the following article is focusing on the contribution of comparative analysis of german and Arabic literature in teaching concepts to the cultural dialogue and the development of intercultural competence. The comparative thematics as part of the comparative literature studies offers the possibility for such a concept. Aspects of foreignness in dealing with literary texts of other cultures and related didactical approaches have to be put into consideration. The article seizes difficulties from the perspective of the students und offers an example for this approach with comparative research done by the author in previous publications

Dept. of Greek and Latin Studies and its Literature

328. Byzantine Influences On Coptic Hymnography: The Bilingual Hymn of the Coptic Midnight Office by the Coptic Hymnographer Sarkis

Sameh Farouk Soliman

Ephemerides liturgicae, 126: 236-253, (2012)

On his return from a period spent in Jerusalem, the Coptic hymnographer Sarkis († 1292 AD) composed a chant for the Coptic liturgy. The text follows a very ancient tradition in that it deliberately mixes the Coptic and Greek languages. The A. reproduces the text along with translations into English and Arabic, and having examined possible literary models, offers also a philological analysis.

329. L'influence D'aratus Sur Quelques Poetes Alexandrins Et Romains

Ophelia Fayez Riad

Polumathèshors-Série N°5Mélanges offerts À Jean-Pierre Levet, (2012)

Aratus of Soleus in Cilicia in Asia Minor, (c. 315-240/ 239 B.C.) wrote the famous work " Phenomena" which influenced some Alexandrian poets like: theocritus(310 B.C.), the bucolic poet of Syracuse in his Idylls, Callimachus of Cyrene (c.310 B.C.) in his hymns and Apollonios of Rhodes (c. 295 B.C.) specially in his epic poem the " Argonautica". the influence of the "Phenomena" has also been reflected on some of the Roman Poets like: Lutatius Catulle (Consul 102 A.D.) in his poem "Lock of Berenice", Ovide (43 A.D.) in his poem "Fasti" Virgile (70 A.D.) in his "Eclogues" and Ciceron (106 B.C.) in his two poems "De Divinatione" and "De Signis" and finally on Achilles Tatius (3rd B.C.) in his work "About the Spheres". In a nutshell, Aratus, in his Phenomena, was the Alexandrian and Roman Hypotext and Hypertext.

330. Weltbürgerschaft und kosmopolitismus im jahrhundert der aufklärung

Mohamed Osman Elkhosht

Kultur, Identität, Menschenrechte: Transkulturelle Perspektiven, (2012)

This paper attempted to discuss the emergence of cosmopolitanism in the era of modernity, factors of the rise of cosmopolitism and its manifestations in the Enlightenment. It presented the objections and challenges that faced and are still facing cosmopolitanism to date. The paper also touched upon the extent to which this trend lead to the concept of world citizenship and whether cosmopolitanism in its current forms would replace state citizenship with a truly cosmopolitan vision of citizenship This is done in framework of a comparative analytical approach which aimed at reaching a major critical view of the issue. The paper was able to reach the conclusion that there are serious challenges for the establishment of world citizenship and state from a philosophical view owing to the fact that first, cosmopolitanism is meaningless without the context of the actual world state; world citizenship is inconsistent in this case with the origin of citizenship, which is the national state Second, there are doubts raised about the willingness of all humanity -individuals and states- to the existence of a single world state Third, the possibility of achieving world citizenship through a world political model of one state or government faces difficulties, if not an impossibility, given the conflicting interests, religions and ideologies and different minds and thinking. Finally, as serious tensions and polarizations between believers and non-believers abound in all continents of the world more and more obstacles are facing cosmopolitism.

Dept. of History

331. The Role of Endowments in the Scientific Prosperity of Maqdis in Ayyubid Age

Amal H. Zayan

International Research Journal of Social Sciences, 1 (1): 1-7 (2012)

The endowments of the students of science are one of the aspects of piety. According to the jurists, it is an equivalent to jihad for the sake of God. the endowments or El-Ahbas were considered one of the most important aspects of charity. Also, theywere considered by many jurists as a continuous charity to obtain its owner reward. the profits of endowments became theprimary resource for expenditure on the scientific institutions, from the Sheikh of school to the servants. So, sons of Ayyubwere interested in endowments.the expenditure on the scientific institutions was achieved by endowment authority accordingto the conditions stipulated by the endower in his document. in an accurate reading of the texts of these documents, we findthat the endower determines the way of spending and how much is spent on all employees in this scientific institution as wellas precise determining for the endowed places. As a result of the availability of funds from the proceeds of these endowments,these schools played its scientific role, where they accepted many delegations of scientists, scholars and students from thedifferent countries of the Islamic world. in this way, the scientific prosperity has increased in Jerusalem in the Ayyubid age,because of these endowments, which have been endowed to various scientific centers. Thus, the endowments were the mainsource of spending on these scientific centers in Maqdis, and what necessary to meet their different needs. the returns of thesefunds were spent on the employees in the school, where the salaries were paid to the employers in the schools. Some fundswere allocated to spend on the restoration of these schools and reform what was destroyed. Besides, some returns were spenton providing the libraries in those school with the necessary books, papers, and ink pens. Also, buying the necessary rugs, carpets, mats, lamps, oil, etc to these schools.

Keywords: Ayyuid age; Endowmets; Saladin; Sientific prosperity; Sultan Nur El-Din mahmoud.

Dept. of Japanese Language and its Literature

332. Listening Problems of Japanese Arabic Learners –Mainly the Issue of R and L

Hanan Rafik Mohamed

International Center for Japanese Studies, 2: 103-112 (2012)

In this paper, I discuss the listening problems of Japanese Arabic learners focusing on the issue of /r/ and /l/. First, I introduce a contrastive phonetic analysis of Arabic and Japanese. Following this, I analyze learners' errors through listening investigations. These investigations show that the problems arise from the interference of the learners' mother tongue, i.e., Japanese.
The summary of learners' errors is as follow:1) the most difficult problem for Japanese Arabic learners is distinguishing between r and l. 2) The percentage of correct answers for word-initial /l/ and word-final /r/ are slightly higher compared with other positions. Based on these results, I conclude that these two positions are easier to learn than other positions.

Therefore, I recommend starting practicing from these two positions.3). The range of correct answer for /r/ and /l/ is between 100% and 25%. This implies that there is a huge difference among the learners. in order to clarify the cause of this difference, it is important to understand at what age the learner started to learn a Foreign language, the experience of learninga foreign language, and other elements.
4) Voiceless glottal fricative h is obviously difficult for learners. This could be because the possibility of the influence of Japanese hi and hu is high. 5) Distinguishing between pharyngealised and non- pharyngealised sounds is difficult.
6) The incorrect answers of velar fricative is about half of the incorrect answers of pharyngeal fricative and A Based on this, I conclude that the acquisition of velar fricative sounds is easier than pharyngeal fricative sounds to the learners.
7) Distinguishing between glottal stop and vowels is difficult.
8) Distinguishing between velar stop /k/ and uvular stop /q/ is difficult.Finally, I suggest not only segments level investigations, but also syllable level investigations in order to make the actual situation of Japanese Arabic learners even clearer for future studies.

Keywords: Listening problems of Japanese arabiclearners – Mainly the Issue of R and L.

333. دراسة مقارنة حول الأدبين الياباني والعربي الحديث: من منظور أوجه الالتقاء بين<أحلام> ناتسومى سوسيكي ونجيب محفوظ

وائل محمد عرابي

Kyoto Bulletin of Islamic Area Studies, (2012)

This study is the nucleus of a research project seeks to shed light on aspects of convergence between the Japanese and Arab modern literature from two essential motivations. the first is the scarcity of such studies strongly; putting on the shoulders of specialists in Japanese and Arab literary studies both a great responsibility to fill this vacuum research.the Second motive is to face claims that there are “distinct sharp difference between Japanese and Arab literature” and they differ almost one hundred and eighty degrees, and that they are far apart from each other as much as far apart geographically.
Through my Studies at Osaka university to get Ph.D. in Japanese literature, and teaching history of the Japanese literature in general, and the Japanese story and novels in particular at Cairo university, and Through my exposure Study and analysis of several literary works of writers such as Natsume Sōseki, Moriōgai, Akutagawa Ryúnosuke, Dazai Osamu, and Kaji Motojiro…..etc concluded that this study could be based on the assumption that "despite the difference between the Japanese and Arab communities intellectually, culturally, and historical", but there are similarities and points of convergence like a thin threads that link between the two peoples both , and their literary products in particular.
The study mainly to shed light on strong similarities between each of the story of (Ten Nights of Dreams) by the great novelist Natsume Sōseki (1867-1916) published in the "Asahi" newspaper in the period from 25 July to 5 of August in 1908, and the story of (I Saw as the Sleeper Sees) for the writer Naguib Mahfouz (1911 - 2006) " Nobel Prize winner in 1988" Which issued in the year 1982. However, we also may be exposure in this study to a dream or two of the story of (the Dreams of the Recuperation Periods) for the same writer.

Keywords: The Japanese and Arab modern literature; Natsume Soseki; Naguib Mahfouz; Dreams.

Dept. of Philosophy

334. The Contribution of Averroes to the Spread of Greek Philosophy

Hoda El Khouly

Book Published by Arrenakh, (2012)

The purpose of this paper is to present the major points of the philosophy of Averroes and to highlight his contribution to the spread of Greek philosophy, from the Arab-ruled European territories to the rest of Europe.
Through their raids during the 8th, 9th and 10th centuries, the Arabs emerged as a large military force in the Mediterranean and developed a culture based on the teachings and values of Islam. Greek culture gradually passed into the hands of Arab scientists, who played their leading role in building a global scientific renaissance by translating the Greek ancient texts into the Arabic language, which was the language of science and culture, thereby making their mark on the European Renaissance.
During the period from the early 9th century AD until the late 12th century occurred a rapid growth and spread of philosophy amongst other things.
This period, which began with Al-Kindi and his efforts to introduce Greek and Hellenistic philosophy to the Arab world and ended with Averroes, is also Known as the Islamic Golden Age.

Dept. of Psychology

335. Reliability and Factor Structure of A Trait Emotionalintelligence Measure in Four Arab Countries

Ahmed A. Mohamed, Sayed El Khouly and Mohamad Saad

Education, Business and Society: Contemporary Middle Eastern (2012)

The purpose of this paper is to examine the reliability and factor structure of the Arabictranslation of the Emotional intelligence Scale (EIS-41-A), a popular trait-based emotional intelligencetest in Arab countries.Design/methodology/approach A sample of 453 professionals from Egypt, Kuwait,Saudi Arabia and the UAE completed the EIS-41-A.Findings ، Findings show that the Arabic scale did have acceptable reliability and demonstrated thesame factor structure as the original English language scale.Research limitations/implications ، Limitations of the study include the small sample size fromsome of the countries included. Originality/value.
This is the first paper to investigate the characteristics of an Arabic languageemotional intelligence scale and opens the door to further research on emotional intelligence in theArab world.

Keywords: Egypt; Kuwait; Saudi Arabia; United arab emirates; Psychology; Behaviour; Intelligence; Factor structure; Emotional intelligence scale.

Faculty of Dar El-Ulum

Dept. of Semitic and Oriental Studies and Linguistics

336. Die Imperativsätze in Koran Und Thora: Eine Vergleichende Syntaktische Und Statistische Studie

Tarek Soliman

Book Published by Verlag Shaker, (2012)

Mein besonderer Dank gilt Prof. Dr. Werner Arnold, der die Abfassung der Arbeit begleitetund das Erstgutachten erstellt hat sowie für die vielen Gespräche G. Khoury, Prof. Dr. Klaus Beyer und dem ägyptischen Volk und der Regierung, undntscheidenden Denkanstösse, für die weiteren Gutachten Prof. Dr.inspirierenden die es mir mit einem fünfjährigen Stipendium ermöglichten, in Deutschland zu promovieren. Bedanken möchte ich michauch bei Herrn Klaus Barwig dafür, dass er mich in der Endphase auf stilistische Fehler aufmerksam gemacht hat. Zu danken habe ich aber auch für die‚offenen Ohren"meiner deutschen‚Ersatz-Eltern"Dita und Helmut Trampota, die für mich die beschwerliche Arbeit des Korrekturlesens übernahmen. Dies gilt auch für Familie Steidel, besonders für Frau Heidi, die mir engelsgleich eine herzliche atmosphäre schuf, in der das Schreiben leichter von der Hand ging und für Dr. athir Alshanawi, der mir half, die arabischen Belege zu schreiben, ebenso Frau Arzu und Herr Alaa Sabry, Frau Stefanie Steidel sowie Frau Dr. Gwendolyn Doschko für ihre Hilfe.

The Institute of Educational Studies and Research

Dept. of Curriculum and Instruction

337. English Language Preparation of Tourism and Hospitality Undergraduates in Egypt: Does It Meet their Future Workplace Requirements? Workplace Requirements?

Sayed Younis AbdelGhany and Muhammad M. AbdelLatif

Journal of Hospitality, Leisure, Sport & Tourism Education, (2012) IF: 0.346

For Egyptian tourism and hospitality university students, mastering English is a prerequisite for getting a job related to their major after graduation. the study reported in this paper examined the English language preparation of tourism and hospitality undergraduates in Egypt and its adequacy as perceived by teachers and students. the interview data showed that the students' views on their English language preparation and on their perceived English language needs differed from those of their teachers. Highlighting some shortcomings of the English language instruction provided to these students, the study suggests reshaping it in a way that could optimally help them be well-prepared for meeting their future workplace requirements.

Keywords: English fortourism; Tourism education; Needs analysis; ESP.

338. Teaching A Standard-Based Communicative English Textbook Series to Secondary School Students in Egypt: Investigating Teachers' Practices and Beliefs

Muhammad M. Mahmoud Abdel Latif

English Teaching- Practice and Critique, 11 (3): 78-97 (2012) IF: 0.216

Since any standards-based reform is made to bring about an improvement in students' learning, it requires changes in teachers' practices as well. This study examined how a standards-based communicative curricular reform in general secondary school English in Egypt has changed teachers' classroom practices, and the factors influencing such practices. the study depended on data triangulation through administering a questionnaire to 263 teachers, and using classroom observations and semi-structured interviews with 33 teachers. the results indicate that the standards-based curricular reform has not brought about the desired changes in teachers' practices. Teachers were found to allocate much more instructional time and effort to grammar and vocabulary than to the other language skill components. This means that the standards-based communicative textbook series is taught non-communicatively. the interviews and questionnaire showed that five factors influenced teachers' practices: washback, culture of teaching, inadequate time, students' low English level, and lack of equipmentand materials. of all these factors, washback was the most influential. the study suggests that for this standards-based communicative curricular reform to serve as a catalyst for changes in instruction, there has to be another parallel reform in the students' examination system. Additionally, other teacher-related and contextual problems should be addressed.

Keywords: Instructional practices; Standards-based curriculum; Curriculum reform; Washback; Teachers; Beliefs.

339. English Reading Materials Used at Gaza Prep Schools as Perceived by Students and Teachers: A Qualitative Study

Enas Abdullah Hammad and Muhammad M. Abdel Latif

Contextualising Efl for Young Learners: international Perspectives on Policy, Practice and Procedure, (2012)

Research on teaching English reading to Palestinian young learners is generally scarce. Thestudy reported in this chapter explored the views of students and teachers on the English reading materials used at Gaza public and private prepcratory schools. the data of the study was collected using semi-structured interviews with a sample of Students (n=18) and teachers (n=16) from both types of schools. the study found that the private school teachers and students had positive attitudes towards their English reading materials . on the contrary neither public school Students nor their teachers were satisfied with their English reading materials This dissatisfaction can be mainly attributed to text readability difficulties, irrelevance of reading topics to students knowledge needs , and inappropriate reading comprehension question and activities . The chapter ends with discussing the results of the study, and presenting its implications and recommendations.

Dept. of Educational Technology

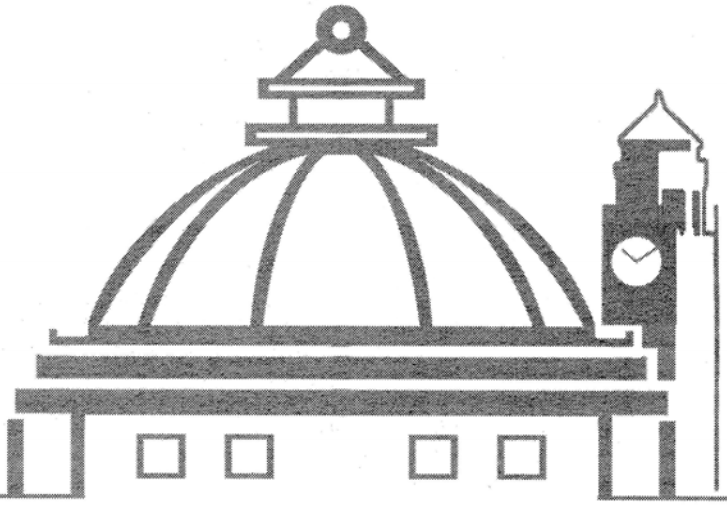
340. Blended Training Program Providing the Effective Communication Skills for Faculty Members in Some Arab Universities

Amal Abdel-Fattah Ahmed Swidan

Российский Университет Дружбы Народов –Факультет Гуманитарных И Социальных Наук Кафедра Иностранных Языков-Языки И Культуры:Перспективы Развития В 21 Веке- -Материалы Межвузовской Конференции- Москва, (2012)

The problem of the current study can be expressed in an attempt to answer the following main question: What is the blended training program providing the effective communication skills for faculty members in some Arab universities. This main question is branched into the following questions:

1. What are the effective communication skills necessary to develop the performance of faculty members in some Arab universities?
2. What are the specifications of the followed system in merger e .training and traditional training face-to-face.
3. What is the effect of the blended system between e-training and traditional training face-to-face at the level of the cognitive aspect of effective communication skills.
4. What is the effect of blended system between e-training and traditional training face-to-face at the level of skillful performance for effective communication skills.



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