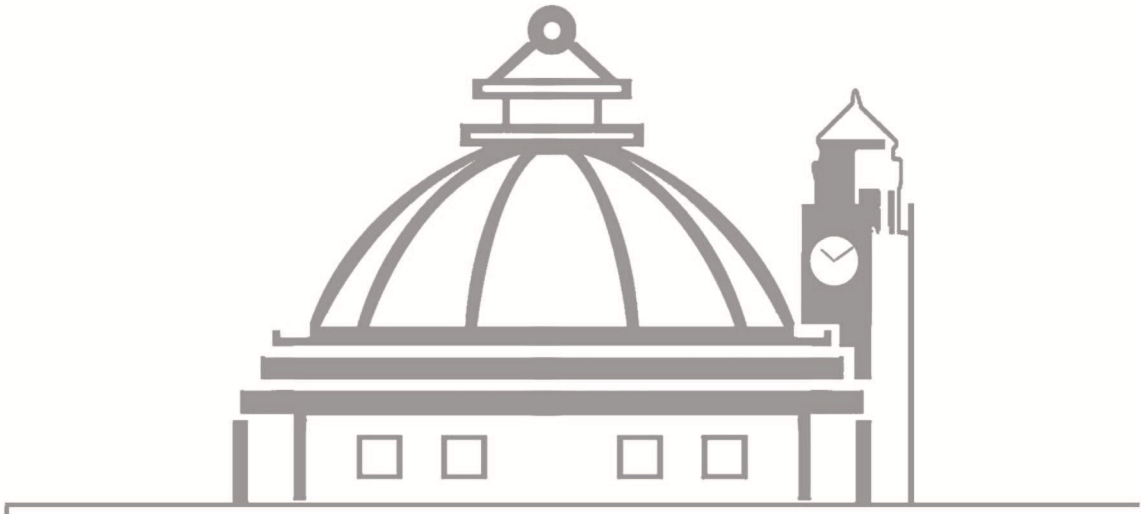

International Publications Awards
Cairo University

Vol. 6 Issue 1 (C)

May 2012

Dear colleagues,

We are pleased to introduce vol. 6 Issue 1, (C) 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 2011 and wish them all the best for their future endeavors.

Lastly, the top 50 eminent authors of Cairo University were tabulated in front of this issue. Their ranking was extracted from both Scopus and Thomson data-bases according to their number of published articles, number of citations and h-index.

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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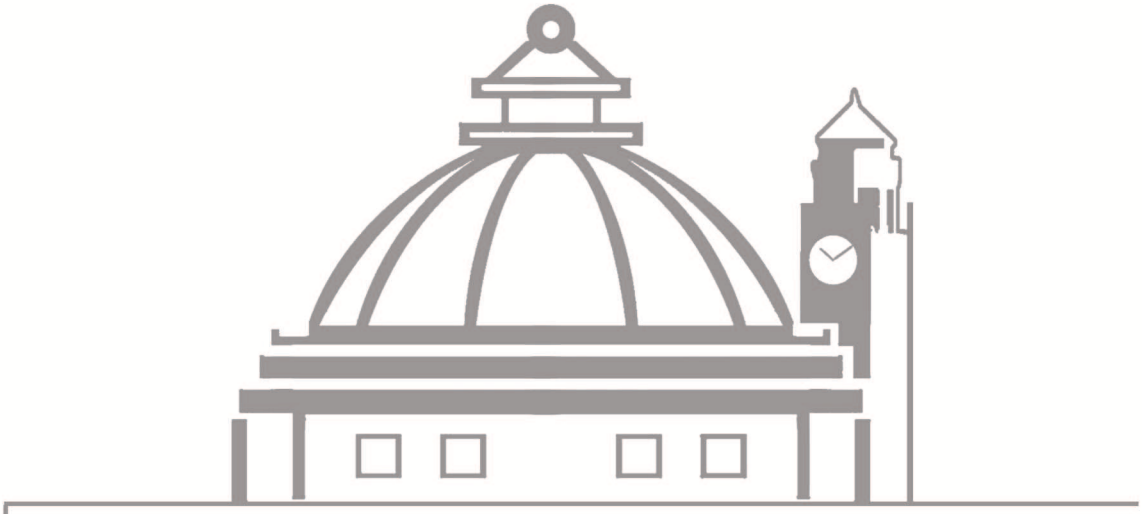


Researches Published In Nature and Science Journals

Cairo University Researches Published In Nature and Science Journals

Faculty of Medicine

Department of Pediatric

201. *TTC21B* Contributes Both Causal and Modifying Alleles Across the Ciliopathy Spectrum

Erica E. Davis, Qi Zhang, Qin Liu, Bill H. Diplas, Lisa M. Davey, Jane Hartley, Corinne Stoetzel, Katarzyna Szymanska, Gokul Ramaswami, Clare V. Logan, Donna M. Muzny, Alice C. Young, David A. Wheeler, Pedro Cruz, Margaret Morgan, Lora R. Lewis, Praveen Cherukuri, Baishali Maskeri, Nancy F. Hansen, James C. Mullikin, Robert W. Blakesley, Gerard G. Bouffard, NISC Comparative Sequencing Program, Gabor Gyapay, Susanne Reiger, Burkhard Tönshoff, Ilse Kern, Neveen A. Soliman, Thomas J. Neuhaus, Kathryn J. Swoboda, Hulya Kayserili,Tomas E. Gallagher, Richard A. Lewis, Carsten Bergmann, Edgar A. Otto, Sophie Saunier, Peter J. Scambler, Philip L. Beales, Joseph G. Gleeson, Eamonn R. Maher, Tania Attié-Bitach, Hélène Dollfus, Colin A. Johnson, Eric D. Green, Richard A. Gibbs, Friedhelm Hildebrandt, Eric A. Pierce and Nicholas Katsanis

Nature Genetics, 43 (3): 189–196 (2011) IF: 36.377 1

Ciliary dysfunction leads to a broad range of overlapping phenotypes, collectively termed ciliopathies. This grouping is underscored by genetic overlap, where causal genes can also contribute modifier alleles to clinically distinct disorders. Here we show that mutations in *TTC21B*, which encodes the retrograde intraflagellar transport protein IFT139, cause both isolated nephronophthisis and syndromic Jeune asphyxiating thoracic dystrophy. Moreover, although resequencing of *TTC21B* in a large, clinically diverse ciliopathy cohort and matched controls showed a similar frequency of rare changes, in vivo and in vitro evaluations showed a significant enrichment of pathogenic alleles in cases ($P < 0.003$), suggesting that *TTC21B* contributes pathogenic alleles to ~5% of ciliopathy cases. Our data illustrate how genetic lesions can be both causally associated with diverse ciliopathies and interact in trans with other disease-causing genes and highlight how saturated resequencing followed by functional analysis of all variants informs the genetic architecture of inherited disorders.

Keywords: Nephronophthisis; Ciliopathy; *TTC21B/IFT139*; Allelism; Disease-causing mutation.

Faculty of Science

Department of Chemistry

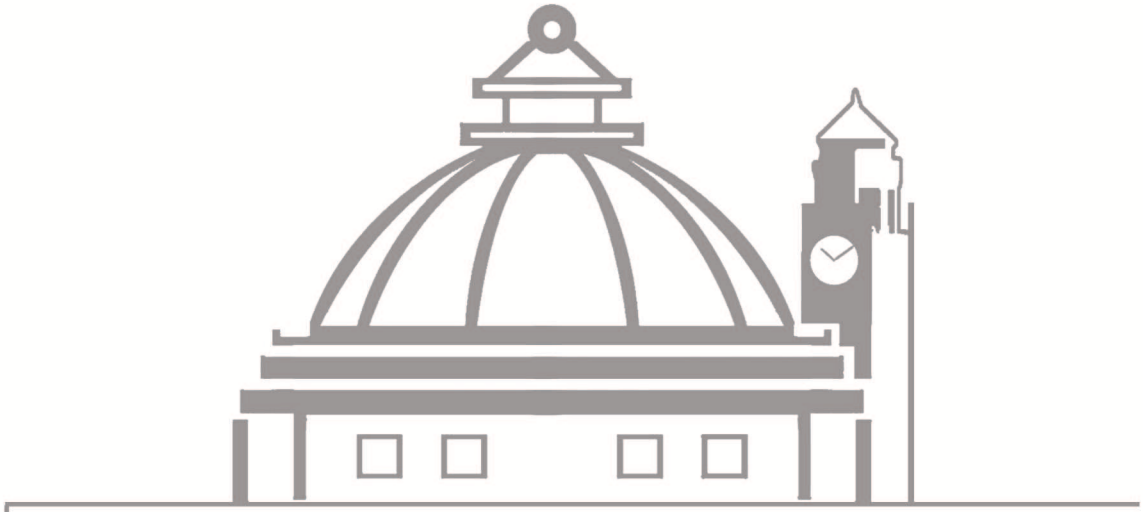
Laser Scribing of High-Performance and Flexible Graphene-Based Electrochemical Capacitors

Maher F. El-Kady , Veronica Strong , Sergey Dubin , Richard B. Kaner

Science (16) , 335 ,6074 1326-1330 (2012) IF:31.377

Although electrochemical capacitors (ECs), also known as supercapacitors or ultracapacitors, charge and discharge faster than batteries, they are still limited by low energy densities and slow rate capabilities. We used a standard LightScribe DVD optical drive to do the direct laser reduction of graphite oxide films to graphene.

The produced films are mechanically robust, show high electrical conductivity (1738 siemens per meter) and specific surface area (1520 square meters per gram), and can thus be used directly as EC electrodes without the need for binders or current collectors, as is the case for conventional ECs. Devices made with these electrodes exhibit ultrahigh energy density values in different electrolytes while maintaining the high power density and excellent cycle stability of ECs. Moreover, these ECs maintain excellent electrochemical attributes under high mechanical stress and thus hold promise for high-power, flexible electronics.



(1)
Engineering Sciences Sector

1-1 Faculty of Engineering

1-2 National Institute of Laser Enhanced Sciences

1-3 Institute of Statistical Studies and Research

1-1. Faculty of Engineering

1-1-01. *Dept. of Aerospace Engineering*

1. Wing Box Transonic-Flutter Suppression using Piezoelectric Self-Sensing Diagonal-Link Actuators

R. A. H. Otiefy and H. M. Negm

International Journal of Solids and Structures, 48: (2011) IF :1.677

The main objective of this research is to study the capability of Piezoelectric (PE) self-sensing actuators to suppress the transonic wing-box flutter, which is a flow-structure interaction phenomenon. The unsteady general frequency modified Transonic Small Disturbance (TSD) equation is used to model the transonic flow about the wing. The wing-box structure and the piezoelectric actuators are modeled using the equivalent plate method, which is based on the first-order shear deformation plate theory (FSDPT). The piezoelectric actuators are used as diagonal-links. The optimal electromechanical-coupling conditions between the piezoelectric actuators and the wing are collected from previous work. Three main different control strategies; Linear Quadratic Gaussian (LQG) which combines the Linear Quadratic Regulator (LQR) with the Kalman Filter Estimator (KFE), Optimal Static Output Feedback (SOF), and Classic Feedback Controller (CFC); are studied and compared. The optimum actuators and sensors locations are determined using the Norm of Feedback Control Gains (NFCG) and Norm of Kalman Filter Estimator Gains (NKFEG), respectively. A genetic algorithm (GA) optimization technique is used to calculate the controller and estimator parameters to achieve a target response.

Keywords: Aeroelasticity; Smart structure;Wingbox flutter.

2. Thermal Buckling and Nonlinear Flutter Behavior of Shape Memory Alloy Hybrid Composite Plates

Hesham Hamed Ibrahim, Mohammad Tawfik and Hani Mohammed Negm

Journal of Vibration and Control, 17: (2011) IF :0.863

A new nonlinear finite element model is provided for the nonlinear flutter response of shape memory alloy (SMA) hybrid composite plates under the combined effect of thermal and aerodynamic loads. The nonlinear governing equations for moderately thick rectangular plates are obtained using first-order shear-deformable plate theory, von Karman straindisplacement relations and the principle of virtual work. To account for the temperature dependence of material properties the thermal strain is stated as an integral quantity of thermal expansion coefficient with respect to temperature. The aerodynamic pressure is modeled using the quasi-steady first-order piston theory. Newton-Raphson iteration method is employed to obtain the thermal post-buckling deflection, while the linearized updated mode method is implemented in predicting the limit-cycle oscillation at elevated temperatures. Numerical results are presented to show the thermal buckling and flutter characteristics of SMA hybrid composite plates, illustrating the effect of the SMA volume fraction and pre-strain value on the aero-thermo-mechanical response of such plates.

Keywords: Nonlinear FEM; Panel flutter; Shape memory alloys; Shear deformable plates; Thermal buckling.

1-1-02. *Dept. of Architectural Engineering*

3. Incremental Housing Development 2010; Lowering the Cost, Lowering-not the Standards – A Conceptual Framework

Nasamat Abdel-Kader and Sayed Ettouney

International Journal for Housing Science and Its Applications, 35 (4): 219 -231 (2011)

The serious-most challenges of low-cost housing, were and still are: lowering the development cost without compromising provision standards and the quality of living in housing projects. They continue to top the list of research interests of scholars and institutions (academic and civic), both in the developed and developing countries and settings. Two general conceptions/approaches are still prominent in addressing the said challenges in low cost developments, namely:

Provision of "affordable" completed low cost dwellings and settings with lower (as low as it can get) standards hence cheaper elements, components, details and finishes. Provision of "incrementally" developed housing projects, i.e. phasing the development cost over an extended period (spanning the life and operation of the dwelling), thus meeting the "initial" cost limitations at the initial phase without denying the users their rights to expand and upgrade the standards of their dwellings in later phases (according to needs and affordability . The present paper critically reviews the two approaches to low cost housing, together with underlying conceptions; highlighting valid and current regional and international research contributions.

A design and decision making tool/frame-work is then put-forward to enable the involved actors (designers, developers and authorities included) to recognize and compare the merits and drawbacks of possible "scenarios" of action, in low cost housing developments.The discourse comprises five closely related segments, in the following sequence: On the challenge of low cost housing; an introduction, -Valid thoughts, conceptions and approaches (oldies and current) ; a critical review, - A design and decision making tool in low cost housing development, - Application and evaluation of the proposed tool, - Developing the tool; In praise of incremental low cost housing development - Epilogue.

Keywords: Development stages; Development phases; Cost phasing; Professionals' roles; Users' roles.

4. New Strategy of Upgrading Slum Areas in Developing Countries using Vernacular Trends to Achieve A Sustainable Housing Development

Tamer Abdel Aziz, and Injy M.Shawket

Energy Procedia Journal, (6): 228–235 (2011)

Vernacular architecture is surely a contradiction in terms. The vernacular is the unconscious work of craftsmen based on knowledge accumulated over generations – the very opposite of architecture, which involves a premeditated design process with a conscious appeal to the intellect. Yet, the term is convenient

shorthand to describe an approach that adopts the spirit of the vernacular; if not its actual forms it is not intended to indicate a new style . In fact, many of the architects featured here reject the concept of style. Instead, describe their intention to reflect by analogous inspiration the characteristics of local buildings, their scale in particular, whether they have chosen to concentrate on the use of materials, the landscape, the local culture or even no more than the idea of continuity with the past.According to what is seen nowadays in Egypt from increasing in the random self-built areas (slums areas), which is one of the main issues facing the development in developing countries, studies are trying to find out a way to help instead of depending on our governments all the time.And this paper will try to investigate the minimum parameters that are required to create vernacular urban spaces through proposing a new strategy for the slums upgrading projects by finding the similarities between vernacular urbanism and slums. By this way we could help the governments (especially in the third world countries) to find out a way to solve their housing problems through the rapid increase in population growth, without facing the troubles of the informal areas and slums phenomena and to achieve sustainable housing development depending on the concept of self-built' environments.

Keywords: Vernacular architecture; slums upgrading; sustainable development; housing problem; third world countries.

5. Toward Sustainable Economic Development: From "Metropolis" to "Oligopolies" through Integrated New Economic Activities

Tamer Abdel Aziz

OIDA International Journal of Sustainable Development, 2 (9): 41-52 (2011)

While many definitions of the term "sustainability " have been introduced over the years, the most commonly cited definition states that sustainable development is development that "meets the needs of the present without compromising the ability of future generations to meet their own needs". And one of the field of Sustainable Development (SD) is the economic sustainability,which is a collection of methods to create and sustain development which seeks to relieve poverty, create equitable standards of living, satisfy the basic needs of all peoples and produce Sustainable Economic growth. Nowadays developing countries is facing a great problem in their economic development and finding a new job opportunities. And this paper will focus on how developing countries can achieve sustainable economic development on regional level through new urbanization; and to be transformed from Metropolitan cities to Oligopolies cities. First part will represent a literature view on the "New Urbanisation" principles then the "Oligopolies" theory which is one of the most important theories that shows the different development paths of the cities of the world from local centers to Oligopolies cities. Then the paper will give an Internatinal examples for the "New Economic Activities" which are not depending on just natural resources and to make diversities in the Economic bases. And finally it will study the way of how these "New Economies" can be integrated together on Regional and International levels to help in competing on the global levels to be Oligopolies, and to increase their GDP and minimize the unemployment rate to achieve Economic Sustainable development as this will be one of the gates for sustainable cities.

Keywords: New Economies Activities; New Urbanization; Oligopolies; Sustainable Economic development; World Power Poles.

1-1-03. *Dept. of Biomedical Engineering*

6. Construction of Gene Regulatory Networks using Biclustering and Bayesian networks

Fadhl M Alakwaa, Nahed H Solouma and Yasser M Kadah

Theoretical Biology and Medical Modelling, 8 (39): 1-20 (2011) IF: 1.604

Background: Understanding gene interactions in complex living systems can be seen as the ultimate goal of the systems biology revolution. Hence, to elucidate disease ontology fully and to reduce the cost of drug development, gene regulatory networks (GRNs) have to be constructed. During the last decade, many GRN inference algorithms based on genome-wide data have been developed to unravel e complexity of gene regulation. Time series transcriptomic data measured by genome-wide DNA microarrays are traditionally used for GRN modelling. One of the major problems with microarrays is that a dataset consists of relatively few time points with respect to the large number of genes. Dimensionality is one of the interesting problems in GRN modeling.

Results: In this paper, we develop a biclustering function enrichment analysis toolbox (BicAT-plus) to study the effect of biclustering in reducing data dimensions. The network generated from our system was validated via available interaction databases and was compared with previous methods. The results revealed the performance of our proposed method.

Conclusions: Because of the sparse nature of GRNs, the results of biclustering techniques differ significantly from those of previous methods.

Keywords: Bioinformatics; Gene regulatory networks; Biclustering; Baysian networks.

7. Improving the Prediction of Yeast Protein Function using Weighted Protein-Protein Interactions

Khaled S Ahmed, Nahed H Solouma and Yasser M Kadah

Theoretical Biology and Medical Modelling, 8 (11): 1-17 (2011) IF: 1.604

Bioinformatics can be used to predict protein function, leading to an understanding of cellular activities, and equally-weighted protein-protein interactions (PPI) are normally used to predict such protein functions. The present study provides a weighting strategy for PPI to improve the prediction of protein functions. The weights are dependent on the local and global network topologies and the number of experimental verification methods. The proposed methods were applied to the yeast proteome and integrated with the neighbour counting method to predict the functions of unknown proteins. Results: A new technique to weight interactions in the yeast proteome is presented. The weights are related to the network topology (local and global) and the number of identified methods, and

the results revealed improvement in the sensitivity and specificity of prediction in terms of cellular role and cellular locations. This method)new weights) was compared with a method that utilises interactions with the same weight and it was shown to be superior. Conclusions: A new method for weighting the interactions in protein-protein interaction networks is presented. Experimental results concerning yeast proteins demonstrated that weighting interactions integrated with the neighbor counting method improved the sensitivity and specificity of prediction in terms of two functional categories: cellular role and cell locations.
Keywords: Bioinformatics; protein function prediction; protein-protein interaction.

8. Finite Element Models for Computer Simulation of Intrastromal Photorefractive Keratectomy

Ahmed A. Hameed Sayed, Nahed H. Solouma, Amal A. El-Berry and Yasser M. Kadah

Mechanics in Medicine and Biology, 11: 1255–1270 (2011) IF: 0.493

The main idea to correct sight disorders using lasers is to modify corneal curvature by applying laser to specific layers of the cornea. Intrastromal photorefractive keratectomy (ISPRK) is a laser technique used to correct sight disorders by evaporating corneal tissue from the stroma. Evaporating such tissue produces small cavities that may coincide to form a larger cavity. The composed big cavity is assumed to collapse to deform the overall curvature of the cornea. In this work, we provide finite element models to simulate the ISRPK procedure using a three-dimensional (3D) model of the cornea with typical parameters. The model outcome was compared with an earlier 2D model used for the same purpose, so as to determine its accuracy. In addition, a 3D finite element simulation of the procedure was made for a virtual astigmatic case to visualize the corneal curvature change. The results of this work show that this finite element models provide an accurate simulation of the corneal deformation expected after performing the procedure.
Keywords: ISPRK; photorefractive laser surgery; biomechanics; Finite element modeling.

9. Magnetized Water and Saline as A Contrast Agent to Enhance MRI Images

Samir M. Badawi, Wael Abou EL-wafa. Ahmed and Yasser M. Kadah

Life Science Journal, 8: 497–501 (2011) IF: 0.158

MRI image enhancements have been carried out using different contrast agents. In this research we started with testing the effect of accurately pre-specified magnetized water on MRI received signal, and then considered the magnetized-saline (MS) as a new MRI brain contrast agent (CA).A 40 years old 80kg male injected with 250ml MS. Couple groups of MRI images were performed over the same circumstantial conditions and MRI protocol; before and after the injection. The focused study on MRI showed a significant difference in image intensities after injecting the MS compared to normal MRI images, and water contour of the white matter in T2 WIS is more obvious than before saline injection series. Further quantitative measurements applied using MATLAB genetic algorithm. Leading to the result; magnetized saline injection affect signal intensity and enhance contrast in MRI brain images.
Keywords: Image contrast; MRI; Magnetized water; Enhancement.

10. Model-based Parameter Estimation Applied on Electrocardiogram Signal

Moustafa Bani-Hasan, Fatma El-Hefnawi and Yasser Kadah

Computational Biology and Bioinformatics Research, 3: 25-28 (2011)

An Electrocardiogram (ECG) feature extraction system was developed based on the calculation of the poles employing Pade's approximation techniques. Pade's approximation was applied on five different classes of ECG signals' arrhythmia. Each signal was represented as a rational function of two polynomials of unknown coefficients. Poles were calculated for this rational function for each ECG signals' arrhythmia and were evaluated for a large number of signal windows for each arrhythmia. The ECG signals of lead II (ML II) were taken from MIT-BIH database for five different types. These were the ventricular couplet, ventricular tachycardia, ventricular bigeminy, and ventricular fibrillation and the normal. ECG signal was divided into multiple windows, where the poles were calculated for each window, and was compared with the poles computed from the different arrhythmias. This novel method can be extended to any number of arrhythmias. Different classification techniques were tried using neural networks, K nearest neighbor, linear discriminate analysis and multi-class support vector machine.
Keywords: Arrhythmias analysis; electrocardiogram; feature extraction; statistical classifiers.

11. Monte Carlo Method and the Ising Model for Magnetized and Non-Magnetized Water as MRI Contrast Agent

Wael Abou El-wafa Ahmed, Yasser M. Kadah and Samir M. Badawi

Journal of American Science, 7: 1008–1012 (2011)

An Electrocardiogram (ECG) feature extraction system was developed based on the calculation of the poles employing Pade's approximation techniques. Pade's approximation was applied on five different classes of ECG signals' arrhythmia. Each signal was represented as a rational function of two polynomials of unknown coefficients. Poles were calculated for this rational function for each ECG signals' arrhythmia and were evaluated for a large number of signal windows for each arrhythmia. The ECG signals of lead II (ML II) were taken from MIT-BIH database for five different types. These were the ventricular couplet, ventricular tachycardia, ventricular bigeminy, and ventricular fibrillation and the normal. ECG signal was divided into multiple windows, where the poles were calculated for each window, and was compared with the poles computed from the different arrhythmias. This novel method can be extended to any number of arrhythmias. Different classification techniques were tried using neural networks, K

nearest neighbor, linear discriminate analysis and multi-class support vector machine.
Keywords: Arrhythmias analysis; electrocardiogram; feature extraction; statistical classifiers.

12. Overlapped k-Space Acquisition and Reconstruction Technique for Motion Artifact Reduction in Magnetic Resonance Imaging

Yasser M. Kadah

Journal of Medical Imaging and Health Informatics, 1: 61-65 (2011)

A new MRI acquisition strategy based on acquiring the k-space in consecutive overlapped bands was developed. Starting from the general assumption of rigid body motion, we consider the case when the acquisition of the k-space is in the form of bands of finite number of lines arranged in a rectilinear fashion to cover the k-space area of interest. We consider cases with an averaging factor of at least 2. Instead of acquiring a full k-space of each image and then average the result, we developed a new acquisition strategy based on acquiring the k-space in consecutive overlapped bands. In case of no motion, this overlap can be used as the second acquisition. On the other hand, when motion is encountered, such overlap can be used to substantially reduce motion artifacts in the resultant image. This is achieved by utilizing the overlap area to estimate the motion, which is then taken into consideration in image reconstruction. We demonstrate the success of this approach using both numerical simulations as well as real data acquired from a human volunteer. The new method has the potential for practical applications to make more efficient use of MRI scanners and making the scanning time lower providing more comfort to the patient.
Keywords: Motion Artifact; Magnetic resonance imaging; Artifact suppression; Navigator echo.

1-1-04. *Dept. of Chemical Engineering*

13. Synthesis and Film Formation of Iron–Cobalt Nanofibers Encapsulated in Graphite Shell Magnetic, Electric and Optical Properties Study

Nasser A. M. Barakat, M. F. Abadir, Ki Taek Nam, Ammar M. Hamza, Salem S. Al-Deyab, Woo-il Baeka and Hak Yong Kim

Journal of Materials Chemistry, 21: 10957-10964 (2011) IF: 5.101

Novel characteristics for the FexCoy alloys have been obtained when these compounds were synthesized in the form of nanofibers encapsulated in a graphite shell. The prepared nanofibers reveal good semiconducting features as a thin film from the prepared nanofibers supported on a graphite disk and could be utilized as a diode with good rectifying behaviour. Magnetic properties study showed that the introduced nanofibers are magnetically clean as very low remanent magnetizations were detected; moreover the saturation magnetization is a temperature-independent property. Optical properties study indicated that these nanofibers have band gap energies of 4.73 and 5.43 eV. FexCoy bimetallic alloys could be produced in the form of nanofibers encapsulated in a graphite shell by calcination of electrospun nanofiber mats composed of poly(vinyl alcohol), ferrous acetate and cobalt acetate tetrahydrate in an argon atmosphere at 750 _C. The composition of the nanofibers could be adjusted by controlling the concentration of the original electrospun solution; two formulations have been prepared: FeCo and FeCo2.7. Transmission electron microscopy indicated that the thickness of the graphite shell enveloping the obtained nanofibers is _10 nm. A graphite disk possessing on its surface a well attached thin film from the introduced nanofibers could be successfully prepared when a diskette made of poly(acrylonitrile) was used as a collector during the electrospinning process. The introduced methodology is effective, simple and can be exploited to produce different metallic alloys nanofibers.

14.Chromatographic Separation of Neodymium Isotopes by using Chemical Exchange Process

I.M. Ismail, M. Ibrahim , H.F. Aly, M. Nomura , and Y. Fujiic

Journal of Chromatography A, 1218: 2923–2928 (2011) IF :4.194

The neodymium isotope effects were investigated in Nd–malate ligand exchange system using the highly porous cation exchange resin SQS-6. The temperature of the chromatographic columns was kept constant at 50 ◦C by temperature controlled water passed through the columns jackets. The separation coefficient of neodymium isotopes, ε's, was calculated from the isotopic ratios precisely measured by means of an ICP mass spectrometer equipped with nine collectors as ion detectors. The separation coefficient, ε×105, were calculated and found to be 1.4, 4.8, 5.4, 10.6, 16.8 and 20.2 for 143Nd, 144Nd, 145Nd, 146Nd, 148Nd and 150Nd, respectively .
Keywords: Neodymium isotopes; Isotope separation; Malate ligand; Ion exchange; Resin; Chromatography.

15. A Study of the Removal Characteristics of Heavy Metals from Waste Water by Low-cost Adsorbents

O.E.Abdel-Salam, N.A.Reiad and M.M.El- Shafie

Journal of Advanced Research, 2: 297-303 IF :3.0

In this study, the adsorption behavior of some low-cost adsorbents such as peanut husk charcoal , fly ash , and natural zeolite, with respect to Cu^{2+} and Zn2+ ions, has been studied in order to consider its application to the purification of metal finishing wastewater. The batch method was employed: parameters such as pH, contact time, and initial metal concentration were studied. The influence of pH of the metal ion solutions on the uptake levels of the metal ion by the different adsorbents used were carried out between pH 4 and pH 11.The optimum pH for copper and zinc removal was 6 in the case of peanut husk charcoal and natural zeolite, and it was 8 in the case of fly ash. An equilibrium of time of 2 h was required for the adsorption of Cu(II) and Zn(II) ions into natural zeolite. Adsorption parameters were determined using both Langmuir and Freundlich isotherms, but the experimental data were better fitted to the Langmuir equation than to Freundlich

equation. The results showed that peanut husk charcoal, fly ash , and natural zeolite all hold potential to remove cationic heavy metal species from industrial wastewater in the order fly ash< peanut husk charcoal< natural zeolite.

Keywords: Adsorption; Low-cost adsorbents; Industrial wastewater.

16. Utilization of Black Liquor as Concrete Admixture and Set Retarder Aid

Samar A. El-Mekkawi, Ibrahim M. Ismail, Mohammed M. El-Attar, Alaa A. Fahmy and Samia S. Mohammed

Journal of Advanced Research, 2: 163–169 (2011) IF: 3.000

The utilization of black liquor, produced by the pulp and paper industry in Egypt, as a workability aid and set retarder admixture has been investigated. This approach may help eliminate the environmentally polluting black liquor waste. It also provides a low cost by-product, which can be widely used in the construction industry. The properties of black liquor and its performance on concrete at two different ratios of water to cement have been studied. The results revealed that lack liquor from rice straw pulp increases concrete workability, improves compaction, and reduces honeycombing.Moreover, it retards the initial and final set time and enhances uniform compaction. The effect of incorporating small portions of silica fume has been investigated. The ageing effect of this material over a period of one year, to determine its safe storage period, has been studied. Finally, this admixture was found to comply with the relevant Egyptian standards.

Keywords: Rice straw black liquor; Workability; Concrete; Set retarder; Admixture.

17. Composition Dynamics in Perforated Plate Liquid Extraction Columns

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

Chemical Engineering Research and Design, 89: 2228–2235 (2011) IF :1.519

A composition dynamics model is developed for un-agitated perforated plate liquid-liquid extraction columns. The linearization of the phase equilibrium relation enabled the analytical solution of the set of differential difference equations describing the dynamics of the compositions of each of the continuous and dispersed phases on any plate within the column. The system dynamic parameters are expressed in terms of the dead times and mixing lags associated with the flow of the two phases in the active contact area and in between the plates. Frequency response data have been generated to elucidate the effect of total number of plates, plate spacing, phase flow rates, and the slope of the linearized equilibrium curve on the obtained system dynamics. The rather involved transfer functions describing the extract and raffinate product composition dynamics have been approximated to simple transfer functions involving a dead time and a first order lag which are functions of the relevant design, operating, and physico-chemical parameters.

Keywords: Liquid-liquid extraction; Un-agitated perforated plate columns; Composition dynamics; Modeling and simulation.

18. Recovery of Pure MnSO4·H2O by Reductive Leaching of Manganese from Pyrolusite Ore by Sulfuric Acid and Hydrogen Peroxide

A.A. Nayl, I.M. Ismail and H.F. Aly

International Journal of Mineral Processing, 100: 116–123 (2011) IF:1.082

Manganese leaching and recovery from pyrolusite ore, was investigated by usingH2SO4 as a leachant and H2O2 as a reducing agent. The effects of agitation, H2O2 concentration, H2SO4 concentration, liquid/solid mass ratio, leaching time and reaction temperature on manganese recovery were studied. The optimal leaching conditions were determined as 4.0 MH2SO4 and 0.8 MH2O2 using liquid–solid mass ratio of 5.0 for 90 min at 40 °C and ore particle size of 44–37 μm. Under these conditions, the leaching efficiency was 92.0% forMn. It was found that the use of H2O2 as a reducing agent for the reductive leaching of manganese increased the leaching rate. Analysis of the experimental results indicted that the leaching process is fitted by a chemical reaction model in temperature range 20–40 °C, and at higher temperature, 45–70 °C, the diffusion reaction model prevails.

Activation energies for these models were calculated to be 49.5 kJ·mol−1 and 10.6 kJ·mol−1, respectively. Based on the experimental results, a separation method and flow sheet were developed and tested to separate high purity MnSO4.H2O (N99.4%). Comparison between the present results and that reported in the literature are given.

Keywords: Manganese sulfate; Reductive leaching; Manganese ore; Sulfuric acid; Hydrogen peroxide.

19. Sensitivity of Orifice Meter Gas Flow Computations

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

Journal of Petroleum Science and Engineering, 80: 102-106 (2011) IF :0.761

The effect of fluctuations in temperature and gas composition on the isentropic exponent and viscosity of metered natural gas are often overlooked in custody meters flow calculation software. They are usually entered manually at constant nominal values. Data pertaining to an existing installation is used to verify quantitatively the effect of this approximation on the accuracy of flow calculations.

An analysis of the sensitivity of the coefficient of discharge and expansion factor with respect to both the isentropic exponent and viscosity is presented. It is found that the sensitivity of the measured gas flow rate to fluctuations in either temperature or gas composition is smaller than either of the sensitivities of the expansion factor and coefficient of discharge to such fluctuations.

Keywords: Accuracy; Sensitivity; Custody Meters; Natural Gas.

20. Antioxidant Capacity of Hesperidin from Citrus Peel using Electron Spin Resonance and Cytotoxic Activity Against Human Carcinoma Cell Lines

Hanan A. Al-Ashaal and Shakinaz T. El-Sheltawy

Pharmaceutical Biology, 49 (3): 276-282 (2011) IF: 0.638

Context: Hesperidin is a flavonoid that has various pharmacological activities including anti-inflammatory, antimicrobial and antiviral activities.Objective: The aim of the study is the isolation of hesperidin from the peel of Citrus sinensis L. (Rutaceae), and the evaluation of its antioxidant capacity and cytotoxicity against different human carcinoma cell lines.

Materials and methods: In the present work, hesperidin is identified and confirmed using chromatographic and spectral analysis. To correlate between hesperidin concentration and antioxidant capacity of peel extracts, extraction was carried out using 1% HCl-MeOH, MeOH, alkaline solution, the concentration of hesperidin determined qualitatively and quantitatively using high performance thin layer chromatography (HPTLC), high performance liquid chromatography (HPLC) analysis, in vitro antioxidant capacity of hesperidin and the extracts against free radical diphenylpicrylhydrazyl (DPPH•) performed using an electron spin resonance spectrophotometer (ESR). Cytotoxic assay against larynx, cervix, breast and liver carcinoma cell lines was performed.

Results: Hesperidin was found to be moderately active as an antioxidant agent; its capacity reached 36%. In addition, the results revealed that hesperidin exhibited pronounced anticancer activity against the selected cell lines. IC50 were 1.67, 3.33, 4.17, 4.58 µg/mL, respectively.

Discussion and conclusion: Orange peels are considered to be a cheap source for hesperidin which may be used in the pharmaceutical industry as a natural chemopreventive agent. Hesperidin and orange peel extract could possess antioxidant properties with a wide range of therapeutic applications.

Keywords: Cytotoxicity; Antioxidant; ESR; Hesperidin; Peels extracts; Rutaceae.

21. Hydrodynamic Characteristics of a Novel Circulating Fluidized Bed Steam Reformer Operating in the Fast Fluidization Regime

Moataz Bellah M. Mousa, Seif-Eddeen K. Fateen and Essam A. Ibrahim

International Journal of Chemical Reactor Engineering, 9: A104 (2011) IF :0.640

Circulating Fluidized Bed Steam Reformers (CFBSRs) represent an important alternative for the production of syngas for the important Fisher-Tropsch (FT)process as well as other applications such as hydrogen production. Most research regarding this novel CFBSRs did not take its hydrodynamic characteristics into consideration. In this work, the riser Computational Fluid Dynamics (CFD) simulationsis investigated using two phase Eulerian-Eulerian approach coupled with kinetic theory of granular flow with k-epsilon model to describe the turbulence of each phase. The model equations were solved via the commercial CFD package FLUENT, which uses the finite volume numerical approach. Cold flow simulations were carried under the fast fluidization regime and results were validated qualitatively against experimental data from the literature and were able to capture the radial segregation of the catalyst, the velocity distribution of both phases and other characteristics of the flow).

Keywords: Computational fluid dynamics; Fluent; Fast fluidization; Steam reforming; Hydrogen production; Circulating fluidized bed reactor; Two-phase flow.

22. Characterization of El-Fawakhir Serpentine Fibers and Their Use in the Reinforcement of Unsaturated Polyester

Ghoneim, I. A., W.A. El–kholy, M.S. Hassan and M.F. Abadir

Journal of American Science, 7 (5): 730 - 736 (2011)

Serpentine fibers from the El–Fawakhir area in the Eastern Egyptian desert were obtained from the parent rock and characterized using XRD, XRF, IR and thermal analysis. They were then incorporated into unsaturated polyester (UP) matrix to from slabs. These slabs were tested for thermal conductivity and thermal expansion where their insulation behavior was much better than UP samples containing E type glass fibers. Both composite matrices (UP + Serpentine and glass fibers) exhibited similar values of thermal expansion, decreasing with increased fiber level. Both matrices showed comparable tensile and flexural strengths both increasing with increased fiber fraction; while the elongation was much lower in case of serpentine fibers. AC characteristics (AC resistivity, dielectric constant, dielectric loss and dissipation factor) were also determined for both types of UP matrices at different frequencies ranging from 40 Hz to 1 MHz and temperatures up to 120oC. The results showed similar behavior in both types of matrices although those reinforced with mineral fibers showed lower dissipation losses.

Keywords: Serpentine; Fibers; Unsaturated; Polyester.

23. Prediction of Power Requirement in Mixing of Clay Based Pastes

S.K. Amin, K. M. El Khatib, S.R. Mostafa and M.F. Abadir

Industrial Ceramics 31 (3): 1-7 (2011)

The successful design of mixers is known to depend primarily on the mixed fluids properties as well as the geometry of both impeller and vessel. A classical approach commonly used to predict the power requirements in the mixing process is to make use of the relation between the power number N_p and the Reynolds number Re. Here, $Re = p.n.D^2/\mu$ where ρ is the density of the liquid mixture, μ its viscosity, n the rotational speed of the impeller and D its diameter. On the other hand, $N_p = P/p.n^2.D^5$, where P is the power required for mixing. This approach has been conventionally applied for Newtonian fluids and suspensions but not to pastes. In the present paper, relationships were developed for mixing of ceramic pastes used in the manufacture of sewer pipes. A standard mix was chosen and the effect of the following variables on the power number –

Reynolds number relation was investigated: water content, grog content and particle size of clay. All paste mixes investigated followed a relation of the type $N_p = a / Re^n$, where a and b are constants that depend essentially on on the fraction of grog used and to lesser extent on the water fraction and clay particle size. The values of the constant b were found to be close to unity in all case emphasizing the fact that the laminar regime mixing relation $N_p = a / Re$ applicable for Newtonian fluids is also valid for pastes.

Keywords: Mixing; Clay water pastes; Power number; Reynolds number.

24. Preparation and Characterization of Chemically Bonded Phosphate Ceramics (CBPC) for Encapsulation of Harmful Waste

W. A. Ibrahim, H. A. Sibak and M. F. Abadir

Journal of American Science, 7 (9): 543-548 (2011)

A chemically bonded phosphate ceramic material has been prepared for the sake of encapsulating lead battery waste. In this paper the optimum conditions for the preparation of magnesium potassium phosphate compacts are determined and the formation of the final product assessed using XRD. The effect of applied pressure and pressing duration as well as the Mg:K molar ratio on the porosity and permeability of compacts was studied. It was found that a minimum porosity was achieved by using a molar ratio of Mg: K = 1:1 and that a pressing time of 10 minutes is sufficient to reach compacts of reasonably low permeability. Also, the compressive strength of compacts was found to increase linearly with curing time and to be much more affected by pressing time duration than by the magnitude of the applied pressure

Keywords: Phosphate bonded; Ceramic cement; Magnesium; Potassium.

25. Innovation in Radioactive Wastewater-StreamManagement. Part II: Theoretical Model and Experimental Verification

Aly Karameldin, Nabil Mahmoud Abdelmonem, Loula Ahmed Shouman and Dalia Abdelfatah Fadel

International journal nuclear desalination, 4 (3): 230-247 (2011)

The present work is the second part of the authors' innovative method for radioactive wastewater-stream management, by volume reduction,by a mutual heating and humidification of a compressed dry air introducedthrough the wastewater. In this part, to determine the optimal operating conditions, a theoretical model describing volume reduction of the radioactive wastewater stream is achieved. A set of first-order simultaneous differential equations describing the bubble humidity, temperature, liquid temperature, and mass diffusion to the bubbles variations, are obtained through the mass and energy conservations. A set of coupled first-order differential equations are used to solve for the humidity ratio, water diffused to the air stream, water temperature and humid air stream temperature distributions through the bubbling column. These coupled differential equations are simultaneously solved numerically by a developed computer program using the fourth-order Runge–Kutta method. Therefore, the behaviour of the air bubble state variables with column height can be predicted and optimised. Moreover, the design curves of the volumetric reduction of the wastewater streams are obtained and assessed at the different operating conditions. An experimental set-up was Innovation in radioactive wastewater-stream management 231constructed to verify the suggested model. Comprehensive comparison between suggested model results, recent experimental measurements and the results of previous works was carried out and assessed. A good agreement between experimental and theoretical model is obtained. A semi-empirical correlation is obtained together with design curve of bubbling column.

Keywords: Wastewater management; Research reactor; Bubbling columns; Volumetric mass transfer; Air humidification; Volume reduction.

26. Synthesis and Properties of Natural Polymers -Grafted- Acrylamide

Marwa El- Sayed, Mohamed Sorour, Nabil Abd El Moneem, Hala Talaat, Hayam Shalaan and Sahar El Marsafy

World Applied Science Journal, 13 (2): 360-368 (2011)

The water sorption property of hydrogels accounts for a great number of biomedical and technological applications. Grafting has proven to be a powerful method for producing substantial modification in polysaccharide properties thereby enlarging the range of its utilization. The aim of this work is to identify the appropriate conditions for grafting a candidate synthetic monomer to a blend of polysaccharides comprising starch (St), chitosan (Ch) and alginate (Alg).

This was achieved by carrying out a graft polymerization reaction of acrylamide (Am) onto a blend of natural polysaccharides (PsB) of St, Ch and Alg using ammonium persulfate (APS) as a free radical initiator in the presence of methylenebisacrylamide (MBA) as a crosslinker .The produced grafted and hydrolyzed copolymers were characterized using Fourier Transform Infrared Spectroscopy (FTIR) and scanning electron microscopy (SEM) as well as nitrogen content (%N). These Studies focused on comparing hydrogel samples in terms of grafting percentage (%G) and grafting efficiency (%E). Among all the grafted samples, PsB grafted acrylamide (PsB-g-Am) gave the maximum attained values of %G (366.6%), %E (91.6%) and %N (17.1%).

This was followed by chitosan grafted acrylamide (Ch-g-Am) and starch grafted acrylamide (St-g-Am) while, the minimum value was spotted for alginate grafted acrylamide (Alg-g-Am). Swelling water ratio (SWR) before and after alkaline hydrolysis was compared. It was found that the maximum SWR values for all the grafted and hydrolyzed samples that were soaked in distilled water were 28 and 176 g/g, respectively. SWR for samples soaked in salt solutions (0.15 mol/L NaCl, CaCl2 and AlCl3) were also examined. SWR in salt solutions for the grafted samples was higher than that of their hydrolyzed samples. Most of the employed hydrogels were pH responsive therefore; the pH effect of the immersion medium between pH of 3 and 13 on SWR has been studied.

Keywords: Polysaccharides; Natural polymers; Grafting; Acrylamide; Swelling.

1-1-05. *Dept. of Computer Engineering*

27. Comprehensive Review of Neural Network-Based Prediction Intervals and New Advances

Abbas Khosravi, Saeid Nahavandi, Doug Creighton and Amir F. Atiya

Ieee Transactions on Neural Networks, 22 (9): 1341-1356 (2011) IF: 2.633

This paper evaluates the four leading techniques proposed in the literature for construction of prediction intervals (PIs) for neural network point forecasts. The delta, Bayesian, bootstrap, and mean-variance estimation (MVE) methods are reviewed and their performance for generating high-quality is compared. PI-based measures are proposed and applied for the objective and quantitative assessment of each method's performance. A selection of 12 synthetic and real-world case studies is used to examine each method's performance for PI construction. The comparison is performed on the basis of the quality of generated PIs, the repeatability of the results, the computational requirements and the PIs variability with regard to the data uncertainty. The obtained results in this paper indicate that: 1) the delta and Bayesian methods are the best in terms of quality and repeatability, and 2) the MVE and bootstrap methods are the best in terms of low computational load and the width variability of PIs. This paper also introduces the concept of combinations of PIs, and proposes a new method for generating combined PIs using the traditional PIs. Genetic algorithm is applied for adjusting the combiner parameters through minimization of a PI-based cost function subject to two sets of restrictions. It is shown that the quality of PIs produced by the combiners is dramatically better than the quality of PIs obtained from each individual method.

Keywords: Bayesian; Bootstrapp; Delta; Mean-variance estimation; Neural network; Prediction interval.

28. Lower Upper Bound Estimation Method for Construction of Neural Network-Based Prediction Intervals Homotopy-WHEP Technique

Abbas Khosravi, Saeid Nahavandi, Doug Creighton and Amir F. Atiya

Ieee Transactions on Neural Networks, 22 (3): 337-346 (2011) IF: 2.633

Prediction intervals (PIs) have been proposed in the literature to provide more information by quantifying thelevel of uncertainty associated to the point forecasts. Traditional methods for construction of neural network (NN) based PIs suffer from restrictive assumptions about data distribution and massive computational loads. In this paper, we propose a new, fast, yet reliable method for the construction of PIs for NN predictions. The proposed lower upper bound estimation (LUBE) method constructs an NN with two outputs for estimating the prediction interval bounds. NN training is achieved through the minimization of a proposed PI-based objective function, which covers both interval width and coverage probability. The method does not require any information about the upper and lower bounds of PIs for training the NN. The simulated annealing method is applied for minimization of the cost function and adjustment of NN parameters. The demonstrated results for 10 benchmark regression case studies clearly show the LUBE method to be capable of generating high-quality PIs in a short time. Also, the quantitative comparison with three traditional techniques for prediction interval construction reveals that the LUBE method is simpler, faster, and more reliable.

Keywords: Neural network; Prediction interval; Simulated annealing; Uncertainty.

29. Combination of Long Term and Short Term Forecasts with Application to Tourism Demand Forecasting

Robert R. Andrawis, Amir F. Atiya and Hisham El-Shishiny

International Journal of Forecasting, 27: 870–886 (2011) IF:1.863

Forecast combination is a well-established and well-tested approach for improving the forecasting accuracy. One beneficial strategy is to use constituent forecasts that have diverse information. In this paper we consider the idea of diversity being accomplished by using different time aggregations. For example, we could create a yearly time series from a monthly time series and produce forecasts for both, then combine the forecasts. These forecasts would each be tracking the dynamics of different time scales, and would therefore add diverse types of information. A comparison of several forecast combination methods, performed in the context of this setup, shows that this is indeed a beneficial strategy and generally provides a forecasting performance that is better than the performances of the individual forecasts that are combined. As a case study, we consider the problem of forecasting monthly tourism numbers for inbound tourism to Egypt. Specifically, we consider 33 individual source countries, as well as the aggregate. The novel combination strategy also produces a generally improved forecasting accuracy.

Keywords: Time series forecasting; Tourism forecasting; Tourism demand; Forecasting tourism in Egypt; Forecast combination; Exponential smoothing; Holt's model; Bayesian forecasting.

30. Forecast Combinations of Computational Intelligence and Linear Models for the NN5 Time Series Forecasting Competition

Robert R. Andrawis, Amir F. Atiya and Hisham El-Shishiny

International Journal of Forecasting, 27: 672–688 (2011) IF: 1.863

In this work we introduce the forecasting model with which we participated in the NN5 forecasting competition (the forecasting of 111 time series representing daily cash withdrawal amounts at ATM machines). The main idea of this model is to utilize the concept of forecast combination, which has proven to be an effective methodology in the forecasting literature. In the proposed system we attempted to follow a principled approach, and make use of some of the guidelines and concepts that are known in the forecasting literature to lead to superior

performance. For example, we considered various previous comparison studies and time series competitions as guidance in determining which individual forecasting models to test (for possible inclusion in the forecast combination system). The final model ended up consisting of neural networks, Gaussian process regression, and linear models, combined by simple average. We also paid extra attention to the seasonality aspect, decomposing the seasonality into weekly (which is the strongest one), day of the month, and month of the year seasonality.

Keywords: NN5 competition; Time series forecasting; Neural network forecasting; Gaussian process forecasting; Forecast combination; Seasonality; Computational intelligence models.

31. An Integrated Framework for Advanced Hotel Revenue Management

Neamat E.Gayar, Mohamed Saleh, Amir F. Atiya, Hisham El-Shishiny Athanasius Zakhary and Heba Abdel-Aziz Habib

International Journal of Contemporary Hospitality Management, 23 (1) : 84-981 (2011)

Purpose – This paper aims to present an integrated framework for hotel revenue room maximization. The revenue management (RM) model presented in this work treats the shortcomings in existing systems. In particular, it extends existing optimization techniques for hotel revenue management to address group reservations and uses "forecasted demand" arrivals generated from the real data. Design/methodology/ approach – The proposed forecasting module attempts to model the hotel reservation process from first principles. In particular, it models hotel arrivals as an interrelated process of stochastic parameters like reservations, cancellations, duration of stay, no shows, seasonality, trend, etc. and simulates forward in time the actual process of reservations to obtain the forecast.

On the other hand, the proposed optimization module extends existing optimization techniques for hotel revenue management to address group reservations, while including integrality constraints and using "forecasted demand" arrivals generated from the data.

The optimization model is based on large-scale integer programming model to optimize decision rules for accepting reservations. Findings – A case study based on three different sets of reservation records of simulated hotel data was conducted to test the operation of the system on real data. Results showed that the model is able to generate effective recommendations to maximize revenue. Originality/value – The main value of this paper is that it presents an integrated framework for hotel room revenue maximization.

The novelty introduced in this approach is that it is based on an advanced room demand forecast model that simulated the reservation process from its first principles and produces demand scenarios that are used by an optimization model to generate proper recommendations.

Keywords: Hotels; Optimization techniques; Forecasting; Profit maximization.

32. Forecasting Hotel Arrivals and Occupancy using Monte Carlo Simulation

Athanasius Zakhary, Amir F. Atiya, Hisham El-Shishiny and Neamat E.Gayar

Journal of Revenue and Pricing Management, 10: 344–366 (2011)

Forecasting hotel arrivals and occupancy is an important component in hotel revenue management systems. In this article, we propose a new Monte Carlo simulation approach for the arrivals and occupancy forecasting problem. In this approach, we simulate the hotel reservations process forward in time, and these future Monte Carlo paths will yield forecast densities. A key step for the faithful emulation of the reservations process is the accurate estimation of its parameters. We propose an approach for the estimation of these parameters from the historical data. Then, the reservations process will be simulated forward with all its constituent processes such as reservation arrivals, cancellations, length of stay, no shows, group reservations, seasonality, trend and so on. We considered as a case study the problem of forecasting room demand for Plaza Hotel, Alexandria, Egypt. The proposed model gives superior results compared to existing approaches.

Keywords: Hotel demand forecasting; Hotel arrivals forecasting; Occupancy forecasting; Monte Carlo; Forecasting by simulation; Demand uncontraining.

33. A Fast Edge-based Arabic Sign Language Recognition Using Probablistic Neural Network

Elsayed E. Hemayed and Allam S. Hassanien

CiiT International Journal of Digital Image Processing, 3 (17): 1100-1106 (2011)

This paper introduces a new prototype system of sign to voice recognition technique to recognize Arabic signs and converts them into voice correspondences to enable Arabian deaf people to interact with normal people. The proposed technique captures a color image for the hand gesture and converts it into YCbCr color space that provides an efficient and accurate way to extract skin regions from colored images under various illumination changes. Prewitt edge detector is used to extract the edges of the segmented hand gesture. For its fast training process, probabilistic neural network (PNN) is used at classification stage where it uses a supervised training set to develop distribution functions within the pattern layer. These functions, in the recall mode, are used to estimate the likelihood of an input feature vector being part of a learned class. The nearest class with maximum score is selected and the corresponding sound clip is played. The proposed technique is used to recognize Arabic sign language alphabets and the most common Arabic gestures. Specifically, we applied the technique to 106 different signs and gestures with an average accuracy of 97.5% for three different signers at different situations. The proposed technique was also applied successfully to recognize Arabic fingerspelling. The detailed of the proposed technique and the experimental results are discussed in this paper.

Keywords: Arabic sign language; Fingerspelling; Gesture recognition; Probabilistic neural network; Sign-to-Voice; Skin color segmentation.

34. A Fuzzy Type-1 Facial Recognition System

Hala A. Gabr and Elsayed E. Hemayed

CiiT International Journal of Fuzzy Systems,3 (8): 306-312 (2011)

This paper presents a type-1 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-1 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.

35. DYN-CBC: Dynamic adjustment of Context Based Clearing for Advanced GA Niching

Magda B. Fayek

CiiT International Journal of Artificial Intelligent Systems and Machine Learning, 774–779 (2011)

The inability of GA to find multiple global maxima of a multimodal function has been a basic limitation. Many niching and diversity preserving techniques have been suggested to overcome it. Clearing is one of the common approaches proposed.

Due to its promising performance it has attracted researchers to further enhance its performance. CBCI (Context Based Clearing) is an updated version of standard clearing procedure. This approach made use of context information to prevent clearing candidates that may lead to undetected optima. In this paper three advanced dynamic versions of CBC are proposed (CBCII, CBCIII, and CBCIV) to further enhance the clearing process.

They are modified versions of CBCI, each by a different approach. The proposed techniques were tested using the M7 function; a massively multimodal deceptive optimization function typically used for testing the efficiency of finding global optima in a search space. The results are compared with those of CBCI. Results show that the new versions discover more optima in earlier generations than CBCI while having a comparable complexity with CBCI. Compared to other clearing techniques the suggested techniques outperform them as regards complexity and manage to find global M7 optima much faster.

Keywords: Clearing; Context; Genetic algorithms; Multimodal optimization; Niching methods.

1-1-06. ***Dept. of Electric Power and Machines Engineering***

36. PSO-BELBIC Scheme for Two-Coupled Distillation Column Process

Hassen T. Dorrah, Ahmed M. El-Garhy and Mohamed E. El-Shimy

Journal Advanced Research, 2: 73-83 (2011) IF:3.000

In the two coupled distillation columns process, the specifications for top and bottom product purity can be met through keeping the tray temperatures within a specified range around their steady state values. Normally, the process is decoupled into a group of independent loops and a conventional PID controller is assigned to control each loop. Tuning of conventional PID controllers is very difficult specially when the process is subjected to external unknown factors. Fuzzy logic controllers (FLC's) cover a wider range of operating conditions and are more readily customizable in natural language terms. In this paper, fuzzy PID controllers are proposed to replace the conventional ones. Moreover, the values of the parameters of the proposed fuzzy PID controllers are optimized using particle swarm optimization (PSO) technique with minimization of sum square error (SSE) as a performance index. For the purpose of validation, PSO is also used to optimize the design of conventional PID controllers. The simulations of the proposed optimized fuzzy PID controllers prove their excellence in improving the dynamic and steady state characteristics.

Keywords: Particle Swarm Optimization (PSO); Two-coupled distillation column; Brain Emotional Learning Based Intelligent Controller (BELBIC); PID controller.

37. Evaluation of Fuzzy-based Maximum Power-Tracking in Wind Energy Conversion Systems

M. Azzouz, A.L Elshafei and H. Emara

IET Renewable Power Generation, (5): 422–430 (2011) IF :2.328

Fuzzy logic is a convenient approach to construct maximum power-point-tracking algorithms. A new scheme composed of two fuzzy systems is proposed here. The first fuzzy system is based on a modified hill climb search algorithm to conclude the power set-point. The second fuzzy system is an adaptive proportional integral-like controller that uses a variable structure tuning algorithm to track the power set-point. Simulations show that the proposed scheme can improve the system efficiency.

Keywords: Fuzzy logic; wind energy conversion systems; maximum power tracking.

38. Experimental Analysis of Vibrations Damping Due to Magnetostrictive Based Energy Harvesting

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

Journal of Applied Physics, 109: 07E509 (2011) IF: 2.079

The paper deals with the mechanical vibrations damping effect induced by a magnetostrictive energy harvesting device properly working. The proposed experimental setup allows us

to investigate, through time-domain measurements, the dependence of the mechanical damping from parameters like magnetic bias and external load, affecting the global harvested power. This result would underline the promising possibility to reduce mechanical vibrations and obtain power harvesting at the same time.
Keywords: Magneto -elastic coupling; Magnetostriction; Villari effect.

39. Vector Hysteresis Modeling Using Octal Clusters of Coupled Step Functions

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

Journal of Applied Physics, 109: 07D342 (2011) IF: 2.079

Recently, substantial efforts have been focused on the efficiency enhancement of vector Preisach-type model implementation methodologies. This paper presents a computationally efficient approach for implementing a vector Preisach-type hysteresis model through an ensemble of octal clusters of coupled step functions. Within this approach, each cluster can be tuned by proper selection of coupling factors to exhibit vector hysteresis properties, thus minimizing number of clusters needed to construct a vector Preisach-type model.
Keywords: Hysteresis modeling; Hopfield neural networks; Evolutionary computation.

40. Adaptive Fuzzy Regulation of the DC-bus Capacitor Voltage in A Wind Energy Conversion System (WECS)

A. L. Elshafei and M. Azzouz

Expert Systems with Applications, 38: 5500–5506 (2011) IF :1.926

This paper proposes a new voltage regulator of the DC-bus capacitor of a variable speed wind power generation system based on adaptive fuzzy system. The change in the fuzzy rule base is done using a variable-structure direct adaptive control algorithm to achieve the pre-defined control objectives. This algorithm has two merits. First, it has a good performance in the training phase as it makes use of the initial rule base defined for the fuzzy logic controller. Second, it has a robust estimator since it depends on variable structure technique. The adaptive nature of the new controller significantly reduces the rule base size and improves its performance.
Keywords: Fuzzy systems; wind energy conversion systems; adaptive control.

41. Effect of the Formation of the Dry Zone Around Underground Power Cables on Their Ratings

Ossama E. Gouda, Adel Z. El Dein, and Ghada M. Amer

Ieee Transactions on Power Delivery, 26 (2): 972-978 (2011) IF :1.415

Many factors affect the loading of the underground power cables, such as ambient temperature, depth of laying of cable, number of parallel circuits of cable and thermal resistivity of the surrounding soil. One important factor usually ignored, is the formation of dry zones around the underground power cables. Dry zones are usually formed around underground power cables under loading condition due to the migration of moisture within the soil. In this paper, the effect of the formation of the dry zone on the ampacity of the underground power cables is investigated. The de-rating factor for the formation of dry zone around underground power cables is suggested and calculated for different types of natural backfill soils. IEC 60287-1-3 is taken as reference. Experimental work was conducted to study the dry zone phenomena of the dry zone as related to different types of soils.
Keywords: Index Terms-Cable ampacity; De-rating factor; Dry Zone; Temperature Distribution.

42. Improved Active Power Filter Performance Based on an Indirect Current Control Technique

M. A. Ahmed and S.A. Zaid O.A. Mahgoub

Journal of Power Electronics, 11 (6): 931- 937 (2011) IF: 0.779

This paper presents a method for the performance improvement of a shunt active power filter (SAPF) using the indirect current control (ICC) scheme. Compared to the conventional direct current control (DCC) scheme, the ICC gives better performance with a lower number of sensors. A simplified and efficient control algorithm using a low cost Intel 80C196KC microcontroller is implemented using only two current sensors for the source current and one voltage sensor for the DC-link voltage of the SAPF circuit. The objective is to eliminate harmonics and to compensate the reactive power produced by non-linear loads such as an uncontrolled rectifier feeding an inductive load. The APF is realized using a three phase voltage source inverter (VSI) with a dc bus capacitor. Experimental results are presented to prove the better performance of the ICC method over the DCC one.
Keywords: Active power filter; Direct current control; Indirect current control; Total harmonic distortion.

43. Spacecraft Power System Controller Based on Neural Network

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

Journal ACTA Astronautica,69: 650-657 (2011) IF: 0.612

Neural control is a branch of the general field of intelligent control, which is based on the concept of artificial intelligence. This work presents the spacecraft orbit determination, dimensioning of the renewable power system, and mathematical modeling of spacecraft power system which are required for simulating the system. The complete system is simulated using MATLAB-SIMULINK. The NN controller outperform PID in the extreme range of non-linearity. Well trained neural controller can operate at different conditions of load current at different orbital periods without any tuning such in case of PID controller. So an artificial neural network (ANN) based model has been developed for the optimum operation of spacecraft power system. An ANN is trained using a back propagation with Levenberg–Marquardt algorithm. The best validation performance is obtained for mean square error is

equal to 9.9962×10−11 at epoch 637. The regression between the network output and the corresponding target is equal to 100% which means a high accuracy. NNC 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 spacecraft power system in low earth orbit (LEO). Therefore, this technique is going to be a very useful tool for the interested designers in space field.

Keywords: Spacecraft; Neural network Control; Photovoltaic array; Ni–Cd battery.

44. Unsymmetrical High-impedance Earth Fault Central Relay for Transmission Networks

Doaa Khalil Ibrahim and Saber Mohamed Saleh

Electric Power Components and Systems, 39:1469–1492 (2011) IF: 0.577

This article presents a central relay based on wavelet transform for high- impedance earth fault detection, zone identification, location, and classification in part of the Egyptian 500-kV transmission network. The scheme recognizes the distortion of the voltage and current waveforms caused by the arcs usually associated with high-impedance earth faults for unsymmetrical faults, whether single line to ground fault or double line to ground fault. The proposed discrete wavelet transform based analysis yields three phase voltages in the high-frequency range and zero-sequence root mean square current in the low-frequency range that are fed to fault detection and location algorithms, respectively, while phase currents in the high-frequency range are fed to the classification algorithm. The fault detection algorithm is based on the recursive method to sum the absolute values of the high-frequency signal generated over one voltage cycle, while the zone identification and fault location algorithms use unsynchronized zero-sequence root mean square currents. On the other hand, the fault classification algorithm is based on the currents in the high-frequency range for one side data of the faulted line at the local relay after the detection and location process. Characteristics of the proposed central relay are analyzed by extensive simulation studies that clearly reveal that the proposed relay can accurately determine the network faulted line and can calculate fault distance with an acceptable error that does not exceed 5%. All simulation studies are carried out using a high-impedance earth fault model of a distribution system that is modified for transmission systems. An available real high-impedance earth fault case study is used to check the performance of the fault classification algorithm to classify phase and earth faults.

Keywords: High-impedance earth faults; Wavelet transform; Transmission networks; Fault location.

45. A Simplified Control Strategy for the Shunt Active Power Filter for Harmonic and Reactive Power Compensation

Mohamed A. Ahmed, Sherif A. Zaid and Osama A. Mahgoub

J. Electrical Engineering, 11(2): 45-51 (2011) IF: 0.278

Implementation of a cost-effective practical shunt active power filter (SAPF) depends on microcontroller was the key for developing a simplified control strategy that modifies a previously published one which named on-line compensating method [1]. The objective is to eliminate harmonics and compensate reactive power generated by non-linear loads to improve the power quality. The SAPF is realized using three phase voltage source inverter (VSI) with dc-bus capacitor and the proposed control algorithm is elaborated using a low cost (Intel 80C196KC) microcontroller. The simulation and experimental results are presented to prove the efficient performance of the SAPF under the proposed controller.

Keywords: Three Phase Active Power Filter; Unity power factor; Hysteresis current controller; Dc-voltage controller.

1-1-07. *Dept. of Electronics and Communications*

46. Analysis of a Transmission Line Periodically Loaded with Position-Modulated Loads

E.S. Sakr and I.A. Eshrah

Journal of Applied Physics A,103 (3): 859–862 (2011) IF: 1.765

The dispersion characteristics of a periodically loaded transmission line is engineered via varying the amplitudes and/or positions of the periodic shunt loads. The band diagram of the periodic structure is obtained using two approaches: the Bloch–Floquet approach and a Green's function-based approach. The effect of both amplitude and position modulation on the band diagram is discussed, to provide a step to bandgap engineering of the structure.

Keywords: Periodic structures; Metamaterials; Dispersion diagram; Microwave filters.

47. Composite Right/left-handed Circular Meta-waveguide

Tamer M. Abuelfadl

Applied Physics A: Materials Science and Processing, 103: 759-763 (2011) IF: 1.765

A new realization of a cylindrical meta-waveguide is proposed. The guide is a metallic cylinder loaded azimuthally with conducting rods short circuited to the outer cylinder. It can be simplified to a planar periodically cascaded coupled lines. However, the actual circuit is described in cylindrical coordinates as screw or helically periodic structure.

The dispersion relation was obtained from the circuit model and from the actual structure using EM simulation, with a good agreement between both. An 8-cell structure was simulated to show the overall guide transmission characteristic. The major advantage of this new guide is that it does not contain any dielectrics, which makes it favorable in applications involving electron beams such as Backward Wave Oscillator BWO, Gyrotron BWO, and Cherenkov backward wave detector.

Keywords: Metametrial; Backward wave Oscillator; Microwave circuits and filters.

48. Generation and Classification of CCII and ICCII Based Negative Impedance Converter Circuits using NAM Expansion

Ahmed M. Soliman

International Journal of Circuit Theory and Applications, 39: 835–847 (2011) IF: 1.759

A new simplified generation method of negative impedance converter circuits (NIC) is introduced. The generation method is based on nodal admittance matrix expansion starting from the input admittance of the NIC circuit terminated by a load rather than treating the NIC as a two-port network element.
The four pathological elements, namely nullator, norator, voltage mirror and current mirror, are used in the generation procedure. Two classes of the NIC pathological circuits are defined; each class includes two types. Eight pathological NIC circuits are generated for each class.
Two alternative current conveyor and inverting current conveyor-based realizations for each pathological circuit based on alternative pairing of the pathological elements are defined resulting in a total of 16 NIC circuit for each class and a total of 32 NIC circuits.
A new NIC-based circuits realizing floating negative impedances are also introduced.
Keywords: Negative impedance converter; Pathological VM; Pathological CM; Nullator; Norator; Current conveyors; Inverting current conveyor.

49. Generation of Current Mode Filters using NAM Expansion

Ahmed M. Soliman

International Journal of Circuit Theory and Applications, 39: 1087–1103 (2011) IF: 1.759

Systematic synthesis method to generate a family of current mode band-pass–low-pass circuits based on nodal admittance matrix (NAM) expansion is given. Eight equivalent circuits are obtained, five of them are new.
Each of the generated circuits uses two grounded capacitors and three grounded resistors and two balanced output current conveyor (BOCCII) or two balanced output inverting current conveyor (BOICCII) or a combination of the two types. Generation of a low input impedance current mode band-pass–low-pass circuits based on NAM expansion results in 16 equivalent circuits.
The NAM expansion is also used to generate 32 equivalent current mode universal filters using four BOCCII or BOICCII or a combination of the two types.
Keywords: Nodal admittance matrix synthesis; Nullator; Norator; Pathological current and voltage mirrors; Balanced output current conveyors; Balanced output inverting current conveyors.

50. Generation of Kerwin-Huelsman-Newcomb Biquad Filter Circuits using Nodal Admittance Matrix Expansion

Ahmed M. Soliman

International Journal of Circuit Theory and Applications, 39: 697–717 (2011) IF: 1.759

Nodal admittance matrix (NAM) expansion is used to generate a family of grounded passive component Kerwin Huelsman Newcomb (KHN) circuits. The generated KHN circuits have independent control on the selectivity factor and the radian frequency as in the original KHN, besides they have independent control on the gain, which is not achievable in the original KHN circuit.
The NAM expansion is based on using nullor elements and voltage mirror and current mirror as well. Two types of the KHN circuit are considered, each includes four classes. For each class it is found that there are 32 different KHN circuit; therefore, there is a total of 128 circuits that belong to type-A KHN and a similar number for type-B KHN circuits. Simulation results are included to support the generation method.
Keywords: Universal filters; KHN circuit; Nodal admittance matrix expansions; Pathological elements.

51. Pathological Representation of the Two-Output CCII and ICCII Family and Application

Ahmed M. Soliman

International Journal of Circuit Theory and Applications, 39: 589–606 (2011) IF: 1.759

The pathological mirror and nullor representation of the two-output current conveyor family is given. New pathological mirror and nullor representations of the two-output current conveyor family are given and compared with the corresponding nullator norator resistors' realizations. Simplified representations of the two-output current conveyors based on using two single-output current conveyors are given. Two examples are given, the first example demonstrates the importance of the pathological representation in the generation of a family of 16 oscillators from a two-output current conveyor-based current mode oscillator.
A second example of a current mode low-pass filter using two single-output inverting current conveyors is considered. Its simplified modeling using a single balanced output inverting current conveyor is compared with the original current mode filter and the simulation results are given.
Keywords: Pathological VM; Pathological CM; Nullator; Norator; Two-output current conveyor family; Current mode low-pass filter.

52. A Stochastic Arabic Diacritizer Based on a Hybrid of Factorized and Unfactorized Textual Features

Mohsen A. A. Rashwan, Mohamed A. S. A. Al-Badrashiny, Mohamed Attia, Sherif M. Abdou and Ahmed Rafea

IEEE Transactions on Audio, Speech, and Language Processing, 166–175 (2011) IF: 1.668

This paper introduces a large-scale dual-mode stochastic system to automatically diacritize raw Arabic text. The first of these modes determines the most likely diacritics by choosing the sequence of full-form Arabic word diacritizations with maximum marginal probability via A* lattice search and long-horizon n-grams probability estimation. When full-form words are OOV, the system switches to the second mode which factorizes each Arabic word into all its possible morphological constituents, then uses also the same techniques used by the first mode to get the most likely sequence of morphemes, hence the most likely diacritization. While the second mode achieves a far better coverage of the highly derivative and inflective Arabic language, the first mode is faster to learn, i.e., yields better disambiguation results for the same size of training corpora, especially for inferring syntactical (case-ending) diacritics. Our presented hybrid system that benefits from the advantages of both modes has experimentally been found superior to the best performing reported systems of Habash and Rambow, and of Zitouni et al., using the same training and test corpus for the sake of fair comparison. The word error rates of (morphological diacritization, overall diacritization including the case endings) for the three systems are, respectively, as follows (3.1%, 12.5%), (5.5%, 14.9%), and (7.9%, 18%). The hybrid architecture of language factorizing and unfactorizing components may be inspiring to other NLP/HLT problems in analogous situations.

Keywords: Arabic, A search; Case-ending; Corpus-based linguistics; Coverage; diacritics; Diacritization; disambiguation, Factorized features; Human language technologies (HLT); Hybrid; Language factorization; Language modeling; Language models; Language processing; Morphological analysis; Morphology; Natural language processing (NLP); N-grams, phonetic transcription; Phonological analysis; Statistical language model (SLM); Statistical; Stochastic; Syntax; Unfactorized features; Vowelization.

53. Augmented Integrated Routing Scheme for Routing Bandwidth-Guaranteed Connections in Internet Protocol /Multi-protocol Label Switching Over Wavelength Division Multiplexing Networks

Khaled M. F. Elsayed and Ahmed M. H. Elokda

IET Communications, 5 (10): 1351–1360 (2011) IF: 0.963

The authors consider the dynamic routing problem in a network comprised of internet protocol (IP) routers interconnected via optical wavelength division multiplexing links and optical cross-connects. Traditionally, routing in this context is carried out as two separate processes: path selection at the IP (logical) layer and routing and wavelength assignment at the optical (physical layer to establish lightpaths that constitute the logical links in the IP layer. This separate handling of the routing processes in the two layers usually leads to inefficient exploitation of the network resources. The proposed augmented integrated routing algorithm (AIRA) scheme addresses this apparent in efficiency by implementing a dual-layer routing scheme that utilises information from both the IP and optical layers. The scheme also provides preferential treatment to high-priority connections. The path selection is done using a variant of the hop-constrained adaptive shortest-path scheme in the two layers. The performance evaluation study shows that AIRA outperforms existing state-of-the-art methods in terms of reduced blocking probability, better handling of non-uniform traffic, and shorter path length at both the IP and optical layers. The scheme al so exhibit s good robustness in handling dynamic changes and non-uniform traffic loading in the IP layer.

Keywords: Integrated routing; Augmented routing; Overlays; Peer models; MPLS; GMPLS; Optical Networks.

54. Current Conveyor Based or Unity Gain Cells based Two Integrator Loop Oscillators

Ahmed M. Soliman

Microelectronics Journal, 42: 239–246 (2011) IF: 0.789

Four alternative families of oscillators are considered in this paper, three of the families employ CCII or ICCII or combination of both and each family has sixteen oscillator circuit members. The fourth family uses unity gain cells and has four circuit members. Two alternative transformation methods are used in this paper for the generation of oscillators. The first one uses the adjoint circuit theorem to obtain a new family of current mode oscillators from a voltage mode oscillator circuit. The second transformation method uses the nodal admittance matrix (NAM) expansion to generatea grounded passive element oscillator family from an oscillator circuit, which employs a virtually grounded resistor. Although this paper has a tutorial nature it includes two new families of oscillators; one of them provides both current and voltage outputs and the other provides voltage outputs and is based on the use of voltage, current followers and inverters. Simulation results are included to support the analysis.

Keywords: Nodal admittance matrix synthesis; Nullator; norator; Pathological voltage mirror; Pathological current mirror; Unity gain cells.

55. Generation of Generalized Impedance Converter Circuits using NAM Expansion

Ahmed M. Soliman

Circuits Systems and Signal Processing, 30:1091–1114 (2011) IF: 0.752

The generation of the voltage generalized impedance converter (VGIC) circuits using a nodal admittance matrix (NAM) expansion is given in detail. Thirty two equivalent circuits using current conveyors (CCII) or inverting current conveyors (ICCII) or a combination of both are generated. The reported circuits are suitable for realizing inductors or frequency dependent negative resistors (FDNR) using grounded passive elements. Similarly the generation of the current generalized

impedance converter (CGIC) circuits published recently is reexamined and this resulted in 16 more new CGIC circuits using an alternative NAM expansion. Modification of two of the generated circuits to realize a floating inductor or floating FDNR is also given together with Spice simulation results.
Keywords: Voltage generalized impedance converter; Current generalized impedance converter Current conveyors; Inverting current conveyors.

56. On the Interplay of Network Structure and Routing Strategies in Scale-Free Networks

Walid K. Ghamry and Khaled M. F. Elsayed

Springer Annals of Telecommunications, 66: 17-29 (2011) IF: 0.602

In this paper, we examine how the structural characteristics of network topologies affect the network performance, and we examine the interplay between structural characteristics of network topologies and routing strategies. We consider routing strategies subject to practical constraints (router technology) and economic considerations (link costs) at layer 3. We propose two new routing methods suitable for implementation in large networks and examine various routing strategies (local, global, and hybrid) with tunable parameters and explore how they can enhance the network performance.
We find that there exists an optimal range of values for the tunable parameters to achieve high network performance which depends on the structural properties of the network topology. We also show that our proposed routing scheme, which requires minimum local information, achieves high network performance.
Keywords: Routing strategies; Network throughput; Network structure.

57. Active Realization of Doubly Terminated LC Ladder Filters using Current Feedback Operational Amplifier (CFOA) Via Linear Transformation

Ahmed M. Soliman

International Journal of Electronics and communication AEU, (65): 753-762 (2011) IF: 0.519

A new technique for passive doubly terminated ladder filters transformation has been proposed. The proposed technique depends on current mode realization of doubly terminated LC ladder filters instead of voltage mode realizations presented by Constantinides and Dimopoulos in [1]. Different realizations of passive elements using new technique have been proposed. Design example of a 3rd order low-pass filter has been realized using the proposed technique and compared with the realization introduced by Rathore and Khot [2] using current feedback operational amplifier (CFOA) as an active building block. SPICE simulations have been carried out using 0.18 µ m TSMC CMOS technology and supply voltages of ± 0.9 V. The simulation results have been demonstrated and discussed.
Keywords: Doubly terminated filters; Active filters; CFOA; Two Port Networks.

58. Pathological Realizations of the DCVC (CDBA) and Applications to Oscillators and Filters

Ahmed M. Soliman

International Journal of Electronics and communication AEU, (65): 985-992 (2011) IF: 0.519

The historical origin of the introduction of the differential current voltage conveyor (DCVC) also known as the current differencing buffered amplifier (CDBA) is reviewed. Pathological realizations of the modified differential current conveyor (MDCC) and of the DCVC are given. Generation of alternative equivalent oscillator and filter circuits using voltage followers (VF), current followers (CF), voltage inverters (VI) and current inverters (CI) from known CDBA oscillators and filters is demonstrated by several examples. It is found that there is duplication in some of the recently published circuits and new simplified oscillator and filter circuits are reported.
Keywords: Modified differential current conveyor; Differential current voltage conveyor; Current difference buffered amplifier.

59. Transformation of a Floating Capacitor Oscillator to A Family of Grounded Capacitor Oscillators

Ahmed M. Soliman

International Journal of Electronics, 98 (3): 289–300 (2011) IF: 0.257

A recently reported two current feedback operational amplifier (CFOA)-based oscillator is converted to a family of 16 current mode oscillators using CCII or ICCII or combination of both. A transformation method based on nodal admittance matrix (NAM) expansion is used to transform the floating capacitor CFOA-based oscillator circuit to a family of 16 grounded capacitor oscillators using CCII or ICCII or combination of both. Two of the new grounded capacitor oscillator circuits have a floating property. Simulation results are included.
Keywords: Current feedback operational amplifier; Nodal admittance matrix synthesis; Nullator; Norator; Pathological current and voltage mirrors; CCII; ICCII.

60. Generation of CFOA, CCII and DVCC Based Oscillators from Passive RLC Filter

Ahmed M. Soliman

Journal of Circuits Systems and Computers, 20 (4): 621-639 (2011) IF: 0.215

In a recent paper the link between the Op Amp based two integrator loop oscillators and current feedback operational amplifier (CFOA) based oscillators is detected and clearly explained. It was found that one of the grounded capacitor two CFOA two integrator loop oscillators however was not related directly to any of the Op Amp oscillators. In this paper the origin of the two CFOA grounded capacitor oscillator is found to be the passive second order low-pass filter. It is also found that the differential voltage current conveyor (DVCC) grounded passive element oscillator is generated from the same passive

second order low-pass filter. A new family of grounded capacitor oscillators using current conveyors (CCII) and inverting current conveyors (ICCII) which includes sixteen members is introduced. A second new family of grounded passive elements oscillators using CCII and ICCII which includes eight members is also introduced. A discussion and a comparison with some of the previously reported CCII oscillator circuits is also given at the end of the paper.
Keywords: Two integrator loop oscillators; Passive RLC filter; Current feedback operational amplifier CFOA; DVCC.

61. Generation of the Minimum Component Oscillators from Sallen-Key Filters

Ahmed M. Soliman

Journal of Circuits Systems and Computers, 20 (6): 1165-1183 (2011) IF: 0.215

Two new minimum passive component oscillators using inverting current conveyor (ICCII-) acting as a voltage negative impedance converter (VNIC) are generated from the Sallen Key low-pass and high-pass filters. It is also shown that the Sallen Key low-pass, high-pass and band-pass filters are the origin of the three minimum component oscillators using the current conveyor (CCII+) acting as a current negative impedance converter (CNIC). In addition it is also shown that the Sallen Key high-pass and band-pass filters are the origin of the two minimum component oscillators using single input single output transconductance amplifier (TA) as the active element. Although this paper is considered partially a review paper it includes new generation methods and new minimum component oscillator circuit realizations. Simulation results for the new oscillators using ICCII- are included
Keywords: Minimum component oscillators; Op Amp; CCII; ICCII; VNIC; CNIC.

62. On the Transformation of Grounded Inductors to Floating Inductors using OFA and FCCII

Ahmed M. Soliman

Journal of Circuits Systems and Computers, 20 (2): 243-262 (2011) IF: 0.215

It is well known that a floating inductor circuit is realized from a grounded inductor circuit by replacing the operational amplifier by a floating operational transconductance amplifier. This idea is extended to transform current conveyor grounded inductors to floating inductors by replacing the current conveyor by the recently introduced floating current conveyor. Several examples are considered and simulation results are given to support the theory. Although the paper is partially a review in nature it includes several new realizations of floating inductors.
Keywords: Operational floating amplifier; Floating current conveyors; Grounded inductors; Floating inductors.

63. An Integrated High-Level Hardware/ Software Partitioning Methodology

M. B. Abdelhalim and S. E.-D. Habib

Design Automation for Embedded Systems, 15: 19–50 (2011) IF: 0.167

Embedded systems are widely used in many sophisticated applications. To speed the time-to-market cycle, the hardware and software co-design has become one of the main methodologies in modern embedded systems. The most important challenge in the embedded system design is partitioning; i.e. deciding which modules of the system should be implemented in hardware and which ones in software. Finding an optimal partition is hard because of the large number and different characteristics of the modules that have to be considered.In this article, we develop a new high-level hardware/software partitioning methodology. Two novel features characterize this methodology. Firstly, the Particle Swarm Optimization (PSO) technique is introduced to the Hardware/Software partitioning field. Secondly, the hardware is modeled using two extreme implementations that bound different hardware scheduling alternatives. Our methodology further partitions the design into hardware and software modules at the early Control-Data Flow Graph (CDFG) level of the design; thanks to improved modeling techniques using intermediate-granularity functional modules. A new restarting technique is applied to PSO to avoid quick convergence. This technique is called Re-Excited PSO. Our numerical results prove the usefulness of the proposed technique.The target technology is Field Programmable Gate Arrays (FPGAs). We developed FPGA-based estimation techniques to evaluate the costs of implementing the design components. These costs are the area, delay, latency, and power consumption for both the hardware and software implementations. Hardware/software communication is also taken into consideration.The aforementioned methodology is embodied in an integrated CAD tool for hardware/software co-design. This tool accepts behavioral, un-timed, algorithmic-level, VHDL, design representation, and outputs a valid hardware/software partition and schedule for the design subject to a set of area/power/delay constraints. This tool is code named CUPSHOP for (Cairo University PSo-based Hardware/sOftware Partitioning tool). Finally, a JPEG encoder case study is used to validate and contrast our partitioning methodology against the prior-art methodologies.
Keywords : Hardware; software partitioning; Particle swarm optimization; Control-data flow graphs; FPGAs; Hardware;software co-design; High-level design.

64. Current Mode Oscillators Using Inverting CCII

Ahmed M. Soliman 512

Active and Passive Electronic Devices, (6): 305-320 (2011)

New current mode Wien bridge oscillators using ICCII are introduced. Two Wien bridge oscillators using two single-output ICCII are given first together with a single ICCII minimum component oscillator. Two modified grounded capacitors Wien oscillators are given next. Four grounded passive component oscillators using two balanced output or

double output ICCII are also given. Detailed analysis of the effects of the parasitic components is given. Spice simulation results are included to demonstrate the practicality of the current mode oscillator circuits.
Keywords: Current mode; Oscillators; Inverting current conveyor.

65. Generalized, Floating and Self Adjoint Differential Voltage Current Conveyor

Ahmed M. Soliman

Trends in Applied Sciences Research, 6 (7): 700-709 (2011)

A new building block defined as the generalized differential voltage current conveyor (GDVCC) with three Y inputs and three Z outputs is defined. The new building block has the simultaneous properties of being floating as well as a self-adjoint. The pathological representation of the GDVCC with its nodal admittance matrix (NAM) stamp is given. The CMOS circuit realizing the GDVCC is also included. It is found that among all the current conveyor (CCII) family included in this paper the CCII- and the GDVCC are the only two elements that are floating as well as self adjoint.
Keywords: Current conveyor; Floating element; Adjoint circuit theorem.

66. Generation of Oscillators from Current Mode Band Pass Filters using Single Output ICCII

Ahmed M. Soliman

Active and Passive Electronic Devices, (6): 251-264 (2011)

Three new oscillators using single output ICCII are introduced. The first oscillator uses minimum passive components and uses two ICCII- and is generated from a recently reported current mode band pass filter. Two more oscillators using grounded resistors and capacitors and using three ICCII- or ICCII+ are introduced. Detailed analysis of the effects of the parasitic components is given. Spice simulation results are included to demonstrate the practicality of the three proposed oscillator circuits.
Keywords: Oscillators; Inverting current conveyor; Current mode.

67. New Bode Type Variable Amplitude Equalizers using Inverting Current Conveyor

Ahmed M. Soliman

Active and Passive Electronic Devices, (6): 61-71 (2011)

New active RC Bode-type variable equalizers using Inverting Current Conveyor (ICCII-) are introduced. Voltage mode half range amplitude equalizers using a single ICCII- are given. Current mode full range amplitude equalizers using ICCII- are introduced in the literature for the first time. The proposed equalizers can operate at much higher frequencies than the classical Operational Amplifier (Op Amp) based variable amplitude equalizers. Spice simulation results are included to confirm the practicality of the proposed circuits.
Keywords: Inverting Current Conveyor; Variable Amplitude Equalizers.

68. Nodal Admittance Matrix and Pathological realization of BOOA, DDA, DDOFA and DDOMA

Ahmed M. Soliman

Singapore Journal of Scientific Research, 1 (2): 149-163 (2011)

This paper introduces the nodal admittance matrix (NAM) equations as well as the pathological realizations of four important active building blocks. The four active building blocks are the balanced output op amp (BOOA), the differential differenceamplifier (DDA), the differential difference operational floating amplifier (DDOFA) and the differential difference operational mirror amplifier (DDOMA). The importance of the pathological realizations in the generation of alternative ideally equivalent realizations of an active building block is illustrated by an example on the BOOA.
Keywords: Nodal admittance matrix (NAM); Pathological realizations; BOOA; DDA; DDOFA; DDOMA.

69. Modified Mixed-Mode Universal Filters Using DVCC

Ahmed M. Soliman

Active and Passive Electronic Devices, (6): 61-71 (2011)

New modified mixed-mode universal filters using the Differential Voltage Current Conveyor (DVCC) are introduced. The proposed circuits have the advantages of a using all grounded passive elements, employ DVCC with Z+ output only and have very low input impedance. Simulation results are included to demonstrate the practicality of the proposed circuits.
Keywords: Mixed mode; Universal filters; Differential Voltage Current Conveyor (DVCC).

70. Synthesis of Oscillators Using Limit Variables and NAM Expansion

Ahmed M. Soliman

Activand Passive Electronic Components, (2011)

A systematic synthesis procedure for generating second-order grounded passive element canonic oscillators is given. The synthesis procedure is based on using nodal admittance matrix (NAM) expansion with the bracket method as well as using the infinity parameters. The resulting derived oscillators include circuits using various types of current conveyors. Two classes of oscillators are considered in this paper, and they have the advantages of having independent control on the condition of oscillation and on the frequency of oscillation by varying two different grounded resistors. The two classes of oscillators considered can be easily compensated for the parasitic element effects introduced by the current conveyors. This paper isconsidered to be continuation to the recently published paper on oscillators using NAM expansion D. G. Haigh et al. (2006). This is the first paper in the literature which uses limit-variables called infinity-variables D. G. Haigh et al. (2005) in the synthesis of oscillator circuits. Simulation results demonstrating the practicality of some of the generated circuits are included.

71. Optimization of HVAC System Using Adaptive Genetic Swarm Algorithm

Hanan A. Kamal and Taha I. Taha

CiiT International Journal of Artificial Intelligent Systems and Machine Learning, 3 13: (831-838) (2011)

In this paper a new approach is proposed for global energy consumption minimization of heating, ventilating and air-conditioning (HVAC) systems. The objective function of global optimization and constraints is formulated based on mathematical models of the major components. A Genetically Swarm Optimization (GSO) algorithm is applied for energy minimization problem which is considered as a new application for GSO. The GSO algorithm combines the standard velocity and updated rules of the Particle Swarm Optimization (PSO) with the ideas of selection and mutation of the Genetic Algorithm (GA). In addition of solving the problem using GSO, a new adaptive mutation operator is presented which actively disperses the population preventing premature convergence. The adaptive genetic swarm optimization (AGSO) algorithm is applied for HVAC energy minimization problem. The results have been compared to the standard GA, adaptive GA, PSO, and GSO models. Results obtained showed that AGSO algorithm is faster in convergence and the obtained solutions have higher average fitness than other techniques.

Keywords: Adaptive Genetic Algorithm (AGA); Adaptive Genetic Swarm Algorithm (AGSO); Genetic Algorithms (GA); Genetic Swarm Algorithm (GSO); HVAC System; particle Swarm Optimization (PSO).

72. Multipath Cognitive Routing in Integrated Multicast Satellite-HAP System Structures

Mohamed M. Elsokkary, Mona M. Riad and David Grace

Journal of Electronic Science and Technology 9 (1): 41-45 (2011)

This paper illustrates the issue of integration of different layered network which is having high potential in next telecommunication system structures. We focus on the potential role of an integrated satellite-high altitude platform (HAP) system, proposing a new multilayered inter HAPs-satellite routing algorithm which is mainly relying on multipath routing to ensure the network reliability. The proposed multipath routing scheme is mainly rely of split the traffic between different paths to make the best utilization of multiple routes. We mainly rely on using linear programming method for multipath selection. Due to the induction of link utilization into consideration, the system encounters traffic flow oscillation between paths over time, which is affecting the system performance. Hence, to fix this issue, we proposed cognitive routing algorithm to push and accelerate the system to reach its stable state. Performance of the proposed routing techniques has been evaluated using the appropriate simulation models.

Keywords: Cognitive routing; Multipath routing; Satellite-high altitude platform.

73. A source Authentication Scheme using Network Coding

Ahmed Fathy, Tamer ElBatt and Moustafa Youssef

Inderscience International Journal of Security and Networks, 6: 2-3 (2011)

In this paper, we explore the security merits of network coding and potential trade-offs with the widely accepted throughput benefits, especially in multicast scenarios. In particular, we propose a novel Source Authentication using Network Coding (SANC) scheme. Towards this objective, we propose a general framework for embedding the authentication information within the network coding Global Encoding Vector. First, we illustrate the proposed concept using a simple mapping function. Second, we present a detailed security analysis that reveals the security merits of the proposed scheme, contrasted against two baseline schemes. Finally, we present simulation results pertaining to the network coding performance.

Keywords: Authentication; Impersonation attack; Linear network coding; Wireless ad hoc networks; Simulation; Analysis; Homomorphic encryption.

74. A Fully Symmetric and Completely Decoupled MEMS-SOI Gyroscope

Abdelhameed Sharaf, Sherif Sedky, Mohamed Serry, Amro Elshurafa, Mahmoud Ashour and S. E.-D. Habib

Sensors & Transducers Journal, 11: 10-22 (2011)

This paper introduces a novel MEMS gyroscope that is capable of exciting the drive mode differentially. The structure also decouples the drive and sense modes via an intermediate mass and decoupling beams. Both drive and sense modes are fully differential enabling control over the zerorate-output for the former and maximizing output sensitivity using a bridge circuit for the latter. Further, the structure is fully symmetric about the x- and y- axes which results in minimizing the temperature sensitivity problem. Complete analytical analysis based on the equations of motion was performed and verified using two commercially available finite element software packages. Results from both methods are in good agreement. The analysis of the sensor shows an electrical sensitivity of 1.14 (mV/(º/s)). The gyroscope was fabricated using single mask and deep reactive ion etching. The measurement of the resonance frequency performed showing a good agreement with the analytical and numerical analysis.

Keywords: Gyroscopes; MEMS; Silicon-on-Insulator; Mechanical sensitivity; Reactive ion etching.

75. Efficient Implementation of MIMO Decoders

Muhammad S. Khairy, Mohamed M. Abdallah and S. E.-D. Habib

Chapter 20: 439-454 *in book "MIMO* (2011)

Multiple-Input Multiple-Output (MIMO) technology has emerged as a promising technology for achieving the high data rates of next generation wireless communication systems. MIMO systems improve either the bit-error rate (BER) performance by using spatial diversity or the date rate via

spatial multiplexing. However, Maximum-likelihood (ML) detection for high order MIMO systems faces a major challenge in computational complexity that grows exponentially with the number of transmit and receive antennas. This limits the practicality of these systems from an implementation point of view, particularlyfor mobile battery-operated devices .This reality motivated researchers to consider other suboptimal approaches for MIMO decoding, such as Zero Forcing (ZF), Minimum Mean Square Error (MMSE) and VBLAST (Proakis & Salehi, 1994; Guo & Nilsson, 2003; Myllyla et al., 2005). All of these suboptimal approaches vary in performance and complexity. Recently, the sphere decoding (SD) algorithm which is a tree-based search algorithm enabled the implementation of efficient MIMO decoders that achieve near MLD performance together with reduced complexity (Burg et al., 2005; Barbero et al., 2005; Khairy et al., 2009). Instead of the exhaustive search over all possible combinations of the transmitted symbols, the SD algorithm reduces the complexity by searching only over a finite number of symbols within a circle of radius R centered at the received vector. While the SD approach provides a near ML solution, the runtime measured by the required operations to find the optimum solution is highly dependent on the received signal to noise ratio and the channel conditions. Consequently, the SD algorithm experiences variable throughput problems as the search radius R for each symbol varies according to the noise levels and the channel coefficients. Moreover, the sequential search results in hardware implementations that are not fully pipelined.To alleviate these problems, the fixed sphere decoding (FSD) algorithm was recently proposed (Barbero & Thompson, 2006 b). The FSD algorithm achieves a fixed throughput performance and enables fully-pipelined hardware by performing fixed number of operations per detected symbol, independent of the noise level. The FSD algorithm is performed in two stages where the first one is a pre-processing stage for the received symbols that incorporates a QR decomposition of the channel matrix for the MIMO system. This pre-processing allows for employing a tree-based search algorithm at the second stage that finds the optimal symbol which has the minimum distance to the received symbol. In this chapter, we present an efficient FPGA prototype of the FSD that implements an efficient QR decomposition of the channel matrix for a MIMO system using CORDIC array techniques followed by the FSD tree-based search algorithm. This prototype provides an improved hardware implementation in terms of area and throughput compared to up-todate published results in the literature. The FPGA implementation is incorporated with a MATLAB simulation model of an OFDM based MIMO system to validate the hardware design .As a practical application, we employed the FSD in the receiver of the IEEE802.16e WiMAX MIMO system. The IEEE 802.16e standard supports three types of MIMO space time codes (STC), referred to as matrix A, B, and C. These STC codes achieve different levels of throughput and diversity depending on the quality of the MIMO channels. We employed the FSD as a STC detector to decode the different STC schemes. In achieving that, the received signal is adaptively pre-processed according to the STC type prior feeding it to the FSD. At the end of the chapter, we present the performance of a two by two STC-WiMAX system with the FSD in terms of bit error rate and throughput.The results indicate that our FPGA implementation achieves throughput values that satisfy the requirements of the WiMAX standard.

1-1-08. ***Dept. of Engineering Mathematics and Physics***

76. Survey on Speech Emotion Recognition: Features, Classification Schemes, and Databases

Moataz El Ayadi, Mohamed S. Kamel and Fakhri Karray

Pattern Recognition, 44: 572–587 (2011) IF: 2.607

Recently, increasing attention has been directed to the study of the emotional content of speech signals, and hence, many systems have been proposed to identify the emotional content of a spoken utterance. This paper is a survey of speech emotion classification addressing three important aspects of the design of a speech emotion recognition system. The first one is the choice of suitable features for speech representation. The second issue is the design of an appropriate classification scheme and the third issue is the proper preparation of an emotional speech database for evaluating system performance. Conclusions about the performance and limitations of current speech emotion recognition systems are discussed in the last section of this survey. This section also suggests possible ways of improving speech emotion recognition systems.

Keywords: Archetypal emotions; Speech emotion recognition; Statistical classifiers; Dimensionality reduction techniques; Emotional speech databases.

77. Collision-induced Absorption (CIA) Spectra and Ground-state Potentials of inert gas Mixtures

M.S.A. El-Kader

Journal of Quantitative Spectroscopy & Radiative Transfer, 112: 1533-1542 (2011) IF: 2.331

Collision-induced absorption spectra of the rare gas systems He–Ne, He–Ar, He–Kr, He–Xe, Ne–Kr, Ne–Xe, Ar–Kr and Ar–Xe at different temperatures with the pressure second virial coefficients, viscosity and thermal conductivity have been used for deriving the empirical models of the induced dipole moment and the interaction potential. Theoretical zeroth, first and second moments of the binary spectra using various models for the induced dipole moment and interatomic potential are compared with the experimental values performed by the groups of Marteau, Bosomworth, Bucktoyarova, Bar-Ziv, Ryzhov and Frommhold. In addition, mixture diffusion coefficients and isotopic thermal factors calculated for these models are compared with experimental ones. The results show that these models are the most accurate models reported to date for these mixtures.

Keywords: Induced Dipole Moment; Interatomic Potential; Rare Gas Mixtures.

78. Structural Investigation and Simulation of Acoustic Properties of some Tellurite Glasses using Artificial Intelligence Technique

M.S. Gaafar, Mostafa A.M. Abdeen and S.Y. Marzouk

Journal of Alloys and Compounds 509: 3566-3575 (2011) IF: 2.138

The developments in the field of industry raise the need for simulating the acoustic properties of glass materials before

melting raw material oxides. In this paper, we are trying to simulate the acoustic properties of some tellurite glasses using one of the artificial intelligence techniques (artificial neural network). The artificial neural network (ANN) technique is introduced in the current study to simulate and predict important parameters such as density, longitudinal and shear ultrasonic velocities and elastic moduli (longitudinal and shear moduli). The ANN results were found to be in successful good agreement with those experimentally measured parameters. Then the presented ANN model is used to predict the acoustic properties of some new tellurite glasses. For this purpose, four glass systems xNb2O5–(1 − x)TeO2, 0.1PbO–xNb2O5–(0.9 − x)TeO2, 0.2PbO–xNb2O5–(0.8 − x)TeO2 and 0.05Bi2O3–xNb2O5–(0.95 − x)TeO2 were prepared using melt quenching technique. The results of ultrasonic velocities and elastic moduli showed that the addition of Nb2O5 as a network modifier provides oxygen ions to change [TeO4] tbps into [TeO3] tps.

Keywords: Tellurite glasses; Ultrasonic velocities; Elastic moduli; Artificial intelligence.

79. Effect of Nano Clay Particles on Mechanical, Thermal and Physical Behaviour of Waste-Glass Cement Mortars

M. Aly, M.S.J. Hashmi, A.G. Olabi, M. Messeiry, A.I. Hussain

Material Science and Engineering: A,(528) 7991-7998 (2011) IF: 2.101

Worldwide, around 2.6 billion tons of cement is produced annually. This huge size of production consumes large amounts of energy and is one of the largest contributors to carbon dioxide (CO2) release. Accordingly, there is a pressing demand to minimise the quantity of cement used in the concrete industry. The main challenge to this is to get durable concrete with less cement and within reasonable cost. The economic, environmental and engineering benefits of reusing ground waste-glass powder (WGP) as a partial cement replacement has been established, but low glass reactivity and the possible alkali-silica reaction (ASR) are a drawback. Recent advances in nano-technology have revealed that nano-sized particles such as nano clay (NC) have a high surface area to volume ratio that provides the potential for tremendous chemical reactivity, accelerating pozzolanic activity and hindering ASR. This paper presents a laboratory study of the properties of NC/WGP cement composites. The microstructure, ASR, fracture energy, compressive and flexural properties of cement mortars containing WGP powder as a cement replacement with and without NC are investigated and compared with plain matrix. In addition, the hydration of cement compounds was followed by differential thermal analysis (DTA), thermogravimetric analysis (TGA), and also X-ray diffraction (XRD). The results showed that incorporation of glass powder has a positive effect on the mechanical properties of cement mortars after 28 days of hydration. Also, the results revealed that the mechanical properties of the cement mortars with a hybrid combination of glass powder and NC were all higher than that of plain mortar and with glass powder after 28 days of hydration. In addition, the DTA/TGA results and XRD analysis showed a reduction in the calcium hydroxide (CH) content in mortars with glass powder and with a hybrid combination of glass powder and NC, which confirms the improvements of mechanical properties and occurrence of pozzolanic reaction after 28 days of hydration .

Keywords: Nano clay; Glass powder; Cement morta.

80. An Evolutionary Computation Approach For Time-Harmonic Field Problems Involving Nonlinear Magnetic Media

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

Journal of Applied Physics,109: 07D321 (2011) IF: 2.079

Recently, the particle swarm optimization evolutionary approach has been successfully utilized in field computation for devices involving nonlinear magnetic media. The purpose of this paper is to extend the aforementioned approach toward the solution of time-harmonic field problems. More specifically, unknown time-step vector magnetic potentials leading to the minimization of the energy functional are computed in an evolutionary mechanism to determine instantaneous field components. The proposed approach has been implemented and utilized for different supply frequencies, field amplitudes, and media characteristics. Details of the approach as well as comparisons with finite-element computations demonstrating the accuracy of the approach are given in the paper.

Keywords: Evolutionary computation; Time harmonic-field; Nonlinear media.

81. An Empirical Multi-parameter Anisotropic Intermolecular Potential, Collision-induced Absorption and Predicted Collision-induced Light Scattering Spectra for CF4–He

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

Chemical Physics, 388:78 -85 (2011) IF: 2.017

An approximate anisotropic intermolecular potential for the interaction of CF4 with He is developed by simultaneously fitting the Exponential Morse-Morse-Morse-Spline-van der Waals (EM3SV) potential form to high energy beam results, interaction pressure virial coefficients, diffusion coefficients, mixture viscosity and thermal conductivity. The collision-induced absorption spectrum of this system at 213 K has been calculated using the empirical models of the induced dipole moment and the interaction potential. Theoretical zeroth, first and second moments of this spectrum using various models for the induced dipole moment and interatomic potential are compared to the experimental values. Also, with this potential and with a suitable model for the anisotropy, the lineshape calculations have been used to predict a reasonable experimental spectrum of the induced light scattering. The results show that these models of the potential, the induced dipole moment and the induced anisotropy are the most accurate models reported to date for this mixture.

Keywords: Collision-induced Absorption; Intermolecular Potential; CF4–He.

82. Discrete Fractional Fourier Transform as A Fast Algorithm for Evaluating the Diffraction Pattern of Pulsed Radiation

Magdy Tawfik Hanna, Amr Mohamed Shaarawi, Nabila Philip Attalla Seif and Waleed Abd El Maguid Ahmed

Optical Society of America,28 (8): 1610-1619(2011) IF:1.936

A technique is proposed for computing the field radiated from a rectangular aperture. This technique, based on the discrete fractional Fourier transform, avoids the complexities of computing the diffraction pattern by the direct evaluation of the Fresnel integral. The advocated approach provides a fast and accurate computational tool, especially in the case of evaluating pulsed fields radiated through two-dimensional screens of complex amplitude. A detailed numerical study that demonstrates the efficacy of this approach is carried out.
Keywords: Discrete Fractional Fourier Transform; Pulsed Radiation; Fresnel Integral.

83. Fractional Smith Chart Theory

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

Ieee Microwave and Wireless Components Letters, 21 (3): 117-119 (2011) IF: 1.770

For the first time, a generalized Smith chart is introduced here to represent fractional order circuit elements. It is shown that the standard Smith chart is a special case of the generalized fractional order Smith chart. With illustrations drawn for both the conventional integer based lumped elements and the fractional elements, a graphical technique supported by the analytical method is presented to plot impedances on the fractional Smith chart. The concept is then applied towards impedance matching networks, where the fractional approach proves to be much more versatile and results in a single element matching network for a complex load as compared to the two elements in the conventional approach.
Keywords: Fractional; matching elements; Smith chart.

84. Theory of Fractional Order Elements Based Impedance Matching Networks

A. G. Radwana, A. Shamimb and K. N. Salamab

Ieee Microwave and Wireless Components Letters, 21 (3): 120- 122 (2011) IF: 1.770

Fractional order circuit elements (inductors and capacitors) based impedance matching networks are introduced for the first time. In comparison to the conventional integer based L-type matching networks, fractional matching networks are much simpler and versatile. Any complex load can be matched utilizing a single series fractional element, which generally requires two elements for matching in the conventional approach. It is shown that all the Smith chart circles (resistance and reactance) are actually pairs of completely identical circles. They appear to be single for the conventional integer order case, where the identical circles completely overlap each other. The concept is supported by design equations and impedance matching examples.
Keywords: Fractional; matching elements; Smith chart.

85. An Expression for the Voltage Response of a Current-Excited Fractance Device Based on Fractional-Order Trigonometric Identities

A. G. Radwan and A. S. Elwakil

International Journal of Circuit Theory and Applications, (2011) IF: 1.759

We report a closed-form expression of the voltage response of a current-excited fractance device. The derived simple expression is made possible following the introduction of the generalized sine and cosine functions (sin_α (t) and cos_α (t)), which are valid on any fractional-order surface and tend to the normal sin(t) and cos(t) at α=1 or asymptotically as t.∞→
Keywords: Fractional-order systems; elementary circuits; circuit theory; fractional calculus.

86. Empirical Pair Polarizability Anisotropy and Interatomic Potential for Monatomic Gas Mixture of Kr and Xe

M.S.A. El-Kader, A.A. El-Sadek, B.M. and Taher G.

Molecular Physics, 109: 1677–1689 (2011) IF: 1.743

Quantum mechanical lineshapes of collision-induced light scattering (CILS) at room temperature are computed for gaseous binary mixtures of krypton with xenon using theoretical induced pair polarizability anisotropy as input. Comparison with measured anisotropic spectrum of light scattering shows good agreement, in spite of the uncertainty in its spectral moments. Empirical model of the pair polarizability anisotropy which reproduce the experimental spectrum and the first few spectral moments more closely than the fundamental theory are also given. Good agreement between computed and experinental lineshapes of scattering is obtained when potential models which are constructed from the thermophysical and total scattering cross sections are used.
Keywords: Pair Polarizability Anisotropy; Interatomic Potential; Krypton–Xenon.

87. Lineshapes of Collision-Induced Absorption (CIA) and of Collision-Induced Scattering (CIS) for Monatomic Gas Mixtures of Ne-Ar

M.S.A. El-Kader and T.Bancewicz

Molecular Physics, 109: 457–466 (2011) IF: 1.743

Quantum mechanical lineshapes of collision-induced absorption (CIA) at different temperatures and of collisioninduced light scattering (CIS) at room temperature are computed for gaseous binary mixtures of neon with argon using theoretical induced dipole moment and pair-polarizability trace and anisotropy as input. Comparison with measured spectra of 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 experinental lineshapes of both absorption and scattering is

obtained when potential models constructed from the thermophysical, transport and spectroscopic properties are used.
Keywords: Pair Polarizability Trace; Anisotropy and Dipole Moment Models/neon–Argon.

88. Spectral line-shapes and Moment Analysis in Isotropic and Anisotropic Light Scattering Spectra for Gaseous Argon

M.S.A.El-Kader

Molecular Physics, 109: 863–873 (2011) IF: 1.743

For direct comparison with the measurements of isotropic and anisotropic collision-induced light scattering spectra of argon gas at room temperature performed by Le Duff's group, quantum mechanical lineshapes are computed using different models of the interatomic potential and models of the diatom polarizability tensor invariants as input. New empirical trace and anisotropy parameters, consistent with the spectroscopic measurements, are thus obtained for the argon gas. These are compared, where possible, with existing computations based on classical physics, utilizing the first few even moments of the isotropic and anisotropic light scattering spectra. Some discrepancies with experiment, specially for the second Kerr coefficient, are found, but overall the agreement is satisfactory and the profiles calculated with these models coincide with experiments.

89. Passive and Active Elements Using Fractional L_β C_α Circuit

A. G. Radwan and K. N. Salama

IEEE Trans. Circuits & Systems I, 58 (10): 2388 – 2397 (2011) IF: 1.580

This paper introduces a qualitative revision of the traditional LC tank circuit in the fractional domain. The paper can be divided into six major parts, aiming in turn to establish the various conditions under which L_β C_α impedance may act as a resistor, negative resistor, or a positive or negative pure imaginary inductor or capacitor, in accordance to new frequency definitions; illustrate the process by which the phase response chooses the shortest path from initial to final phase, and use this illustration to verify the cases discussed in part one; develop the generalized parameters for the bandpass filter response of the L_β C_α circuit, such as the resonance frequency and quality factor versus α-β plane; discuss sensitivity analyses with respect to the fractional orders, as well as the time domain analyses for the impulse and step responses with their analytical formulas; and lastly, to propose some possible applications for this generalized circuit.
Mathematical and PSpice simulation results are included to validate the discussion.
Keywords: Negative resistor; resonance; quality factor; sensitivity; analysis; fractional oscillation.

90. Comment on "Group Solution of a Time Dependent Chemical Convective Process" M.M. Kassem, and A.S. Rashed , Applied Mathematics and Computation, 215 (2009) 1671–1684

Tarek M. A. El-Mistikawy

Applied Mathematics and Computation 217: 5999-6003 (2011) IF: 1.536

The mathematical model formulated by M.M. Kassem and A.S. Rashed in their article: "Group solution of a time dependent chemical convective process, Applied Mathematics and Computation, 215 (2009) 1671-1684", through group analysis, is reformulated and interpreted correctly so that it can represent a feasible situation. A perturbation analysis that replaces their incorrect analysis is performed and proved to compare well with a finite difference solution of the problem.
Keywords: Chemical reaction; Diffusion; Buoyancy; Perturbation analysis; Numerical solution.

91. Stability and Non-Standard Finite Difference Method of the Generalized Chua's Circuit

A. G. Radwan, K. Moddy, S. Momanic

Computers and Mathematics with Applications, 62: 961–970 (2011) IF: 1.472

In this paper, we develop a framework to obtain approximate numerical solutions of the fractional-order Chua's circuit with Memristor using a non-standard finite difference method. Chaotic response is obtained with fractional-order elements as well as integer order elements. Stability analysis and the condition of oscillation for the integer-order system are discussed. In addition, the stability analyses for different fractional-order cases are investigated showing a great sensitivity to small order changes indicating the poles' locations inside the physical s-plane. The Grünwald–Letnikov method is used to approximate the fractional derivatives. Numerical results are presented graphically and reveal that the non-standard finite difference scheme is an effective and convenient method to solve fractional-order chaotic systems, and to validate their stability.
Keywords: Fractional differential equations; Non-standard finite difference schemes; Fractional differential equations; Chaotic systems; Chua's circuit; Memristor.

92. Free Vibration of Non-uniform Column using DQM

A.A. Mahmouda, Ramadan Awadallab and M.M. Nassara

Mechanics Research Communications 38: 443– 448 (2011) IF: 1.307

Most of engineering problems are governed by a set of partial differential equations with proper boundary conditions. The present work is concerned with free vibration analysis of non-uniform column resting on elastic foundation and subjected to follower force. The used method of solution is the differential quadrature method (DQM). Formulation of the problem is introduced. The results obtained and compared with the exact

solution and traditional numerical techniques such as finite element method. The parametric study is used to investigate the effect of column geometry on the natural frequencies, the mode shapes and the critical load.
Keywords: Non-uniform column; Vibration; Follower force; Critical load and Differential Quadrature Method.

93. First Principles Calculation of Field Emission from Nanostructures using Time-Dependent Density Functional Theory: a Simplified Approach

Sherif A. Tawfik, S. M. El-Sheikh, N. M. Salem

Physica E: Low-dimensional Systems and Nanostructures, (43): 1360–1364 (2011) IF : 1.304

We introduce a new simplified method for computing the electron field emission current in short carbon nanotubes and grapheme sheets using ab-initio computation in slab-periodic simulation cells. The evolution of the wave functions using Time-Dependent Density Functional Theory is computed by utilizing the Crank–Nicholson propagator and using the Octopus code (Castroetal., 2006 [1]), where we skip the wave function relaxation step elaborated by Hanetal.(2002) [2], and apply a norm-conserving wave propagation method instead of the norm-nonconserving seventh- order Taylor Expansion method used by Araidai et al.(2004) [3]. Our method is mainly geared towards reducing the time it takes to compute the wave function propagation and enhancing the calculation precision. We found that in pristine carbon nanotubes, the emitted charge tends to emerge mostly from electrons that are concentrated at the nanotube tip region. The charge beam concentrates into specific channel structures, showing the utility of carbon nanotubes in precision emission applications.
Keywords: Carbon nanotubes; precision field emission; time-dependent density functional theory; Crank-Nicholson propagator; Octopus code.

94. First Principles Calculation of Field Emission from Nanostructures with Nitrogen and Boron Doping

Sherif A. Tawfik , S. M. El-Sheikh, N. M. Salem

Physica E: Low-dimensional Systems and Nanostructures, 44:111–114 (2011) IF : 1.304

We investigate the field emission properties of nitrogenated and boronated carbon nanotubes using time-dependent density functional theory, where the wave function propagation is performed using the Crank–Nicholson algorithm. We extract the current–voltage characteristics of the emitted electrons from nanotubes with different doping configurations. We found that boron doping alone either impedes, or slightly enhances, field emission. Nitrogen generally enhances the emission current, and the current is sensitive to the location of the nitrogen dopant in the nanotube. Doping with both nitrogen and boron will generally enhance emission, and the closer the nitrogen dopant is to the tip, the higher is the emitted current. The emitted charge cloud from nitrogen-doped carbon nanotubes, however, diffuse more than that from pristine ones, our simulations show the emergence of a branching structure from the charge cloud, which suggests that nitrogenated carbon nanotubes are less convenient for use in precision beam applications .
Keywords: Nitrogenated carbon nanotubes; Boronated carbon nanotubes, precision field emission; Crank-Nicholson propagator; octopus code.

95. Comment on: "Fundamental Flows with Nonlinear Slip Conditions: Exact Solutions"

Tarek M. A. El-Mistikawy

Zeitschrift für angewandte Mathematik und Physik (ZAMP) 62: 1159-1164 (2011) IF :1.29

In their article (Fundamental flows with nonlinear slip conditions: exact solutions, R. Ellahi, T. Hayat, F. M. Mahomed and A. Zeeshan, Z. Angew. Math. Phys. 61 (2010) 877-888.), the authors considered three simple cases of the steady flow of a third grade fluid between parallel plates with slip conditions; namely, Couette flow, Poiseuille flow, and generalized Couette flow. They obtained exact solutions, which were utilized in a way that did not lead to useful results. Their conclusion that the Couette flow cannot be obtained from the generalized Couette flow, by dropping the pressure gradient, is incorrect. Meaningful results based on their solution are herein presented.
Keywords: Third grade fluid; Slip condition; Generalized Couette flow; Poiseuille flow; Couette flow; Exact solutions.

96. Memristor-Based Reactance-Less Oscillator

M. Affan Zidana, Hesham Omrana, A. G. Radwanb, and K. N. Salamaa

Electronics Letters, 47, 22: 1220–1221 (2011) IF :1.004

The first reactance-less oscillator is introduced. By using a memristor, the oscillator can be fully implemented on-chip without the need for any capacitors or inductors, which results in an area-efficient fully integrated solution. The concept of operation of the proposed oscillator is explained and detailed mathematical analysis is introduced. Closed form expressions for the oscillation frequency and oscillation conditions are derived. Finally, the derived equations are verified with circuit simulations showing excellent agreement.
Keywords: Memristor; oscillator; reactance-less; Nanotechnology.

97. A New Hyprid Method For Optimal Circuit Design Using Semi-definite Programming

Abdel-Karim S.O. Hassan and Ahmed Abdel-Naby

Engineering Optimization, 1-16 (2011) IF: 0.902

In this article a new method for yield optimization (design centering) is introduced. The method has a statistical-geometrical nature, hence it is called hybrid. The method exploits the semi-definite programming applications in approximating the feasible region with two bounding ellipsoids. These ellipsoids are obtained using a two phase algorithm. In the first phase, the minimum volume ellipsoid enclosing the feasible region is obtained. The largest ellipsoid that can be

inscribed within the feasible region is obtained in the second phase. The centers of these bounding ellipsoids are used as design centers.
In the second phase, an additional polytopic region approximation is constructed. A comparison between the obtained region approximations is given. Saving in the number of circuit simulations needed for yield optimization is also considered. Practical examples are given to show the effectiveness of the new method .
Keywords: Circuit design ; Design centering ; Semi-definite programming ; Minimum volume ellipsoid ; Maximum volume ellipsoid.

98. Identification of Surface Cracks in Magnetic Bodies Using Wavelets on a Bounded Interval

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

Physica B, 406: 280–286 (2011) IF: 0.856

Non-destructive identification of cracks in steel bodies has always been an issue of great interest to numerous industrial sectors. Examples in which such non-destructive testing is of considerable importance include railways, pipelines and structural supports.
This paper proposes a technique that employs the application of static magnetic field parallel to the surface under consideration while monitoring emanating fields using an orthogonally oriented hall sensor.
In this approach, wavelets on a bounded interval are utilized to identify the precise location of surface cracks, which are considerably smaller than the active sensing element dimensions. Simulation results demonstrating the advantages of the proposed approach are given in the paper.
Keywords: Non-destructive testing of material; Integral equations; Wavelets.

99. A New Technique of Using Homotopy Analysis Method for Solving High-order Nonlinear Differential Equations.

Hany N. Hassan and Magdy A. El-Tawil

Math. Meth. Appl. Sci, 34: 728–742 (2011) IF: 0.840 529

In this paper, a new technique of homotopy analysis method (HAM) is proposed for solving high-order nonlinear initial value problems. This method improves the convergence of the series solution, eliminates the unneeded terms and reduces time consuming in the standard homotopy analysis method (HAM) by transform the nth-order nonlinear differential equation to a system of n first-order equations. Second- and third- order problems are solved as illustration examples of the proposed method.
Keywords: Nonlinear Initial Value Problems; Homotopy Analysis Method; Modified HAM; System of Differential Equations

100. An efficient analytic approach for solving two-point nonlinear boundary value problems by homotopy analysis method

Hany N. Hassan and Magdy A. El-Tawil

Math. Meth. Appl. Sci, 34 977–989 (2011) IF: 840

In this paper, we use homotopy analysis method (HAM) to solve two-point nonlinear boundary value problems that have at least one solution. The new approach provides the solution in the form of a rapidly convergent series with easily computable components using symbolic computation software. The scheme shows importance of choice of convergencecontrol parameter h to guarantee the convergence of the solutions of nonlinear differential equations. This scheme is tested on three nonlinear exactly solvable differential equations. Two of the examples are practical in science and engineering. The results demonstrate reliability, simplicity and efficiency of the algorithm developed. Copyright.
Keywords: homotopy analysis method; two point nonlinear boundary value problems; convergence-controller parameter; Taylor expansion; Troesch's problem; Bratu's equation.

101. Generalized Model for Memristor-Based Wien Family Oscillators

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

Journal of Microelectronics, 42: 1032–1038 (2011) IF: 0.789

In this paper, we report the unconventional characteristics of memristor in Wien oscillators. Generalized mathematical models are developed to analyze four members of the Wien family using memristors. Sustained oscillation is reported for all types though oscillating resistance and time dependent poles are present. We have also proposed an analytical model to estimate the desired amplitude of oscillation before the oscillation starts. These memristor-based oscillation results, presented for the first time, are in good agreement with simulation results.
Keywords: Memristor; Wien oscillator; nonlinear; oscillating resistance; dynamic poles.

102. On the Boundary Integral Equation Treatment of Exterior Acoustic Problems

A. Mohsen and M. Ochmann

Journal of Computational Acoustics, 1: 395 – 40. (2011) IF: 0.673

The solution of acoustic problems via integral equations is considered. Symmetrical evaluation of the resulting integrals is proposed. The possible reduction of the system matrix to complex symmetric form is considered. Applications of the proposed method to scattering by a soft as well as a hard sphere are presented. Another application to radiation from a uniformly vibrating sphere is also considered. To overcome the nonuniqueness problem, CHIEF method is used and Lagrange multipliers are employed to deal with the resulting overdetermined system to preserve the symmetry of the system matrix.

Keywords : Helmholtz Equation; Boundary Integral Equations; Acoustic Radiation and Scattering; Nonuniqueness.

103. The Application of the Dual Surface Method to Treat the Nonuniqueness in Solving Acoustic Exterior Problems

A. Mohsen , R.Piscoya and M.Ochmann

Acta Acustica United With Acustica, 699-707 (2011)
IF 0.552

The problem of nonuniqueness (NU) of the solution of exterior acoustic problems via boundary integral equations (BIEs) is studied. The application of the dual surface method, used in electromagnetic problems, to exterior acoustic problems is studied. The dual surface integral equations, although identical in form and comparable in complexity to the original surface integral equations provide a unique solution at all real frequencies. The conditions and the proof of uniqueness are outlined. Applications of the method are given for the scattering as well as the radiation from three different structures. We consider normalized frequencies up to ka 22 ., where a is a typical dimension of the structure.
Keywords: Acoustic Radiation; Acoustic Scattering; Integral Equations; Nonuniqueness; Dual Surface Method.

104. Philos Type Criteria for Second-Order Half-Linear Dynamic Equations

Said R. Grace, Ravi P. Agarwal, Martin Bohner and Donal O'Regan

Math.Inequalities & Applications, 20: 211–222 (2011)
IF :0.524

Some new criteria for the oscillation of solutions of the second-order half-linear dynamic equation

$$(a(x^{\Delta})^{\alpha})^{\Delta}(t)+q(t)x^{\alpha}(t)=0$$

are established when $\int^{\infty} a^{-1/\alpha}(s)\Delta s=\infty$

Keywords: Dynamic equation; Half linear; Oscillation; nonoscillation.

105. High Frequency Interaction-Induced Anisotropic Rototranslational Light Scattering Spectra of Gaseous Carbon Dioxide

M.S.A. El-Kader, T. Bancewicz and G. Maroulis

Acta Physica Polonica A, 119: 838-845 (2011) IF: 0.467

The anisotropic rototranslational scattering of carbon dioxide gas is studied theoretically at 294.5 K, in the frequency range 10–470 cm¡1, at a density of 1.026254 mole/litre. The anisotropic double differential cross-section for scattered light is calculated theoretically using new site–site Morse–Morse–Morse–spline–van der Waals intermolecular potentials with the parameters fitted to the different thermophysical and transport properties. Our theoretical calculations take into account multipole contributions from the first- and second-order dipole-induced dipole, first-order dipole-induced octopole and first-order dipole–dipole–quadrupole light scattering mechanisms as well as their cross contributions. The irreducible spherical form for the induced operator of these light scattering mechanisms was determined.
The high frequency wings are discussed in terms of the collision-induced rotational Rayleigh effect and estimates for the dipole–octopole polarizability E4 is obtained and checked with the ab initio theoretical value.
Good agreement is obtained at moderate frequencies between the theoretical and experimental spectra. When an exponential contribution exp(¡º=º0), with º0 = 115 cm¡1 is considered to model very short-range light scattering mechanism, good agreement is found over the whole frequency range.

106. Simulation and Prediction for the Effect of Natural and Steel Fibers on the Performance of Concrete using Experimental Analyses and Artificial Neural Networks Numerical Modeling

Hossam Hodhod and Mostafa A. M. Abdeen

KSCE Journal of Civil Engineering, 15 (8): 1373–1380 (2011) IF: 0.45

Utilization of fibers as concrete reinforcement is one method of preserving environment through the recycling of agriculture and industrial wastes. However, the optimum and efficient application of these fibers requires a measurable evaluation of their effect on properties and performance of concrete. In this study, the application of metallic steel fibers and natural (Linen) fibers in concrete industry is investigated, experimentally. Twenty one mixes are made with different mix proportions and with different types of fibers.
The parameters are concrete characteristic strength, age and type of reinforcing fibers. Compressive, tensile and impact strength were measured for all mixes in addition to the residual compressive strength after exposure to elevated temperature. Measurements were also made using two Non Destructive Testing (NDT) techniques. Experimental results were compared and showed the enhancement level obtained by including steel and natural fibers.
Following this experimental effort, one of the artificial intelligence techniques (Artificial Neural Network) was applied for simulating and predicting the performance of concrete with different mix proportions. The current paper introduced the Artificial Neural Network (ANN) technique to investigate the effect of natural and steel fibers on the performance of concrete.
The results of this study showed that the ANN method with less effort was very efficiently capable of simulating and predicting the performance of concrete with different mix proportions and different types of fibers.
Keywords: Fiber reinforcement; Non-destructive Evaluation; Mechanical Properties; Concrete; Fibrous Composites; Modeling; Artificial Neural Network. Fiber reinforcement; Non-destructive Evaluation; Mechanical Properties; Concrete; Fibrous Composites; Modeling; Artificial Neural Network.

107. Design of Photonic Band Gaps In one-Dimensional Sio2/A-Si Photonic Crystals

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

Journal of Optoelectronics and Advanced Materials, 13: 781–785 (2011) IF: 0.412

We theoretically study one dimensional binary SiO2/a-Si photonic crystals taking into consideration the dissipative nature of amorphous Si. We suggest a method namely; "modified thickness" to control the band gaps central frequencies by gradually changing the width of the alternating layers. We calculate the reflectance, transmittance and absorbance of light based on the transfer matrix method. Calculations show that photonic band gaps can occur at the suggested central frequency and its multiples. We discuss the limitations on the choice of the first central band gap frequency, thickness of the a-Si layers and number of periods.
Keywords: Photonic crystals; one-dimensional; Modified structure; Amorphous Si, Silicon Dioxide.

108. On the Oscillation of Fourth Order Superlinear Dynamic Equations on Time Scales

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

Journal Dynamic Systems and Applications, 20: 45–54 (2011) IF: 0.398

Some oscillation criteria for the oscillatory behavior of fourth order superlinear dynamic equations on time scales are established. Criteria are proved to ensure that all solutions of superlinear and linear equations are oscillatory. Many of our results are new for corresponding fourth order superlinear differential equations and fourth order superlinear difference equations.
Keywords: Oscillation theorems ;super ;inear ;dynamic equations.

109. Design Centering and Region Approximation using Semidefinite Programming

Abdel-Karim S.O. Hassan & Ahmed Abdel-Naby

International Journal of Research and Reviews in Applies Sciences (IJRRAS), (6) 3: 366 –375 (2011)

The design centering problem seeks for the optimal values for the system designable parameters that maximize the production yield (probability of satisfying the design specifications by the manufactured systems). A new method for design centering and region approximation for a convex and bounded feasible region is introduced. The method finds iteratively a sequence of increasing-volume ellipsoids enclosing tightly selective sets of feasible points. These ellipsoids are known as Löwner-John ellipsoids. The sequence of Löwner-John ellipsoids is well defined to converge to the minimum volume ellipsoid containing the feasible region. The center of this ellipsoid defines a design center for the proposed design problem and the ellipsoid itself is considered as a region approximation for the feasible region. A re-use of system simulations is performed in order to minimize the overall computational effort. Numerical and practical examples are considered to show the effectiveness of the new method.
Keywords: Design centering ; Yield optimization ; Semidefinite programming ; Löwner-John ellipsoid ; Minimum volume ellipsoid, Region approximation.

110. Modifications to Murty's Method for Linear Programming Using Ellipsoidal Technique with Sliding Objective

Abdel-Karim S.O. Hassan and Hesham O. M. Ali

International Journal of Research and Reviews in Applies Sciences (IJRRAS), (7) 3: 2249 –259 (2011)

In this paper significant modifications to the method proposed by Murty in 2006 for solving LP are introduced. Each iteration in Murty's method consists of two steps ; a centering step and a descent step. The centering step is a corrector step that tries to move a current interior feasible solution into the center of the feasible region without sacrificing the objective quality. This center is considered as the center of the largest hypersphere that can be inscribed in the polytopic feasible region. The centering step is accomplished using two centering phases. The second step is a predictor step that results in a strict decrease in objective value. A modification is done to that procedure by combining the foregoing two centering phases through adding an extra constraint parallel to the objective function to the polytopic feasible region. Then, the center of the modified polytopic feasible region is obtained by finding the center of the largest hyperellipsoid inscribed inside it using an ellipsoidal method. A descent step is then done to get a better solution .
Keywords: Ellipsoidal method; IPM, LP; Murty Method.

111. Laminar Flow of Non-Newtonian Fluid in Right Angled Triangular Ducts

Adel A. Megahed and Sherif E. Adel

International Journal of Applied Mathematics andPhysics, 3 (1): 131-135 (2011)

A finite difference numerical solution has been developed and applied to the fully developed laminar flow of power law non-Newtonian fluids in ducts of right angled triangular cross section. Numerical results for velocity and friction factor are presented for power flow index from 0.5 to 1.25. The effect of the flow index on velocity profiles and friction factor has been discussed.
Keywords: Hydrodynamics; Viscoelastic flow; Duct flow; Finite difference.

112. Optimal Seat Suspension Design Using Genetic Algorithms

Wael Abas, Ossama Abouelatta, M. El-Azab, M. ElSaidy and Adel A. Megahed

Journal of Mechanics Engineering and Automation, 1: 44-52 (2011)

The linear seat suspension is considered due to the low cost consideration, therefore, the optimal linear seat suspension design method can be used for this purpose. In the present

paper, the design of passive vehicle seat suspension system was handled in the framework of linear optimization.
Keywords: Biodynamic response; Seated human models; Simulation; Genetic algorithms.

113. Similarity Solution for Steady MHD Falkner-Skan Heat and Mass Transfer Flow over a Wedge in Poroue Media Considering Thermal Diffusion and Diffusion-Thermo Effects with Variable Viscosity and Thermal Conductivity

Adel A. Megahed, A,A, Afify and Afaf Musbah

International Journal of Applied Mathematics and Physics, 3 (1) 119- 129 (2011)

An analysis is presented to investigate the effects of thermal-diffusion (Soret) and the diffusion-thermo (Dufour)effects, temperature-dependent viscosity, thermal coductivity on Falkner-Skan heat and mass transfer flowof a viscous incompressible fluid over a wedge immersed in a porous media.The similarity solutions are obtained by applying scaling group of transformations.
Keywords: Falkner-Skan flow; Porous media; Similarity solutions; Heat and Mass Transfer.

114. Buckling of Prismatic and Non-prismatic Columns using Differential Quadrature Method

A. Salah, M.Nassar,A. Abdel Gawad

Canadian Journal of Pure and Applied Science, 5 (1): 1399- 1404 (2011)

Differentia Quadrature (DQ) is a numerical method for evaluating derivatives of a sufficiently smooth function. Of the various numerical solution, differential quadrature (DQ) method has distinguished itself because of its high accuracy, straightforward implementation and generality in a variety of problems. In this paper differential quadrature method is used to solve buckling problem of column. Critical buckling load is obtained for prismatic and non-prismatic column and various boundary conditions are applied. The obtained critical buckling load is compared with exact solution. Equally effect of the number of grid points on the solution is studied. Direct substitution method is used to implement various boundary conditions. A treatment of clamped - free boundary conditions is shown where modified weighting coefficients formula is driven. Also the effect of the non-prismatic constant on the buckling load is studied.
Keywords: Differential Quadrature; Buckling; Prismatic; Non-prismatic.

115. A Fast Built-in Sensor for CMOS digital applications

R.F. Ahmed, A.G. Radwan, A.H. Madian and A.M. Soliman

Canadian Journal on Electrical and Electronics Engineering, 2 (6): 229-242 (2011)

Various testing methods have been proposed for testing digital circuits. One of those testing methods is the quiescent current testing which is now widely used due to the high fault coverage it achieves. But this method suffers from a big problem that is the voltage degradation it causes to the Circuit Under Test (CUT). In this paper, a novel built-in sensor (BIS) for digital CMOS circuit testing is proposed. The proposed BIS has no voltage degradation and it is able to detect, identify and localize both open and short circuit faults. Moreover, it has a simple realization with very small area and reaction time. PSpice simulations are made to verify that the proposed BIS can detect all short and open circuit fault cases applied to the CUT. Look-up tables are included to describe the detection and localization of all possible faults either open or short circuit faults in the given example. Also, comparison with the previous sensors is included. This BIS can be applied to any other CMOS circuit by adjusting the reference voltages it uses.
Keywords: Digital testing; built in sensor; fault detection; catastrophic faults.

116. A Memristor-based Third Order Oscillator: Beyond Oscillation

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

Applied Nanoscience, 1: 143 – 145 (2011)

This paper demonstrates the first third-order autonomous linear time variant circuit realization that enhances parametric oscillation through the usage of memristor in conventional oscillators. Although the output has sustained oscillation, the linear features of the conventional oscillators become time dependent. The poles oscillate in nonlinear behavior due to the oscillation of memristor resistance. The mathematical formulas as well as SPICE simulations are introduced for the memristor-based phase shift oscillator showing a great matching.
Keywords: Memristor ; Linear time variant ; Oscillator

117. Built-in Current Sensor For Testing Analog Blocks

R.F. Ahmed , A. G. Radwan, A. H. Madian , A.M. Soliman

Canadian Journal on Electrical and Electronics Engineering, 2 (6): 216-228 (2011)

This paper presents novel testing scheme for detecting catastrophic faults in analog circuits. Here, the proposed scheme is applied to test the terminal characteristics of two well-known analog building blocks; the Current Feedback Operational Amplifier (CFOA) and the Operational Trans-Resistance Amplifier (OTRA). It produces on-line testing and it has no voltage degradation. Moreover, it has a simple design, very small area and can detect both short and open circuit faults. Also, simulations are made to test two universal analog filters to prove that the proposed method can detect and localize the defected analog block in the filter. Finally, the proposed scheme is compared with the conventional IDDQ testing scheme and it proves that the proposed method has a superior performance.
Keywords: Analog testing; built in sensor; fault detection; catastrophic faults.

118. Transient Adjoint Sensitivities for Discontinuities with Gaussian Material Distributions

A. G. Radwan, Mohamed H. Bakr and Natalia K. Nikolova

*Progress in Electromagnetics Researc*B, 27: 1-19 (2011)

We present a novel approach for adjoint transient sensitivity analysis with respect to discontinuities with space-dependent materials exhibiting known distribution. Our approach integrates the Time Domain Transmission-Line-Modeling (TD-TLM) with the Adjoint Variable Method (AVM). Using only one extra TD-TLM simulation, the sensitivities of the observed response with respect to all the parameters of the Gaussian distribution are obtained. The accuracy of our sensitivity analysis approach is illustrated through a number of different 2D and 3D examples. Using the previous sensitivities, gradient based optimization technique is applied to exploit in the location and profile of various inhomogeneous material Gaussian distribution for inverse problems. This method can be repeated for any continuous or discontinuous distributions that exist in electromagnetic imaging for space dependent materials like cancer detection.

Keywords: Computational electromagnetics; inverse problem; TLM; adjoint sensitivity; cancer detection.

119. Mean Square Numerical Methods for Initial Value Random Differential Equations

Magdy A. El-Tawil and Mohammed A. Sohaly

Open Journal of Discrete Mathematics, 1: 66-84 (2011)

In this paper, the random Euler and random Runge-Kutta of the second order methods are used in solving random differential initial value problems of first order. The conditions of the mean square convergence of the numerical solutions are studied. The statistical properties of the numerical solutions are computed through numerical case studies.

Keywords: Random Differential Equations; Mean Square Sense; Second Random Variable; Initial Value Problems; Random Euler Method; Random Runge

120. Modified Homotopy Analysis Method for Second order nonlinear initial value problems

Hany N. Hassan and Magdy A. El-Tawil

Int. J. of Appl. Math and Mech. 7 (18): 82-108 (2011)

In this paper, a new modification of the homotopy analysis method is proposed for solving a special kind of nonlinear differential equations. This modification improves the convergence of the series solution, eliminates the unneeded terms and reduces time consuming in the homotopy analysis method (HAM). Boussinesq type equations are used as test problems to show the simplicity and effectiveness of the method.

Keywords: Second order nonlinear initial value problems; Homotopy analysis method; Modified homotopy analysis method; Boussinesq type equations.

121. Solution of Stochastic Cubic and Quintic Nonlinear Diffusion Equation Using WHEP, Pickard and HPM Methods

Magdy A. El-Tawil1 and Aisha F.Fareed

Open Journal of Discrete Mathematics, 1: 6-21 (2011)

In this paper, the cubic and quintic diffusion equation under stochastic non homogeneity is solved using Wiener- Hermite expansion and perturbation (WHEP) technique, Homotopy perturbation method (HPM) and Pickard approximation technique. The analytic solution of the linear case is obtained using Eigenfunction expansion .The Picard approximation method is used to introduce the first and second order approximate solution for the non linear case. The WHEP technique is also used to obtain approximate solution under different orders and different corrections. The Homotopy perturbation method (HPM) is also used to obtain some approximation orders for mean and variance. Using mathematica-5, the methods of solution are illus-trated through figures, comparisons among different methods and some parametric studies.

Keywords: Stochastic Diffusion Equations; WHEP Technique; HPM Method.

122. Solving Cubic and Coupled Nonlinear Schrödinger Equations using the Homotopy Analysis Method

Hany N. Hassan and Magdy A. El-Tawil

Int. J. of Appl. Math and Mech. 7 (8): 41-64 (2011)

The homotopy analysis method (HAM) is applied to solve the nonlinear Schrödinger (NLS) equations. In this paper, we will reduce the NLS equation to a system of two nonlinear equations contain the real and imaginary parts of the solution. The method provides the solution in the form of a rapidly convergent series with easily computable components using symbolic computation software such as Mathematica. The scheme shows importance of choice of convergence-control parameter ħ to guarantee the convergence of the solutions of nonlinear differential equations. This scheme is tested on two cases study, the cubic nonlinear Schrödinger (CNLS) equation and a system of coupled nonlinear Schrödinger equations. The results demonstrate reliability and efficiency of the algorithm developed.

Keywords: Cubic nonlinear Schrödinger; Coupled nonlinear Schrödinger equations; Homotopy analysis method; Convergencen; controller parameter.

123. Statistical Study of the Stochastic Solution Processes of Stochastic Navier-Stokes Equations Using Homotopy-WHEP Technique

Magdy A. El-Tawil1 and Abdel-Hafeez A. El-Shekhipy

Int. Journal of Computer Science & Computational Mathematics, 1 (4) : 19-30 (2011)

This paper indicates the application of the Homotopy-WHEP method to find an approximate for the statistical moments of the stochastic solution processes of 2-D Navier-Stokes

equations under the effect of a stochastic excitation. Some cases studies from the results of this method are considered to illustrate some corrections.
Keywords: Stochastic Navier stokes equations; Homotopy WHEP technique; Wiener–Hermite Expansion (WHE); homotopy perturba- tion method (HPM); Averages; Variance.

124. Application of Conic Optimization and Semidefinite Programming in Classification

Abdel-Karim S.O. Hassan, Mohamed A. El-Gamal & Ahmad A.I. Ibrahim

International Journal of Research and Reviews in Applies Sciences (IJRRAS), (6) 3: 277–283 (2011)

In this paper, Conic optimization and semidefinite programming (SDP) are utilized and applied in classification problem. Two new classification algorithms are proposed and completely described. The new algorithms are; the Voting Classifier (VC) and the N-ellipsoidal Classifier (NEC). Both are built on solving a Semidefinite Quadratic Linear (SQL) optimization problem of dimension n where n is the number of features describing each pattern in the classification problem. The voting classifier updates usage of ellipsoids in separating N different classes instead of only binary classification by using a voting unit. The N-ellipsoidal classifier makes the separation by means of N separating ellipsoids each contains one of the N learning sets of the classes intended to be separated. Experiments are performed on some data sets from UCI machine learning repository. Results are compared with several well-known classification algorithms, and the proposed approaches are shown to provide more accurate and less complex classification systems with competitive error rates.
Keywords: Conic optimization ; Semidefinite programming; Pattern recognition ; Classifiers ; Separating ellipsoids.

125. Numerical Simulation and Prediction for Steep Water Gravity Waves of Arbitrary Uniform Depth using Artificial Neural Network

Mostafa A.M. Abdeen and Samir Abohadima

CSC Journals International Journal of Engineering (IJE), 5 (1): 529–546 (2011)

Nonlinear permanent progressive wave is one of the most important applications in water waves. In this study, analytic formulation of the steep water gravity waves is presented. Abohadima and Isobe [1] showed that Cokelet solution [2] is the most accurate among many other solutions. Due to the nonlinearity of analytic equations, the need to numeric simulation is raised up. In the current paper, consequence numerical models, using one of the artificial intelligence techniques, are designed to simulate and then predict the non linear properties of permanent steep water waves. Artificial Neural Network (ANN), one of the artificial intelligence techniques, is introduced in the current paper to simulate and predict the wave celerity, momentum, energy and other wave integral properties for any permanent waves in water of arbitrary uniform depth. The ANN results presented in the current study showed that ANN technique, with less effort, is very efficiently capable of simulating and predicting the non linear properties of permanent steep water waves
Keywords: Steep water gravity waves; Nonlinear permanent progressive wave; Numerical simulation; Artificial Neural Network.

126. Unsteady Generalized Couette Ow with Heat Transfer Considering the Hall Effect

H. A. Attia, and M. A. M. Abdeen

Journal of Mechanical Engineering,(62) 5-6: 279-288 (2011)

The unsteady Couette flow of an electrically conducting , viscous, incompressible fluid bounded by two parallel insulating porous plates is studied with heat transfer considering the Hall effect. An external uniform magnetic field and a uniform suction and injection are applied normal to the plates while a uniform and constant pressure gradient is imposed in the axial direction.
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 Hall current and the uniform suction and injection on both the velocity and temperature distributions is investigated and interesting results are reported.
Keywords: Couette flow; hydromagnetic; heat transfer; Hall current; numerical solution.

127. Modeling of A Wide Band Pass Optical Filter Based on 1D Ternary Dielectric–Metallic–Dielectric Photonic Crystals

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

Journal of Optics, 13: (2011)

We suggest ternary structures of dielectric–metal–dielectric photonic structures to be used as optical band pass filters. We theoretically study and evaluate the optical properties of these one dimensional structures. ZnSe/metal/LiF and SiC/metal/SiO2 with three metals, namely silver, gold and copper, are suggested as the optical filters.
We calculated the reflectance and the transmittance of electromagnetic waves (EMW) out of these structures using the transfer matrix method.
These calculations take place for the case of normal and oblique incidences using actual measured values for the indices of refraction. Our calculations show that such photonic crystal (PC) filters have a well shaped pass band in the visible range and block efficiently ultraviolet and infrared EMW. Our results show that PCs having silver as the metal layer are preferred to those having gold and copper because of the high transmittance in the visible range. A SiC/Ag/SiO2 filter shows better performance than a ZnSe/Ag/LiF one from the transmittance and the shape of the band points of view.
Such a filter shows a well shaped wide band over the range of incident angles from 0◦ to 80◦.
Keywords: Band pass filter; Photonic crystals; One-dimensional; Metal–Dielectric–Metal; Transmittance

128. Comparison and Oscillatory Behavior for Certain Second Order Nonlinear Dynamic Equations

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

Applied Mathematics and Computation, 35: 525–536 (2011)

We present some new necessary and sufficient conditions for the oscillation of second order nonlinear dynamic equation on an arbitrary time scale T, where and are ratios of positive odd integers, and are positive -continuous functions on T. Comparison results with the inequality are established and application to neutral equations of the form are investigated.
Keywords: Comparison; theorems; Oscillation; Nonoscillation;Time - scales.

129. Oscillation Criteria for A Fourth Order Dynamic Equations on Time Scales

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

Annals of Differential Equations, 27: 361-366 (2011)

Some new criteria for the oscillation of a fourth order sublinear and/or linear dynamic equation on time scale are established. Our results are new for the corresponding fourth order differential equations as well as difference equations.
Keywords: Oscillation; Nonoscillation; Dynamic equations.

130. Oscillation Criteria for Even Order Dynamic Equations on Time-Scales

Said R. Grace, Ravi P. Agarwal and Billur Kaymakcalan

Internat.Journal of Pure and Applied Math, 72: 591–597 (2011)

Some new criteria for the oscillation of even order linear dynamic equations on time-scales of the form

$x^{\Delta^n}(t) + q(t)x(t) = 0$ are established
Keywords: Oscillation ; nonoscillation; dynamic equation

131. Oscillation Criteria Via Inequalities for Second Order Dynamic Inclusions

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

Journal of the Indian MathSoc., 78: 45–52 (2011)

Oscillation criteria are established for second order dynamic inclusions of the form

$$(ay^{\Delta})^{\Delta}(t) \in F(t,y^{\sigma}(t)) \text{ for a.e. } t \geq t_0 \geq 0,\ t_0 \in T.$$

We note that the results of this paper are new even in the single-valued case.

Keywords: Oscillation ; nonoscillation ; dynamic inclusions.

132. Oscillation of some Fourth Order Difference Equations

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

Inter.J.of Difference Equations, 6: 1-8 (2011)

We shall establish some new criteria for the oscillation of solutions of the fourth-order difference equation

$$\Delta^2\left(a(k)\left(\Delta^2 x(k)\right)^{\alpha}\right) + q(k)f\left(x\left(g(k)\right)\right) = 0$$

with the property that $x(k)/k^2 \to 0$ as $k \to \infty$.

Key words: Difference equations; fourth order; nonlinear; Oscillation.

1-1-09. *Dept. of Irrigation and Hydraulics*

133. The distribution of Kendall's tau for testing the significance of cross-correlation in persistent data

Khaled Hussein Hameda

Hydrological Sciences Journal, 56 (5): 841–853 (2011)
IF: 1.447

Kendall's tau has been widely used as a distribution-free measure of cross-correlation between two variables. It has been previously shown in the literature that persistence in the two involved variables results in the inflation of the variance of tau. In this paper, the full null distribution of Kendall's tau for persistent data with multivariate gaussian dependence is derived, and an approximation to the full distribution is proposed.
The effect of the deviation from the multivariate gaussian dependence model on the distribution of tau is also investigated. As a demonstration, the temporal consistency and field significance of the cross-correlation between the North Hemisphere (NH) temperature time series from AD 1850 to AD 1995 and a set of 784 NH tree-ring width (TRW) proxies in addition to 105 NH tree-ring maximum latewood density (MXD) proxies are studied.
When persistence is ignored, the original Mann-Kendall test gives temporally inconsistent results between the early half (AD 1850 to AD 1922) and the late half (AD 1923 to AD 1995) of the record. These temporal inconsistencies are largely eliminated when persistence is accounted for, indicating the spuriousness of a large portion of the identified cross-correlations.
Furthermore, the use of the modified test in combination with a field significance test that is robust to spatial correlation indicates the absence of field significant cross-correlation in both halves of the record. These results have serious implications for the use of tree-ring data as temperature proxies, and emphasize the importance of utilizing the correct distribution of Kendall's tau in order to avoid the overestimation of the significance of cross-correlation between data that exhibit significant persistence.
Keywords: Kendall's tau; Autocorrelation; Cross-correlation; Persistence; Probability distribution; distribution-free; Non-parametric; Field significance; Gaussian dependence; Copula.

1-1-10. *Dept. of Mechanical Design and Production*

134. Diaphragm pico-liter Pump for Single-Cell Manipulation

Yasser Anisa, Jeffrey Houkal, Mark Holl, Roger Johnson and Deirdr Meldrum

Biomed Microdevices, 13: 651–659 (2011) IF : 3.386

A pico-liter pump is developed and integrated into a robotic manipulation system that automatically selects and transfers individual living cells of interest to analysis locations. The pump is a displacement type pump comprising one cylindrical chamber connected to a capillary micropipette. The top of the chamber is a thin diaphragm which, when deflected, causes the volume of the fluid-filled cylindrical chamber to change thereby causing fluid in the chamber to flow in and out of the micropipette. This enables aspirating and dispensing individual living cells. The diaphragm is deflected by a piezoelectric actuator that pushes against its center. The pump aspirates and dispenses volumes of fluid between 500 pL and 250 nL at flow rates up to 250 nL/s. The piezo-driven diaphragm arrangement provides exquisite control of the flow rate in and out of the capillary orifice. This feature, in turn, allows reduced perturbation of live cells by controlling and minimizing the applied shear stresses.

Keywords: Single-cell manipulation; Micropump; Icroinjection; Pico-liter pump; Microfluidics.

135. A Simplified Technique of Shakedown Limit Load Determination for a Large Square Plate with Small Central Hole under Cyclic Load

Hany F. Abdalla, Mohammad M. Megahed, Maher Y.A. Younan.

Journal of Nuclear Engineering and Design, 241: 657-665 (2011) IF : 0.885

A simplified technique for determining the shakedown limit load of a structure was previously developed and successfully applied to benchmark shakedown problems involving uniaxial states of stress (Abdalla et al., 2007a,b,c). In this paper, the simplified technique is further developed to handle cyclic biaxial loading resulting in multi-axial states of stress within the large square plate with a small central hole problem. Two material models are adopted namely: an elastic-linear strain hardening material model obeying Ziegler's linear kinematic hardening (KH) rule and an elastic-perfectly-plastic (EPP) material model. The simplified technique utilizes the finite element (FE) method and employs small displacement formulation to determine the shakedown limit load without performing lengthy time consuming full elastic–plastic cyclic loading FE simulations or conventional iterative elastic techniques. The simplified technique is utilized to generate the shakedown domain for the plate problem subjected to cyclic biaxial tension along its edges. The outcomes of the simplified technique showed very good correlation with the results of analytical solutions as well as full elastic–plastic cyclic loading FE simulations. Material hardening showed no effect on the shakedown domain of the plate in comparison to employing EPPmaterial.

Keywords: Shakedown Limit Loads; Simplified Techniques; Plate with a Hole.

136. Shakedown Limit Load Determination for a Kinematically Hardening 90-Degree Pipe Bend Subjected to Steady Internal Pressure and Cyclic Bending

Hany F. Abdalla, Mohammad M. Megahed and Maher Y.A. Younan

Journal of Pressure Vessel Technology,133 (5): (2011) IF: 0.293

A simplified technique for determining the lower bound shakedown limit load of a structure, employing an elastic–perfectly plastic (EPP) material model, was previously developed and successfully applied to a long radius 90 deg pipe bend (Abdalla et al., 2006, "Determination of Shakedown Limit Load for a 90 Degree Pipe Bend Using a Simplified Technique," ASME J. Pressure Vessel Technol., 128, pp. 618–624). The pipe bend is subjected to steady internal pressure magnitudes and cyclic bending moments. The cyclic bending includes three different loading patterns, namely, in-plane closing, in-plane opening, and out-of-plane bending moment loadings. The simplified technique utilizes the finite element (FE) method and employs a small displacement formulation to determine the shakedown limit load without performing lengthy time consuming full elastic-plastic (ELPL) cyclic loading FE simulations or conventional iterative elastic techniques. In the present research, the simplified technique is further modified to handle structures employing an elastic-linear strain hardening material model following Ziegler's linear kinematic hardening (KH) rule. The shakedown limit load is determined through the calculation of residual stresses developed within the pipe bend structure accounting for the back stresses, determined from the KH shift tensor, responsible for the rigid translation of the yield surface. The outcomes of the simplified technique showed an excellent correlation with the results of full ELPL cyclic loading FE simulations. The shakedown limit moments output by the simplified technique are utilized to generate shakedown diagrams (Bree diagrams) of the pipe bend for a spectrum of steady internal pressure magnitudes. The generated Bree diagrams are compared with the ones previously generated employing the EPP material model. These indicated relatively conservative shakedown limit moments compared with the ones employing the KH rule.

Keywords: Shakedown Limit Loads; Simplified Techniques; Kinematic Hardening; Pipe Bends.

137. Shakedown Limit Loads for 90-Degree Scheduled Pipe Bends Subjected to Steady Internal Pressure and Cyclic Bending Moments

Hany F. Abdalla, Maher Y.A. Younan and Mohammad M. Megahed

Journal of Pressure Vessel Technology, 133: (2011) IF :0.293

A simplified technique for determining the shakedown limit load for a long radius 90 deg pipe bend was previously developed (Abdalla, H. F., et al., 2006, "Determination of

Shakedown Limit Load for a 90 Degree Pipe Bend Using a Simplified Technique," ASME J. Pressure Vessel Technol., 128, pp. 618–624; Abdalla, H. F., et al., 2007, "Shakedown Limits of a 90-Degree Pipe Bend Using Small and Large Displacement Formulations," ASME J. Pressure Vessel Technol., 129, pp. 287–295). The simplified technique utilizes the finite element (FE) method and employs the small displacement formulation to determine the shakedown limit load (moment) without performing lengthy time consuming full cyclic loading finite element simulations or utilizing conventional iterative elastic techniques. The shakedown limit load is determined through the calculation of residual stresses developed within the pipe bend structure. In the current paper, a parametric study is conducted through applying the simplified technique on three scheduled pipe bends, namely, nominal pipe size (NPS) 10 in. Sch. 20, NPS 10 in. Sch. 40 STD, and NPS 10 in. Sch. 80. Two material models are assigned, namely, an elastic perfectly plastic (EPP) material and an idealized elastic-linear strain hardening material obeying Ziegler's linear kinematic hardening (KH) rule. This type of material model is termed in the current study as the KH-material. The pipe bends are subjected to a spectrum of steady internal pressure magnitudes and cyclic bending moments. The cyclic bending includes three different loading patterns, namely, in-plane closing, in-plane opening, and out-ofplane bending moment loadings of the pipe bends. The shakedown limit moments outputted by the simplified technique are used to generate shakedown diagrams of the scheduled pipe bends for the spectrum of steady internal pressure magnitudes. A comparison between the generated shakedown diagrams for the pipe bends employing the EPP- and the KH-materials is presented. Relatively higher shakedown limit moments were recorded for the pipe bends employing the KH-material at the medium to high internal pressure magnitudes

Keywords: Shakedown Limit Loads; Simplified Techniques; Kinematic Hardening.

138. Alloy Steel - Properties and use Effect of Niobium on HAZ Toughness of HSLA Steels

E. El-Kashif , and T. Koseki

Alloy Steel-Properties and Use, 87-108 (2011)

The effect of Nb, C and Mn on HAZ Toughness of HSLA Steels was investigated, and the followings were found: The microstructures of HAZ varies according to the Carbon equivalent and Nb content and it was found to be consisted of three categories; Category I (base steel), consists of grain boundary ferrite, Widmanstatten ferrite, MA constituents and small areas of pearlite; Category II, consists of grain boundary ferrite, Acicular ferrite, Widmanstatten ferrite and MA constituents; Category III, consists of very thin grain boundary ferrite, lath structure and MA constituents. For the CVN transition temperatures, they reflect the microstructure dependence; category II shows relatively good toughness compared with category III microstructure. The brittle fracture was observed to be initiated at the pearlite colonies, at the grain boundary ferrite and at the intersection of the bainitic packets for the three categories respectively. Mn was found to be the most dominant element affects the formation of MA at the same Carbon equivalent; lowering the Mn content to 0.9% at the same carbon equivalent results in nul MA while increasing it to 2.1% at the same Carbon equivalent results in large increase in MA area fraction. The area fraction of MA increases by Nb addition for low and medium Carbon steels but for high Carbon steels, MA area fraction shows a slight increase due to carbides precipitation. A relative amount of grain boundary ferrite, which is 6 % for these steels determine the initiation site, and as a result the fracture behavior and toughness. A good correlation between fracture properties and microstructure was established based on this criterion. The micro-segregation of C and Mn at the interface between the grain boundary ferrite and the bainitic matrix could explain the formation mechanism of (MA). Enrichment of C alone near the grain boundary didn't result in MA formations, which imply that both C enrichment and alloying elements micro-segregation should be achieve simultaneously to form MA.

Keywords: Niobium; Manganese; HSLA; Toughness; Simulated welding cycle; Heat affected zone.

139. Repair Maintenance of Diesel Engine Cylinder Head

E. El-Kashif and M. A. Morsy

Journal of American Science, 7 (3): 158-168 (2011)

This paper presents many trials to repair a diesel engine cylinder head made of pearlitic grey cast iron, which was used in a truck. The cylinder head was repaired due to the existence of cracks at the junction between the valve seat and the spark plug seat. Shielded metal arc welding (SMAW) process using different electrodes was applied, the increase in preheating temperature resulted in a formation of a continuous carbide layer in the partial fusion zone and a decrease in the Martensite formed at the heat affected zone. However, the decrease in preheat temperature resulted in an increase of Martensite at the heat affected zone and a decrease in the carbide layer at the partial fusion zone. Most of the SMAW electrodes resulted in the formation of regions with high hardness values which imply that the repair welding of the cylinder head using these electrodes is inefficient. Application of the powder flame spray method in repair welding of the cylinder head resulted in partial fusion zone and heat affected zone with hardness values comparable to that of base metal. Preheating in furnace to 500 °C then immediately putting the specimen in the furnace at the same temperature for 1 hour after applying powder flame spray gave excellent hardness results for the heat affected zone (HAZ) and partial fusion zone (PFZ).

Keywords: Failure; Cylinder head; Pearlitic gray iron; SMAW; Flame spray method; Heat affected zone; Partial fusion zone

140. Welding of Austempered Ductile Cast Iron

E. El-Kashif and M. A. Morsy

New York Science Journal, 4 (4): 21-27 (2011)

Austempered ductile iron (ADI) with an austenitic bainitic matrix is a new type of engineering materials and has gained increasing interests in academic research and industrial application due to its exceptional combination of tensile strength and ductility. However, welding of ADI parts remains as a great problem during manufacturing.

In this investigation, Shielded Metal Arc Welding (SMAW) was attempted to weld ADI with AWS E11018-G, ENiFeCI

and ENiCI electrodes. The results obtained from SMAW were compared with that produced from Gas Tungsten Arc Welding (GTAW) using filler metal as stripes machined from base metal material. It was found that welding with GTAW process using filler with the same material followed by austempering heat treatment has superior properties (mechanical and metallurgical)free from any discontinuities compared with SMAW using different electrodes for cast iron welding.
Keywords: Austempered Ductile Iron; Welding; Austempering; SMAW; GTAW; Microstructure.

1-1-11. *Dept. of Mechanical Power*

141. Modelling and Validation of A Gas Engine Heat Pump Working with R410A for Cooling Applications

E. Elgendy, J. Schmidt, A. Khalil and M. Fatouh

Applied Energy, 88: 4980–4988 (2011) IF: 3.915

Gas engine heat pumps play an important role in energy saving and environment protection in both cooling and heating applications. In the present work, a thermal modelling of the gas engine driven heat pump in cooling mode is performed and system main parameters such as cooling capacity, gas engine energy consumption and primary energy ratio (PER) are computed. The modelling of the gas engine heat pump includes modelling of the scroll compressor, the plate evaporator and the gas engine. Discharged refrigerant mass flow rate and compressor power represent the main output parameters of the compressor semi-empirical model. Using the discharged refrigerant mass flow rates along with the available evaporation heat transfer correlations, the system cooling capacity is deduced. Based on the present experimental data, a correlation of gas engine energy consumption as function of compressor power, engine speed and ambient air temperature is obtained. Furthermore, the gas engine heat pump model is validated by comparing experimental and simulation data. The model error percentages to predict the cooling capacity, the gas engine energy consumption and the PER are 7%, 5%, 6% respectively.
Keywords: Gas engine heat pump; Cooling applications; Modelling; R410A.

142. Performance of A Gas Engine Driven Heat Pump for Hot Water Supply Systems

E. Elgendy, J. Schmidt, A. Khalil and M. Fatouh

Energy xxx, 1-7 (2011) IF: 3.597

The present work aimed at evaluating the experimental performance of a gas engine heat pump for hot water supply. In order to achieve this objective, a test facility was developed and experiments were performed over a wide range of ambient air temperature (10.9-25.3 oC), condenser water inlet temperature (33-49 oC) and at two engine speeds (1300 and 1750 rpm). Performance characteristics of the gas engine heat pump were characterized by water outlet temperatures, total heating capacity and primary energy ratio. The reported results revealed that hot water outlet temperature between 35 and 70 oC can be obtained over the considered range of the operating parameters. Also, total heating capacity and gas engine heat recovery decrease by 9.3 and 27.7%, respectively, while gas engine energy consumption increases by 17.5% when the condenser water inlet temperature changes from 33 to 49 oC. Total heating capacity, gas engine heat recovery and gas engineconsumption at ambient air temperature of 25.3 oC are higher than those at ambient air temperature of 10.9 oC by about 10.9, 6.3 and 1.5% respectively. Moreover, system primary energy ratio decreases by 15.3% when the engine speed changes from 1300 to 1750 rpm.
Keywords: Gas engine heat pump; Heating mode; R410A; Water heating; Primary energy ratio; Heat recovery.

143. Ejector Design and Theoretical Study of R134a Ejector Refrigeration Cycle

A. Khalil, M. Fatouh and E. Elgendy

International Journa of Refrigeration, 1-15 (2011) IF: 1.439

In the present paper, a mathematical model is developed to design R134a ejector and to predict the performance characteristics of a vapor jet refrigeration system over a wide range of the investigated parameters. These parameters include boiling temperature (65-85 oC), condensing temperature (25-40 oC), evaporating temperature (0-10 oC), degrees of superheat (0-15 oC), nozzle efficiency (0.75-0.95) and diffuser efficiency (0.75-0.95). Simulated results showed that the present model data are in good agreement with experimental data in the literature with an average error of 6%. It is found that the ejector area ratio at boiling temperature of 85 oC is about double that at boiling temperature of 65 oC for various evaporating and condensing temperatures. The present results confirm that waste heat sources of temperature ranging from 65 to 85 oC are adequate to operate vapor jet refrigeration system for air-conditioning applications.
Keywords: R134a; Ejector; System design; Air conditioning; Performance; Modelling.

144. Modeling and Optimization of a Residential Solar Stand-Alone Power System

Hany A. Khater, Amr A. Abdelraouf and Mohamed H. Beshr

ISRN Renewable Energy, 1–14 (2011)

Modeling and optimization of a residential solar-powered stand-alone power system comprising photovoltaic (PV) arrays and secondary batteries are presented.Moreover, an economic study is performed to determine the cost of electricity (COE) produced from this system so as to determine its competitiveness with the conventional sources of electricity. All of the calculations are performed using a computer code developed by using MATLAB. The system output was calculated for Cairo city (30◦01_N, 31◦14_E) in Egypt. It was found that dual-axis solar tracking is not economically feasible while cooling of the PV surface helps to lower the COE of the system. Also, the average maximum efficiency of the modeled 200W solar cells was 14.16%. The system which has an efficiency of 12% showed a great ability to satisfy the estimated demand load. The COE obtained from the system was found to be 41.7 cents/kWh over 20 years of its operation with an expected future cost of 31 cents/kWh.
Keywords: Renewable energy; residential solar power systems; photovoltaic; cost of electricity.

145. OptimumAlkaline Electrolyzer-Proton ExchangeMembrane Fuel Cell Coupling in a Residential Solar Stand-Alone Power System

Hany A. Khater, Amr A. Abdelraouf, and Mohamed H. Beshr

ISRN Renewable Energy, 1–13 (2011)

Modeling of an alkaline electrolyzer and a proton exchange membrane fuel cell (PEMFC) is presented. Also, a parametric study is performed for both components in order to determine the effect of variable operating conditions on their performance. The aim of this study is to determine the optimum operating conditions when the electrolyzer and the PEMFC are coupled together as part of a residential solar powered stand-alone power system comprising photovoltaic (PV) arrays, an alkaline electrolyzer, storage tanks, a secondary battery, and a PEMFC. The optimum conditions are determined based on an economic study which is performed to determine the cost of electricity (COE) produced from this system so as to determine the lowest possible COE. All of the calculations are performed using a computer code developed by using MATLAB. The code is designed so that any user can easily change the data concerning the location of the system or the working parameters of any of the system's components to estimate the performance of a modified system. Cairo city in Egypt was used as the place at which the output of the system will be determined. It was found that the optimum operating temperature of the electrolyzer is 25◦C. Also, the optimumcoupling pressure of the electrolyzer and the PEMFC is 4 bars. The operating temperature of the PEMFC had a slight effect on its performance while an optimum current density of 400 mA/cm2 was detected. By operating the fuel cell at optimum conditions, its efficiency was found to be 64.66% with a need of 0.5168Nm3 (Nm3 is a m3 measured at temperature of 0◦C and pressure of 1 bar) of hydrogen to produce 1kWh of electricity while its cogeneration efficiency was found to be 84.34%. The COE of the system was found to be 49 cents/kWh, at an overall efficiency of 9.87%, for an operational life of 20 years.

Keywords: Renewable energy; residential stand-alone power systems; proton exchange membrane fuel cells; alkaline electrolyzer ; cost of electricity.

1-1-12. *Dept. of Mining Petroleum and Metallurgy*

146. Does Calcite Content Affect its Separation from Celestite by Falcon Concentrator?

Ayman A. El-Midany and S.S. Ibrahim

Powder Technology, 213 : 41– 47 (2011) IF: 1.887

Calcite is the main gangue mineral in the most of celestite ores. The interlocking between two minerals (i.e., calcite and celestite) differs according to their formation conditions. Such interlocking implies fine grinding to achieve a good liberation and thus use physical separation techniques. As fine grinding is needed, then the recovery of fine particles becomes a challenge. However, the enhanced gravity concentrators are one of the recent developments that offer solutions for the separation by gravity at fine size ranges. Falcon device is a famous example of such concentrators. In this study, the upgrading of fine celestite ore (−80 μm) was tested using Falcon device in terms of bowl speed and fluidization water pressure. In addition, the role of calcite content in the ore was investigated using design of experiments under different conditions of centrifugal speed, fluidization water pressure, and calcite content. Thus, pure samples of celestite and calcite were used to prepare mixtures at different celestite to calcite ratios to simulate the most of celestite ores. The results showed that the calcite content plays a significant role especially at low centrifugal speed and fluidization water pressure where the best results can be achieved.

Keywords: Flotation; Gravity; Phosphate; Dolomite; Polyvinyl alcohol (PVA); Carbon dioxide; Carbonate minerals.

147. Modeling the PVA-coated Dolomite Floatability in Acidic Media

Ayman A. El-Midany, Hassan El-Shall and Spyros Svoronos

Powder Technology, 209 : 25– 28 (2011) IF: 1.887

The dolomite dissolution in an acidic medium generates CO2 gas. The utilization of such phenomenon for dolomite separation from phosphate is limited by using a surface-active agent that can keep such gas adhered to the particle surface. Among several tested polymers and surfactants Polyvinyl Alcohol (PVA) polymer showed promising results in forming stable bubbles of CO2 gas at the dolomite surface. The dolomite dissolution kinetics, in a sulfuric acid, was studied in terms of PVA coating and particle size under constant conditions of temperature and acid concentration. Based on the kinetic data, a dissolution mechanism was proposed. The suggested mechanism depends mainly on the availability of the acid to react with the dolomite particle. Thus, the reaction products play a crucial role either by preventing the acid diffusion or hiding the reactant sites. In addition, a mathematical model, representing the proposed mechanism, was developed to predict the time needed to float different particle sizes.

Keywords: Flotation; Gravity; Phosphate; Dolomite; Polyvinyl alcohol (PVA); Carbon dioxide; Carbonate minerals.

148. Influence of Acrylic Coatings on the Interfacial, Physical, and Mechanical Properties of Stone-Based Monuments

M.K. Khallaf, A.A.El-Midany and S.E. El-Mofty

Progress in Organic Coatings, 72: 592-598 (2011) IF: 1.862

Conservation of historical buildings is an important issue. The environmental conditions seriously affect the monumental stones. Although different coating materials were tested, the polymeric materials have been showing the most promising results for protection of archeological stones. Therefore, in the current study, the acrylic polymer was used for conservation of monuments made of sandstone and limestone.

The adsorption of the acrylic polymer onto both stones was analyzed and the durability of the coatings under different environmental conditions was tested and simulated by artificial aging. Moreover, the mechanism of polymer–stone interactions was elucidated by interfacial characterization techniques.

The results showed that the adsorption of polymer onto either stones is physical as shown by Fourier transform infra-red (FTIR) and electrokinetic measurements. In addition, the presence of polymer coating shows a significant improvement in physical and mechanical properties of the treated stones, e.g., increase in bulk density from 1.9 to 2.3 g/cm3 and decrease in porosity from 15.8% to 2.7% as well as the noticeable increase in compressive strength. All these measures indicated the suitability of acrylic polymer for conservation of either stones.
Keywords: Acrylic; Limestone; Sandstone; Conservation; Interfacial interaction; Adhesion.

149. Electrodeposition and Characterization of Nanocrystalline Ni-Fe Alloys

R. Abdel-Karim, Y. Reda, M.Muhammed, S. El-Raghy, M. Shoeib, and H. Ahmed

*Journal of Nanomaterials, (*2011), IF :1.675

Nanocrystalline Ni-Fe deposits with different composition and grain sizes were fabricated by electrodeposition. Deposits with iron contents in the range from 7 to 31% were obtained by changing the Ni 2+/Fe2+ mass ratio in the electrolyte. The deposits were found to be nanocrystalline with average grain size in the range 20–30 nm. The surface morphology was found to be dependent on Ni2+/Fe2+ mass ratio as well as electroplating time. The grains size decreased with increasing the iron content, especially in case of short time electroplating. Increasing the electroplating time had no significant effect on grain size. The microhardness of the materials followed the regular Hall-Petch relationship with amaximum value (762 Hv) when applying Ni2+/Fe2+ mass ratio equal to 9.8.
Keywords: Nanotechnology; electroplating; Ni-Fe; Corrosion.

150. Characterization of Silicone Coating for Archeological Stone Conservation

A.A.El-Midany, M.K.Khallaf and S.E.El-Mofty

Surf. Interface Anal., 43: 1182–1188 (2011) IF: 1.249

Testing of the polymeric materials for protection of archeological stones is a subject of a continuous research. The selection criteria of a suitable polymer need an intensive investigation. In the current study, silicone emulsion was used for stone conservation. The effectiveness of silicone in protecting either sandstone or limestone, as main archeological stones, was investigated in terms of its interaction with the studied stone. In addition, the durability of the coating under different environmental conditions was tested and simulated by artificial aging. Additionally, the mechanism of the interaction was investigated using interfacial measurementsThe results showed the physical nature of adsorption on either stones as indicated by Fourier Transform InfraRed (FTIR) and Electrokinetic results. Moreover, the polymer shows a significant effect on the physical and mechanical properties, e.g., increase in bulk density from 1.9 to 2.2 g/cm3 and decrease in porosity from 15.8 % to 2.5 % as well as the noticeable increase in compressive strength. All these measures indicated the suitability of the polymer in conservation of either sandstone or limestone.
Keywords: Protection of archeological stones; Stone conservation; Silicone; Polymers; Sand stone; Limestone.

151. Simulation of the grinding of coarse/fine (heterogeneous) systems in a ball mill

D.W. Fuerstenau , P.B. Phatak , P.C. Kapur, A.-Z.M. Abouzeid

International Journal of Mineral Processing, 99: 32:38 (2011) IF : 1.082

Comminution studies have been carried out by grinding narrowly sized fractions of single mineral feeds. Under these conditions, the mill environment remains self-similar and invariant which is a characteristic of the mill/material system. On the other hand, in industry, feed to the mill comprises oversize recycle and new feed that is highly heterogeneous and widely distributed in size. The objective of the present work is to compare the breakage kinetics and energetics of grinding coarse size feed in the presence of deliberately added fines for different material systems. Quartz, dolomite, and limestone mineral systems were selected as feed in order to study these phenomena for minerals whose hardness ranges from hard to soft, approximately from 7 to 3 on Moh's Scale of hardness, at different coarse/fine ratios. It was found that the cumulative breakage distribution functions for this situation do not change with mixture compositions for the three materials. On the other hand, the initial breakage rate function of the coarse particles increases with increasing proportion of fines in the mixture. It was also shown that the fines produced, and the coarse material retained on the top sieve were normalizable with respect to the specific energy consumed by the coarse fractions. A modified breakage rate function was used to simulate the grinding operation of the three material systems using the linear population balance model. As a result, reasonable agreement between the experimental data and the corresponding calculated values was achieved.
Keywords: Simulation of heterogeneous grinding;
Kinetics and energetics of comminution; Grinding of coarse/fine mixtures.

152. Impact of the Adsorption of Corynebacterium diphtheriae intermedius Bacteria on Enhancing the Separation Selectivity of Dolomite and Apatite

Ahmed M. Elmahdy, Salah E. El-Mofty, Nagui A. Abdel-Khalek and Ayman A.El-Midany

Adsorption Science & Technology, 29 (1): 47-57 (2011)
IF: 0.559

The surface modification of minerals by bacteria has recently been examined in an attempt to improve their separation selectivities. In this paper, a study of the effect of Corynebacterium diphtheriae intermedius (CDI) bacteria on the dolomite/apatite separation process is reported. Bacterial interaction with both minerals was investigated employing Fourier-transform infrared (FT-IR) spectroscopy together with measurements of the adsorption isotherm and the zeta potential. FT-IR methods were used to identify the functional groups on the surface of each mineral before and after the adsorption of bacteria, while the adsorption isotherm and the zeta potential were used to illustrate the type of adsorption process involved,

i.e. physical versus chemical adsorption. The application of bioflotation processes to natural ores using CDI bacteria can lower the MgO content of the ores to less than 1%.
Keywords: Adsorption; Bacteria; Dolomite; Phosphate; Flotati surfacemodification.

153. Interfacial Role of Compatabilizers to Improve Mechanical Properties of Silica–Polypropylene Composites

Ayman A. El-Midany and Suzan S. Ibrahim

Physicochemical Problems of Mineral Processing 46 : 295–305 (2011) IF: 0.406

Polymers have tremendous applications from household to high technology applications. The polymers are easy to produce, light, and flexible. However, mechanical properties of polymers, in some industries, are a point of its weakness. Therefore, a mineral, as a bulk filler, was used to overcome this limitation and to reduce the cost of polymer composites and their manfacturing. In this study, the silica flour was introduced into the polypropylene (PP) matrix to enhance its mechanical properties. In addition, the styrene-ethylene/butylene-styrene (SEBS) triblock copolymer and its grafted maleic anhydride (SEBS-g-MA) were used as silica/ PP compatibilizers. The results showed an improvement in mechanical properties after the addition of silica to the PP matrix. However, silica addition led to drop in strain measures. On the other hand, the addition of the compatibilizer enhances the interfacial bonding and smoothen the transfer of the stresses between filler particles and the polymeric matrix.
Keywords: Calcite; Celestite; Mineralogical investigation; Scrubbing.

154. Effect of Celestite-Calcite Mineralogy on Their Separation by Attrition Scrubbing

Ayman A. El-Midany, Ali Q. Selim and Suzan S. Ibrahim

Particulate Science and Technology,29: 272– 284 (2011) IF: 0.402

Celestite ore is one of the principle economic resources of strantium element. Naturally, it contains some impurities, with the main one being the calcite mineral. In this article, the separation of celestite from calcite was conducted using attrition scrubbing based on the difference in the hardness between the two minerals. Due to the friability of calcite, it was expected to be collected in fine fraction, however, this was not the case. The observed results showed the presence of calcite in both coarse and fine fractions. A high percentage of calcite was found in the coarse fraction and decreased as the size did as well. Yet, at certain sizes its behavior was changed in that the decrease in size increased the calcite percentage. This behavior was clarified using detailed characterization of the studied sample using size analysis, x-ray diffraction, chemical analysis, and microspcopisc investigation. In addition, a detailed microscopic analysis for the products of the attrition scrubbing was conducted to explain the observed behavior.
Keywords: Calcite; Celestite; Mineralogical investigation; Scrubbing.

155. Do Pseudomonas Aeruginosa Bacteria Affect the Selectivity of Dolomite/Francolite Separation?

Ahmed M. Elmahdy, Salah E. El-Mofty, Nagui A. Abdel-Khalek and Ayman A.El-Midany

Tenside Surfactants and Detergents, 48: 439–444 (2011) IF: 0.370

The similarity of surface properties of dolomite and phosphate minerals leads to limited or no selectivity in their separation by flotation. Many chemical additives were tested; however, a limited success was achieved. Recently, bio-surfactants and bacteria have received much focus not only because their friendly-environmental behaviour but also for their enhancing selectivity in different processes such as flotation. In this paper, the adsorption of Pseudomonas Aeruginosa (PA) bacteria onto francolite and dolomite was investigated. The adhesion of bacteria was studied by adsorption isotherm, zeta potential, and Fourier Transform Infra-Red (FTIR) to reveal the effect of bacteria on the floatability of each mineral. The proposed adsorption mechanism depends mainly on physical interaction due to Van der Waal's, bridging, electrostatic, as well as hydrophobic forces.
Keywords: Adsorption; Bacteria; Dolomite; Phosphate; Bioflotation; Surface modification.

156. Mineral Industry in Egypt-Part I: Metallic Mineral Commodities

Abdel-Zaher M. Abouzeid, Abdel-Aziz M. Khalid

Natural Resources, 2: 35-53 (2011)

The mineral potential in Egypt is quite high. Almost all sorts of industrial minerals, metallic and non-metallic com-modities exist in commercial amounts. However, Egypt imports many of the mineral commodities needed for the local mineral industries. The main reason for this is that the investors, either the governmental or the private sectors, refrain from investing into the mineral industry for prospecting, evaluation, and developing the mining and mineral processing technologies. This is because the return on investment in the mining industry is generally low and the pay back period is relatively long compared with easy-to-get money projects. Another reason is the disarray of the mining laws and regu-lations and lack of administrative capability to deal with domestic and international investors and solve the related problems. Also, lack of skilled personnel in the field of mining and mineral processing is an additional factor for the set back of the mining industry in Egypt. This is why the mining technology in Egypt is not very far from being primitive and extremely simple, with the exception of the underground mining of coal, North of Sinai, and Abu-Tartur phosphate mining, where fully automated long wall operations are designed. Also, the recent gold and tin-tantalum-niobium pro-jects are being designed on modern surface mining and mineral processing technologies. The present review presents an overview of the most important metallic mineral commodities in Egypt, their geological background, reserves and production rates. A brief mention of the existing technologies for their exploitation is also highlighted.

Keywords: Egypt Mineral Resources; Geological Aspects; Mining; Mineral Processing; Metallic Ores; Mineral.

1-1-13. *Dept. of Petroleum-Engineering*

157. Fast and Efficient Sensitivity Calculation Using Adjoint Method for Three-Phase Field-Scale History Matching

Nasralla R., Ahmed M. Daoud, Khaled A. Fattah and M. H. Sayyouh

Petroleum Science and Engineering (77): 338–350 (2011) IF: 0.761

Adjoint method-based sensitivity for field-scale history matching with large numbers of parameters suffers from several limitations. First, the CPU time depends on the data points which are large for any brown fields of long history; second, it requires large memory to save the grid block pressure and saturation per each time step used in the forward model.

Third, it is computationally expensive as it requires solving the adjoint system of equations backward in time per each forward time step which is usually of high magnitude in case of field scale applications of long history. Lastly, the solver used for solving the adjoint system of equations needs to be efficient for large-scale applications.

We propose an efficient and fast approach for sensitivity calculation based on the Adjoint method to overcome much of the current limitations. First, we use a commercial finite difference simulator, ECLIPSE, as a forward model, which is general and can account for complex physical behavior that dominates most field applications.

Second, the production data misfit is represented by a single generalized travel time misfit per well, thus effectively reducing the number of data points into one per well. Third, we solve the adjoint system of equations backward in time in a larger time step that is equivalent to the time of severe changes in pressure and saturation due to changing well conditions or introducing new infill wells rather than using the forward model time steps.

This approach reduces the computational effort and memory allocated for the sensitivity calculation. Fourth, we use an iterative sparse matrix solver, LSQR, for solving the adjoint system of equations which shows high stability for field-scale applications.

We demonstrate the power and utility of our approach using synthetic and pseudo field examples. The synthetic examples show the robustness and efficiency of our sensitivity calculation approach compared to the perturbation.

The pseudo-field example had 10 years of production history with an original gas cap and a strong aquifer support. Using well log data, core data, water cut and gas–oil ratio history from producing wells; we characterize the permeability at each cell, thus demonstrating the feasibility of our approach for field applications.

Keywords: Adjoint method-based sensitivity; Automatic history matching; ECLIPSE; Generalized travel time misfit.

1-1-14. *Dept. of Structural Engineering*

158. Dispute Resolution Aided Tool for Construction Projects in Egypt

Mohamed Marzouk, Lobna El-Mesteckawi and Moheeb El-Said

Journal of Civil Engineering And Management, 17(1): 63–71 (2011) IF: 3.711

Contract relationships in construction projects in Egypt have become increasingly strained in recent years.Working relationships, communications, and contractual commitments are often not carried out in good faith. Hence, adversarial approaches to public and private sectors of the construction industry in Egypt generate a substantial increase in the use of binding arbitration and the judicial system for the settlement of contractual disagreements. In this research, a survey questionnaire was designed to obtain the relative weights of the factors that influence the Dispute Resolution Strategy (DRS) Decision. Twenty six combinations of project situations were established based on ten factors, established after studying the causes of disputes with the aid of literature and unstructured interviews, which affect the DRS-Decision. Experts were asked to perform pair-wise comparisons for the ten factors and advise on the recommended resolution methodology for the different status of DRS-Decision's factors. Although negotiation is usually the first attempt to solving any dispute, it sometimes could waste time and consequently money without reaching a satisfying solution. A computer model is proposed to inform the user of whether to quit negotiation and/or any amicable solution to save time and money and resort to arbitration/litigation instead, or to stick to negotiation and/or any amicable solution as it's the only way by which the dispute could be resolved. Results obtained from the survey were utilized in the development of the computer model to provide a simple and an easy to use tool that could advise decision makers on the most appropriate dispute resolution strategy that would mostly succeed; save time and money. A case study is presented to validate the computer model and demonstrate its use.

Keywords: Dispute resolution; Conflict resolution; Computer applications; Decision support system; Construction management.

159. A Case-Based Reasoning Approach for Estimating The Costs of Pump Station Projects

Marzouk, M. and Ahmed, R.

Journal of Advanced Research, 2 (4): 289–295 (2011) IF: 3.000

The effective estimation of costs is crucial to the success of construction projects. Cost estimates are used to evaluate, approve and/or fund projects. Organizations use some form of classification system to identify the various types of estimates that may be prepared during the lifecycle of a project. This research presents a parametric-cost model for pump station projects. Fourteen factors have been identified as important to the influence of the cost of pump station projects. A data set that consists of forty-four pump station projects (fifteen water and twenty-nine waste water) are collected to build a Case-Based Reasoning (CBR) library and to test its performance. The

results obtained from the CBR tool are processed and adopted to improve the accuracy of the results. A numerical example is presented to demonstrate the development of the effectiveness of the tool.
Keywords: Parametric-cost estimating; Pump stations projects; Cost drivers; Case-based reasoning; Artificial intelligence.

160. Seismic Vulnerability Evaluation of RC Moment Frame Buildings in Moderate Seismic Zones

H.A. El Howary and S.S.F. Mehanny

Earthquake Engineering and Structural Dynamics, 40: 215-235 IF: 1.403

A multi-level seismic vulnerability assessment of reinforced concrete moment-frame buildings located in moderate seismic zones (0.25g) is performed on a set of ductile versions of low- to mid-rise two-dimensional moment frames. The study is illustrated through application to comparative trial designs of two (4- and 8-story) buildings adopting both space- and perimeter-framed approaches. All frames are dimensioned as per the emerging version of the seismic design code in Egypt. These new seismic provisions are in line with current European norms for seismic design of buildings. Code-compliant designs, as well as a proposed modified code design relaxing design drift demands for the investigated buildings, are examined to test their effectiveness and reliability. Applying nonlinear inelastic incremental dynamic analyses, fragility curves for the frames are developed corresponding to various code-specified performance levels. Code pres lower and upper bounds on design acceleration and drift, respectively, are also addressed along with their implications, if imposed, on the frames seismic performance and vulnerability. Annual spectral acceleration hazard curves for the case study frames are also generated. Estimates for mean annual frequency of exceeding various performance levels are then computed through an integration process of the data resulting from the fragility curves with the site hazard curves. The study demonstrates that the proposed design procedure relaxing design drift demands delivers more economic building designs relative to code-compliant designs, yet without risking the global safety of the structure. The relaxed design technique suggested herein, even though scoring higher, as expected by intuition, mean annual frequency of exceeding various code limiting performance levels expressed in terms of interstory drift ratios, still guarantees a reasonably acceptable actual margin against violating code limits for such levels.
Keywords: RC moment frames; Ductile; Moderate seismic zones; Codes; Fragility curves; hazard.

161. Toward An Economic Design Of Reinforced Concrete Structures Against Progressive Collapse

H. M. Salem, A. K. El-Fouly And H. S. Tagel-Din

Engineering Structures, 33: 3341-3350 (2011) IF: 1.363

A three-dimensional discrete crack model based on the Applied Element Method is used to perform economic design for reinforced concrete structures against progressive collapse. The model adopts fully nonlinear path-dependant constitutive models for concrete and reinforcing bars. The model applies a dynamic solver in which post-failure behavior, elements separation, falling and collision is predicted. First, the model is used to study the behavior of multi-storey reinforced concrete buildings designed in a traditional manner according to the ACI 318-08 and subjected to accidental removal of one or two central columns at the ground level. In an iterative way, the model is then used to investigate a safe design against progressive collapse for such extreme loading case. Based on the analytical results of the AEM, it can be concluded that the collapse of only one column would not lead to any progressive collapse of the studied reinforced concrete structure. However, the collapse of more than one column may lead to a progressive collapse of a considerable part of it. It is concluded also that the AEM could be successfully used as an analytical tool to suggest economical designs that are safe against progressive collapse of reinforced concrete structures.
Keywords: Applied Element Method; Numerical Analysis; Progressive collapse; GSA; UFC; ASCE.

162. Aprobabilistic Boundary Element Method Applied to the Pile Dislocation Problem

Samer Sabry F. Mehanny, Sameh S.F. Mehanny, Youssef F. Rashed

Engineering Structures 33 (2011) IF : 1.363

In this paper a probabilistic approach is presented where the boundary element method is efficiently used to study the effect of a random shift of a given pile within a particular pile cap from its original position – the so-called pile dislocation problem – on selected output design parameters such as pile loads and bending moments in the pile cap. A new circular internal element is developed to simulate the true geometric modeling of piles.
The boundary element method for the shear-deformable (thick) plate theory is employed to analyze the pile cap. The plate–pile interaction forces are considered to have constant variation over the circular pile domain. The probabilistic approach presented herein incorporates a Monte Carlo simulation technique for generating random shifts in the original position of a given pre-selected pile. The procedure has been applied to some exemplar pile caps with given pile layouts typically adopted in bridge construction.
The results demonstrate that the random dislocation of piles within practical ranges/values as customarily encountered for example in pile caps pertinent to bridge applications will cause limited variations in the output design parameters investigated herein and mentioned above. In other words, it has been illustrated that the resulting dispersion in the output values due to random dislocation of piles is less than the possible intrinsic dispersion that may be practically triggered in the pile locations due to common construction inaccuracies and/or unanticipated problems during pile driving process. The study further emphasizes the efficiency and reliability of the Boundary Elements Method adopted herein for such application.

163. A Domain Ontology for Construction Concepts in Urban Infrastructure Products

Tamer El-Diraby and Hesham Osman

Automation in Construction 20: 1120 –1132 (2011) IF :1.311

Domain ontologies are the cornerstone of informatics systems. Like their philosophical counterparts, they aim at providing a shared representation (language) for the concepts of a domain of knowledge. In addition to being human-friendly, these ontologies are machine-interpretable. Hence, they can be the basis for semantic/social web applications where services can be developed to support the exchange of knowledge, coordination and decision support. Informatics ontologies are not meant to be a data exchange standard. However, they can interact fairly well with data standards to support interoperable computer programs. Ontologies are related more to knowledge representation rather than reasoning. Consequently, they normally can be complemented by artificial intelligence tools to enhance their decision support capabilities. The ontology presented here is an attempt to build an abstract (yet extendable) philosophical (yet practical) conceptualization of the essence of knowledge that relates to construction aspects of infrastructure products. A product is the outcome of any work process and includes physical products, decisions, abstract knowledge and knowledge items generated based on all of these. A set of related constraints, mechanism, actors and process are identified along with these products. Product attributes and modalities are also presented to help describe the behavior of these products and support the generation of types or classes of these products

Keywords: Ontology; Knowledge management; Urban infrastructure; Semantic Systems.

164. Developing an Efficient Algorithm for Balancing Mass-haul Diagrams

Khaled Nassar, Ebrahim Aly, and Hesham Osman

Automation in Construction 20: 1185–1192 (2011) IF :1.311

A number of linear and integer programming techniques have been used to minimize the total cost of earthwork by considering the various factors involved in the process. Although these models often ensure a global optimum for the problem, they required sophisticated formulations and are quite involved in their setup and definition as well as being expensive computationally and therefore may be of limited use in real life. In construction practice, Mass-haul diagrams (MD) have been an essential tool for planning earthwork construction for many applications including roadwork, piping, and other linear infrastructure facilities. One of the most common heuristics that is used widely by practicing engineers in the field to balance the MD is the "shortest-haul-first" strategy. Balancing the MD using this heuristic is usually carried out either graphically on the drawing, or manually by computing values from the mass-haul diagram itself. However performing this approach graphically or manually is fairly tedious and time consuming. In addition manual and graphical approaches are prone to error. More importantly, if the project considered has a large number of stations (in the order of hundreds), then performing this balance manually becomes impractical. A robust algorithm is therefore needed that can automatically balance the MD. The research discussed here presents a formal definition of an algorithm that uses a sequential pruning technique for automatically computing balances of mass-haul diagrams. It is shown that the new algorithm is more efficient than existing integer programming techniques and computationally runs in level of complexity of O(log n) time in most cases. Thus this algorithm can handle problems with a large number of stations within a reasonable amount of time. In addition, a computer implementation and extensive computational experiments are provided. Suggestions for how this algorithm can be used in cost-based or grade-based optimization of hauling distances and quantities are discussed.

Keywords: Line of balance; Earthwork Planning; Construction; Road construction Earth moving; Equipment.

165. ELECTRE III Model For Value Engineering Applications

M.M. Marzouk

Automation in Construction, 20: 596–600 (2011) IF: 1.311

Value engineering (VE) programs are implemented to enhance the value received over the life-cycle of constructed assets. It is defined as the process of relating the functions, quality, and costs of the project in the determination of optimum solutions for the project. Value engineering is carried out to optimize the performance and costs of products (e.g., project, service, item, etc.) by identification and removal of unnecessary costs. Such costs include either total life-cycle costs or direct costs of production (e.g., construction, implementation, installation, etc.). This paper considers the application of the ELECTRE III model in the context of value engineering. The steps of the ELECTRE III model include; estimation of concordance indices, estimation of discordance indices, estimation of credibility scores, performing distillation procedure, and performing complete ranking. The proposed methodology is intended to support the decision making on alternatives with an increase in the efficiency of the resolution process. A numerical example is presented to demonstrate the use of the proposed methodology.

Keywords: ELECTRE III Multi-Criteria Decision Making; Ranking of Alternatives; Value Engineering.

166. Knowledge-Enabled Decision Support System for Routing Urban Utilities

Hesham Osman and Tamer El-Diraby

Journal of Construction Engineering & Management 137: 198 –213 (2011) IF :0.676

This paper presents a Web-based system for supporting the selection of the most suitable routes for buried urban utilities. The aim of the proposed system is to support (not make) decisions through a collaborative semiautomated environment, in which stakeholders can share information and/or study the impacts of different routing alternatives with respect to decision constraints. First, the knowledge relating to route selection for urban utilities is represented through an ontology. The ontology defines the types and attributes of infrastructure products and the surrounding areas. It also defines the impacts of routing options on surrounding areas through a set of decision criteria adopted to evaluate the effectiveness of any route in terms of its

potential impacts. A set of constraints are also defined to help represent/study the decision criteria. Second, a GIS-based system has been created to help visualize route data, interact with users, and support the needed discussions among stakeholders. The portal also achieves data interoperability through wrapping existing geospatial data with ontology structures. Finally, a set of reasoners have been created to help quantify/augment some of the constraints. The system is capable of (1) extracting the attributes of each routing option, (2) testing the interaction/conflicts between route attributes and the constraints of the surrounding area, (3) studying the impacts of a route as stipulated in the ontology, (4) referring users to existing best practices to help enhance routes or address conflicts and, when needed, (5) develop objective measures for comparing different routes. On the microlevel (street level), route options are evaluated through a "constraint-satisfaction" approach. On the macrolevel (city level), route options are evaluated through a fuzzy inference scoring system. The proposed system focuses on facility life cycle, sustainability, and community impacts. Construction costing, scheduling, labor, and equipment along with other management issues can either be added to the system or, better, analyzed through integrating the system with four-dimensional (4D) modeling tools.

Keywords: Knowledge- based systems; Information management; Decision support systems; Geographic information systems; Routing; Urban areas; Infrastructure; Utilities.

167. Comparison of Statistical Deterioration Models for Water Distribution Networks

Hesham Osman and Kevin Bainbridge

Journal of Performance of Constructed Facilities 25: 259–266 , (2011) IF :0.293

The use of water main break history as a proxy for condition has become common practice because of the high costs associated with direct assessments. Statistical deterioration models predict future water main breaks on the basis of historical patterns. Many municipalities are beginning to understand the value of utilizing water pipe break histories to manage their noncritical distribution networks via deterioration models. This paper presents a generic IDEF0 process model for developing water main deterioration models. Two common statistical deterioration models for water pipes are compared: rate-of-failure models (ROF) and transition-state (TS) models. ROF models extrapolate the breakage rate for a particular cohort of pipes and do not differentiate between the times between successive failures. On the other hand, transition-state models attempt to model the time between successive failures for pipes. This paper presents a comparison and analysis of ROF models and transition-state models by using a single data set for cast- and ductile-iron pipes in the City of Hamilton, Ontario, Canada. The paper compares the models' ability to support breakage forecasting, long-term strategic planning, and short-term tactical planning. Best practices for pipe segmentation in support of water main deterioration models are presented

Keywords: Water distribution systems; Water pipelines; Deterioration; Infrastructure; Buried pipes; Statistics.

168. Damage Assessment of Buildings Due to Different Parameters of Pipeline Deterioration

Metwally k. G., Hussein M. M. and Akl. A. Y.

Life Science Journal, 8 (3): 278-289. (2011) IF: 0.158 578

Due the high interaction between sewer pipelines deterioration and existing structures in urban areas, the operation of pipeline failure in urban areas draws much attention. In this study a thorough analysis of the pipeline failure influence in different soils on adjacent buildings was investigated. Numerical simulations were performed by means of the finite element program ANSYS/CivilFEM. The purpose of the coupled analyses (soil, pipeline and building in the same model) was to investigate the general mechanisms of soil structure interaction that occur in this type of problem. Each of these analyses produced a large amount of output data. This study highlights how the ground surface and building foundation displacements are used to estimate the damage category of buildings due to failure in pipeline. The variable parameters used to simulate the pipeline failure are pipeline settlement, position of settlement, burial depth, soil stiffness, infiltration of sewage and groundwater. For each case, results are presented as vertical and horizontal displacements of ground beneath the building and estimated category of damage is calculated .

Keywords: Soil structure interaction; Sewer; Pipeline; Deterioration; building damage.

169. The Application of Fuzzy Modeling to Hazard Assessment for Reinforced Concrete Building Structures Due to Pipeline Failure

Dina. A. Emarah, M. M. Hussein, Hamd. M. Mousa and Adel. Y. Akl

Life Science Journal, 8: (3) 595-608. (2011) IF :0.158

In this article, the application of fuzzy modeling to hazard assessment for reinforced concrete building structures due to pipeline failure was implemented. Damage assessment due to sewer pipeline failure is a very important issue in urban regions in Egypt. By combining ground deformation patterns, well-known damage category criteria, the potential damage of adjacent buildings can be assessed due to different parameters of pipeline deterioration. In this study, the well-known computer program ANSYS with geotechnical module "CivilFEM" is used considering nonlinear elastic soil behavior. The finite element model is chosen to investigate the influence of four different parameters of pipeline deterioration at the same time such as pipeline settlement, settlement location, building location with respect to pipeline and burial depth on the building damage category. The results were implemented in a fuzzy based assessment system for reinforced concrete building structures to evaluate the damage category of building. A criterion to define membership functions for each parameter, as input to the fuzzy engine, as well as the rule base was described. The fuzzy output as damage category was briefly validated by using numerous examples for different values that was chosen randomly to cover the whole range of 4 parameters to get the results first in fuzzy system, then running the same values using ANSYS and results were consistent in the two methods. Fuzzy logic support system showed to be a powerful

tool in forecasting potential damage in buildings due to the association of different parameters in pipeline deterioration .
Keywords: Damage category; pipeline failure; membership functions; rule base and fuzzy assessment system .

170. Computer-Aided Design of Framed Reinforced Concrete Structures Subjected to Flood Scouring

H. M. SALEM

Journal of American Science ,7 (10):191-200, (2011)

In the beginning of 2010, several reinforced concrete structures collapsed due to floods in Sinai and Aswan, Egypt. Scour of soil beneath foundations lead to excessive differential settlements, failure of main structural members and finally complete structural collapse. A three-dimensional nonlinear dynamic analysis of a multi-storey reinforced concrete framed structure with induced soil scour under its foundation is carried out using the Applied Element Method. The analysis of the structure is followed until its complete collapse. The numerical analysis is then used to propose a safe design against collapse. Three different alternatives proposed for preventing progressive collapse are independently investigated; floor beams, tie beams connecting footings, and diagonal bracings. Increasing the size of the floor beams was found not to have significant effect on mitigating progressive collapse, while the use of diagonal bracings in the ground floor or rigid tie beams connecting the structure' footings was found to efficiently prevent progressive collapse. With diagonal bracings or rigid tie beams, the excessive differential settlements of the footings can be eliminated and the gravity loads can follow a safe alternative path preventing the structural collapse. The tie beam reinforcement was found to have a significant effect on the structural behavior during such an extreme loading case. Section analysis of the tie beam suggests that its ultimate strength should be based on rupture of main reinforcement, which is more economical and appropriate for such loading case.

Keywords: Flood scouring; progressive collapse; Applied Element Method; tie beams.

171. Comparative Study of Structural Systems for Tall Buildings

N. F. El-Leithy, M. M. Hussein and W. A. Attia

Journal of American Science, 7 (4): 707-719 (2011)

An investigation has been carried out to examine the most common structural systems that are used for reinforced concrete tall buildings under the action of gravity and wind loads. These systems include "Rigid Frame", "Shear Wall/Central Core", "Wall-Frame Interaction", "Outrigger", and "Tube in Tube". The basic modeling technique and assumptions are made by "ETABS" Program, in 3-D modeling. Design considerations are made according to "ACI 318-05" Code and "ASCE 7-05" Standard. This comparative analysis has been aimed to select the optimal structural system for a certain building height. The structural efficiency is measured by the volume of concrete of main elements, structural period, and base shear values. The recommendations for each structural system are based upon limiting the wind drift of the structure, minimizing the cost of wind force resisting elements, and increasing the lateral stiffness.

Keywords: Soil structure interaction; Sewer; Pipeline; Deterioration; building damage.

172. Damage Assessment of Buildings Due to Pipeline Settlement using Fuzzy Decision Support Tool

Dina. A. Emarah, M. M. Hussein, Hamdi. M. Mousa and Adel. Y. Akl

Journal of American Science, 7 (4): 374-384 (2011)

Settlement of buildings, due to nearby pipeline deterioration can result in noticeable damage. By combining ground deformation patterns with well-known damage category criteria, the building deformations can be readily assessed without undue oversimplification. In this paper, the well-known computer program ANSYS with geotechnical module "CivilFEM" is used considering nonlinear elastic soil behavior. The finite element model is chosen to investigate the influence of pipeline settlement and burial depth on buildings. Thus, damage category of buildings can be predicted. Also, a fuzzy based assessment system, which evaluates the damage category of buildings was introduced. A criterion to define the membership functions of fuzzy assessment system starting from available information obtained from ANSYS was also described. This results in the prediction of the category of damage of buildings due to the interaction of more than one parameter in pipeline deterioration.

Keywords: Damage category; pipeline; settlement; and fuzzy assessment system.

173. Application of Lean Principles to Design Processes in Construction Consultancy Firms

Mohamed Marzouk Moheeb El-Said

Journal of Construction Supply Chain Management, 1 (1): 43-55 (2011)

Simulation modelling and Lean principles have both been applied in the construction industry to improve work processes. The outcomes from their implementation are outstanding and have motivated construction researchers to seek means by which other aspects of construction production could benefit from this development. Therefore the aim of this research is to use computer simulation as a tool for assessing the impact of applying Lean principles to design processes in construction consultancy firms to aid in decision making at early stages of construction projects. A comprehensive model for the design process was built before the principles of Lean construction were depicted in the model. Through a detailed case study, it was concluded that applying Lean construction principles to the design process significantly helped to improve process efficiency, in terms of reduced process durations and increased resource utilisation.

Keywords: Lean Principles; Construction Consultancy Firms; Design Phase; Computer Simulation.

174. Experimental Tests on Short Composite and Internally Reinforced Concrete Columns

Ahmed A. El-Barbary, Mahmoud T. Elmihilmy and Wahba W. El-Tahan

International Journal of Structural Engineering, 2 (1): 35-49 (2011)

Experimental investigation of reinforced concrete composite columns behaviour was conducted. Eight rectangular reinforced concrete columns with different parameters were tested under axial loads and biaxial bending. Four columns were internally reinforced with I-section structural steel and the other four were heavily reinforced with reinforcement bars with an equivalent area to the I section. The variables considered in the study were:
1- the eccentricity of the applied force.
2- the ratio of Mx and My.
The main goal of this research was to compare the behaviour of the two groups.The results of the tests indicated that the experimental loads for internally reinforced columns were about 82% of that for the composite columns. A computer program was developed based on the ACI provisions to calculate the theoretical capacity of the tested columns. All the experimental failure loads were greater than the predicted theoretical values by an average value of 84%.
Keywords: Reinforced concrete columns; Experimental tests; Composite columns; Axial loading; Biaxial bending; ACI code.

1-1-15. *Dept. of Systems and Biomedical Engineering*

175. System Dynamic Model For Normal Intraocular Pressure

M. Waly, A.Sharawy, K.Wahba

Global Journal of Computer Applications & Technology, 4: 502–511(2011)

In order to study the mechanism of controlling intraocular pressure (IOP) with engineering methods, a dynamic model was presented which can be used to simulate the circulation of aqueous humor and the factors which affect it. The frame of the model was built based on the ophthalmically accepted feedback mechanism between the aqueous humor and IOP. The functions and the parameters were deduced from the analysis of the physiological theories and previously published data. Such a model may be useful in explaining the normal IOP control.
Keywords: Intraocular pressure; aqueous humor; aqueous humor inflow rate; aqueous humor outflow rate; causal loop diagram; stock and flow diagram.

1-2. Faculty of Computers and Information

1-2-01. *Dept. of Computer Science*

176. Optimization Procedure for Algorithms of Task Scheduling in High Performance Heterogeneous Distributed Computing Systems

Nirmeen A. Bahnasawy, Fatma Omara, Magdy A. Koutb and Mervat Mosa

Egyptian Informatics Journal, 12: 219–229 (2011) IF: 3.000

In distributed computing, the schedule by which tasks are assigned to processors is critical to minimizing the execution time of the application. However, the problem of discovering the schedule that gives the minimum execution time is NP-complete. In this paper, a new task scheduling algorithm called Sorted Nodes in Leveled DAG Division (SNLDD) is introduced and developed for HeDCSs with consider a bounded number of processors. The main principle of the developed algorithm is to divide the Directed Acyclic Graph (DAG) into levels and sort the tasks in each level according to their computation size in descending order. To evaluate the performance of the developed SNLDD algorithm, a comparative study has been done between the developed SNLDD algorithm and the Longest Dynamic Critical Path (LDCP) algorithm which is considered the most efficient existing algorithm. According to the comparative results, it is found that the performance of the developed algorithm provides better performance than the LDCP algorithm in terms of speedup, efficiency, complexity, and quality. Also, a new procedure called Superior Performance Optimization Procedure (SPOP) has been introduced and implemented in the developed SNLDD.
Keywords: Task scheduling; Directed acyclic graph; Parallel processing; Heterogeneous distributed computing systems; Sleek time.

177. PSG: Peer-to-Peer Semantic Grid Framework Architecture

Amira Soliman, Amr Kamel,Walaa heta and Reem Bahgat 648

Egyptian Informatics Journal, 12: 125-138 (2011) IF: 3.000

The grid vision, of sharing diverse resources in a flexible, coordinated and secure manner, strongly depends on metadata. Currently, grid metadata is generated and used in an ad-hoc fashion, much of it buried in the grid middleware code libraries and database schemas. This ad-hoc expression and use of metadata causes chronic dependency on human intervention during the operation of grid machinery. Therefore, the Semantic Grid is emerged as an extension of the grid in which rich resource metadata is exposed and handled explicitly, and shared and managed via grid protocols. The layering of an explicit semantic infrastructure over the grid infrastructure potentially leads to increase interoperability and flexibility. In this paper, we present PSG framework architecture that offers semantic-based grid services. PSG architecture allows the explicit use of semantics and defining the associated grid services. PSG architecture is originated from the integration of Peer-to-Peer (P2P) computing with semantics and agents. Ontologies are used in annotating each grid component, developing

users/nodes profiles and organizing framework agents. While, P2P is responsible for organizing and coordinating the grid nodes and resources.
Keywords: Semantic grid; Peer-to-Peer systems; Multi-agent systems; Semantic resource discovery; Ontology.

178. Order Statistics Bayesian–Mining Agent Modelling for Automated Negotiation

Samir Abdel Rahman, Reem Bahgat and George M. Farag

Informatica, 35: 123-137 (2011)

The availability of qualitative knowledge has been recently used to simulate human negotiations accurately. During real-life negotiation sessions, people accumulate their knowledge to opt for most adequate bids by which both negotiating parties reach a win-win agreement. Unfortunately, existing research mainly concentrates on few negotiation bids. This paper proposes order statistics Bayesian-mining agent approach to automate bilateral multi-issue multi-session win-win negotiation problems. The proposed agent applies a real life social bid ranking based on historical bids of all previous negotiation sessions to dynamically update all issues' weights and preferences. Moreover, it uses our proposed deterministic Trade-Off counter offer method, rather than the existing haphazard estimation method, to estimate precisely the next bid. Experiments are conducted on 3-issue, 5-issue, 6-issue and 10-issue having 27, 3169, 3122 and 13219200 bids respectively. The selected evaluation analysis methods are mainly Pareto optimality, utility, cost and step-wise measurements. Compared with existing agent sorts, such as ABMP, Trade-Off, Bayesian and Mining agents, the proposed agent approach is proved that it is more efficient, effective, scalable and sensitive (adaptable to the opponent steps). Also, it works better to maximize its utilities and to minimize the negotiation costs (the number of rounds).
Keywords: Bayesian mining; Order statistics; Automated negotiation; Multi-issue; Multi-session; Opponent modeling.

1-2-02. *Dept. of Information Systems*

179. An Extended k-means Technique for Clustering Moving Objects

Hoda M. O. Mokhtar and Mohamed E. El-Sharkawi

Egyptian Informatics Journal,12:45–51 (2011) IF: 3.000

k-means algorithm is one of the basic clustering techniques that is used in many data mining applications. In this paper we present a novel pattern based clustering algorithm that extends the k-means algorithm for clustering moving object trajectory data. The proposed algorithm uses a key feature of moving object trajectories namely, its direction as a heuristic to determine the different number of clusters for the k-means algorithm. In addition, we use the silhouette coefficient as a measure for the quality of our proposed approach. Finally, we present experimental results on both real and synthetic data that show the performance and accuracy of our proposed technique.
Keywords: Clustering moving objects; Moving objects databases; Mining moving object trajectories; K-means clustering algorithm.

180. A Flexible Tool for Web Service Selection in Service Oriented Architecture

Hoda M. O. Mokhtar and Ali El- Bastawissy

International Journal of Advanced Computer Science and Applications (IJACSA), 2 (12): 191-201 (2011)

Web Services are emerging technologies that enable application to application communication and reuse of services over Web. Semantic Web improves the quality of existing tasks, including Web services discovery, invocation, composition, monitoring, and recovery through describing Web services capabilities and content in a computer interpretable language.
To provide most of the requested Web services, a Web service matchmaker is usually required. Web service matchmaking is the process of finding an appropriate provider for a requester through a middle agent. To provide the right service for the right user request, Quality of service (QoS)-based Web service selection is widely used. Employing QoS in Web service selection helps to satisfy user requirements through discovering the best service(s) in terms of the required QoS. Inspired by the mode of the Internet Web search engine, like Yahoo, Google, in this paper we provide a QoS-based service selection algorithm that is able to identify the best candidate semantic Web service(s) given the description of the requested service(s) and QoS criteria of user requirements. In addition, our proposed approach proposes a ranking method for those services. We also show how we employ data warehousing techniques to model the service selection problem.
The proposed algorithm integrates traditional match making mechanism with data warehousing techniques. This integration of methodologies enables us to employ the historical preference of the user to provide better selection in future searches. The main result of the paper is a generic framework that is implemented to demonstrate the feasibility of the proposed algorithm for QoS-based Web application. Our presented experimental results show that the algorithm indeed performs well and increases the system reliability.
Keywords: Web services; Web services match-making; Data warehouses; Quality of Services (QoS); Web service ranking.

181. Clustering Moving Objects Using Segments Slopes

Hoda M. O. Mokhtar and Mohamed E. El-Sharkawi

International Journal of Database Management Systems, 3 (1): 35-48 (2011)

Given a set of moving object trajectories, we show how to cluster them using k-means clustering approach. Our proposed clustering algorithm is competitive with the k-means clustering because it specifies the value of "k" based on the segment's slope of the moving object trajectories.
The advantage of this approach is that it overcomes the known drawbacks of the k-means algorithm, namely, the dependence on the number of clusters (k), and the dependence on the initial choice of the clusters' centroids, and it uses segment's slope as a heuristic to determine the different number of clusters for the k-means algorithm. In addition, we use the standard quality measure (silhouette coefficient) in order to measure the efficiency of our proposed approach. Finally, we present experimental results on both real and synthetic data that show

the performance and accuracy of our proposed technique.
Keywords: Moving object database (MOD); Clustering moving objects; k-means clustering algorithm.

182. Data Warehouses for Uncertain Data

Hoda M. O. Mokhtar

Journal of Computing, 3 (6): 178–183 (2011)

Data warehousing is one of the most powerful BI tools nowadays. A data warehouse stores historical data that is integrated from many sources, and processes it in a multidimensional approach to make it easy to use for efficient decision making. However, so far most of the data warehouse's designs are based on the assumption that data in the data warehouse is either true or true until a new snapshot occurs. Today, many real world applications require handling uncertain data. Sensor networks, and a wide range of location based services (LBS), and many others deals with data that is not 100% guaranteed accurate. Inspired by the importance of those newly emerging application, in this paper we propose a novel framework for data warehouses that efficiently handles both exact and uncertain data. We present the application of our model in the context of sensor networks and show analyzing uncertain data can also be achieved.
Keywords: Data Warehouses; Analyzing fuzzy data; Uncertain data warehouses; Sensor data.

183. HITS: A History-Based Intelligent Transportation System

Hoda M. O. Mokhtar

International Journal of Data Mining & Knowledge Management Process (IJDKP), 1 (2): 34-46 (2011)

Transportation is the driving force of any country. Today we are facing an explosion in the number of motor vehicles that affects our daily routines. Intelligent transportation systems (ITS) aim to provide efficient tools that solve traffic problems. Predicting route congestions during different day periods can help drivers choose better routes for their trips. In this paper we propose "HITS" a traffic control system that integrates moving object database techniques [30, 28] along with data warehousing techniques [15]. Our system uses historical traffic information to answer queries about moving objects on road network, and to analyze historical traffic conditions to enhance future traffic related decisions.
Keywords: Intelligent transportation systems; Spatio-temporal data warehouses; Moving object databases.

184. A Time Parameterized Technique for Clustering Moving Object Trajectories

Hoda M. O. Mokhtar and Mohamed E. El-Sharkawi

International Journal of Data Mining & Knowledge Management Process (IJDKP), 1 (1): 14-30 (2011)

Today portable devices as mobile phones, laptops, personal digital assistants(PDAs), and many other mobile devices are ubiquitous. Along with the rapid advances in positioning and wireless technologies, moving object position information has become easier to acquire. This availability of location information triggered the need for clustering and classifying location information to extract useful knowledge from it and to discover hidden patterns in moving objects' motion behaviors. Many existing algorithms have studied clustering as an analysis technique to find data distribution patterns. In this paper we consider the clustering problem applied to moving object trajectory data. We propose a "time-based" clustering algorithm that adapts the k-means algorithm for trajectory data. We present two techniques: an exact, and an approximate technique. Besides, we present experimental results on both synthesized and real data that show both the performance and accuracy of our proposed techniques.
Keywords: Moving object databases; Mining moving object trajectories; Clustering moving objects; Similarity in moving object trajectories.

185. A Heuristic Approach for Sensor Network Outlier Detection

Asmaa F. Hassan, Hoda M. O. Mokhtar and Osman Hegazy

International Journal of Research and Reviews in Wireless Sensor Networks (IJRRWSN), 1 (4): 66–72 (2011)

In the discipline of wireless sensor networks, outliers are those measurements that deviate from the normal pattern of sensed data. Detecting outliers in wireless sensor networks is an important issue to sort out data, encounter noise, and discover abnormal events. In this paper, we develop an algorithm that clusters sensed data, in a distributed manner, to identify the outlier cluster(s) based on sensor's current reading and the historical readings within a past period of time. We give each sensor a rating that depends on the number of outlier readings for that sensor; this rating in turn indicates how much this sensor is trustful. We examine the algorithm using both real and synthetic sensor data streams. We demonstrate that the algorithm conducts reasonable communication overhead and power consumption.
Keywords: Outlier detection; Wireless sensor networks; Data warehouses; Data Mining.

186. iAgile : a Tool for Database Generation Guided by Graphical user Interface

Shaimaa Galal and Ehab Hassanein

International Journal of Computer Science, 8 (6): 292–298 (2011)

The agile development of the database and software systems is highly productive activity; it reduces time consumed, cost and effort invested in project development, but many agile projects do not apply agile practices to database development and still consider it in a serial manner as heavy-weight methodologies exactly work, while agile methodologies were introduced to overcome the problems experienced with the heavy-weight methodologies. The Enhanced Early Development of Graphical User Interface Practice Framework was introduced to enable performing the database development process in an evolutionary manner. In this article a proposed tool will be presented to help generating the final software product through applying and automating this framework to support agility in

both directions of coding and data modeling as well, using such a tool will provide a high level of customer collaboration and help data professionals to work in an agile manner to avoid the problem of having overbuilt systems along with automatically generating portions of the software code based on available modern software architecture models.

Keywords: Agile database development; Agile data modeling; Graphical user interface; Data access Layer generation.

1-2-03. *Dept. of Information Technology*

187. The Design of Optimal Therapeutic Small Interfering RNA Molecules Targeting Diverse Strains of Influenza A Virus

Mahmoud ElHefnawi, Nafisa Hassan, Mona Kamar, Rania Siam, Annalisa Rimoli, Iman El-Azab, Osama AlAidy, Giulia Marsiliin and Marco Sgarbanti

Bioinformatics, 27: 3364-3370 (2011) IF: 4.877

There is an urgent need for new medications to combat influenza pandemics. Using the genome analysis of the influenza A virus performed previously, we designed and performed a combinatorial exhaustive systematic methodology for optimal design of universal therapeutic small interfering RNA molecules (siRNAs) targeting all diverse influenza A viral strains. The rationale was to integrate the factors for highly efficient design in a pipeline of analysis performed on possible influenza-targeting siRNAs. This analysis selects specific siRNAs that has the ability to target highly conserved, accessible and biologically significant regions. This would require minimal dosage and side effects. First, >6000 possible siRNAs were designed. Successive filtration followed where a novel method for siRNA scoring filtration layers was implemented. This method excluded siRNAs below the 90% experimental inhibition mapped scores using the intersection of 12 different scoring algorithms. Further filtration of siRNAs is done by eliminating those with offtargets in the human genome and those with undesirable properties and selecting siRNA targeting highly probable single-stranded regions. Finally, the optimal properties of the siRNA were ensured through selection of those targeting 100% conserved, biologically functional short motifs. Validation of a predicted active (sh114) and a predicted inactive (sh113) (that was filtered out in Stage 8) silencer of the NS1 gene showed significant inhibition of the NS1 gene for sh114, with negligible decrease for sh113 which failed target accessibility. This demonstrated the fertility of this methodology.

Keywords: Influenza A; Pattern recognition; Drug design.

188. Efficient Watermark Detection By Using The Longest Common Substring Technique

Taha Mahdy, Hesham N. Elmahdy and Hoda Onsi

Egyptian Informatics Journal, 12 (2): 115-123 (2011) IF: 3.000

Large scale of watermarking methods is available in the literature. These methods differ in visibility, capacity, and robustness. In watermarking, the robustness against attacks is the most challenging issue. The desynchronization attacks are the most serious problems facing the watermarking process. The traditional correlation methods fail in watermark detection. Until today there is no widely used algorithm for solving the desynchronization attacks. In this paper, we will introduce a new algorithm for solving the watermark desynchronization attacks. The watermark embedding and detection models are introduced. So, these models are related to the attacker model by presenting four attacking scenarios. We show the effect of each attack scenario on bit rate, signal distortion, and robustness. We conclude that, the attacker could not distort a big part of the watermark. So, we suggest using a probabilistic embedding model combined with the longest common substring technique. This combination is efficient in solving the desynchronization attacks. Results show that, the proposed algorithm is powerful against the attacking scenarios. Moreover, the watermark is still be detected even if only 5% of the watermark is recovered.

Keywords: Copyright protection; Video watermarking; Realtime video watermaring extraction.

189. Human Age Estimation Framework using Different Facial Parts

Mohamed Y. El Dib and Hoda M. Onsi

Egyptian Informatics Journal, 12: 53–59 (2011) IF: 3.000

Human age estimation from facial images has a wide range of real-world applications in human computer interaction (HCI). In this paper, we use the bio-inspired features (BIF) to analyze different facial parts: (a) eye wrinkles, (b) whole internal face (without forehead area) and (c) whole face (with forehead area) using different feature shape points. The analysis shows that eye wrinkles which cover 30% of the facial area contain the most important aging features compared to internal face and whole face. Furthermore, more extensive experiments are made on FG-NET database by increasing the number of missing pictures in older age groups using MORPH database to enhance the results.

Keywords: Age estimation; Bio-inspired features; Support vector machine; Support vector regression.

190. Identification of Novel Conserved Functional Motifs Across Most Influenza A Viral Strains

Mahmoud ElHefnawi, Osama AlAidi, Nafisa Mohamed, Mona Kamar, Iman El-Azab, Suher Zada ans Rania Siam

Virology Journal, 8: 44 (2011) IF: 2.546 637

Influenza A virus poses a continuous threat to global public health. Design of novel universal drugs and vaccine requires a careful analysis of different strains of Influenza A viral genome from diverse hosts and subtypes. We performed a systematic in silico analysis of Influenza A viral segments of all available Influenza A viral strains and subtypes and grouped them based on host, subtype, and years isolated, and through multiple sequence alignments we extrapolated conserved regions, motifs, and accessible regions for functional mapping and annotation.

Across all species and strains 87 highly conserved regions (conservation percentage > = 90%) and 19 functional motifs (conservation percentage = 100%) were found in PB2, PB1, PA, NP, M, and NS segments. The conservation percentage of these segments ranged between 94 - 98% in human strains (the

most conserved), 85 - 93% in swine strains (the most variable), and 91 - 94% in avian strains.
The most conserved segment was different in each host (PB1 for human strains, NS for avian strains, and M for swine strains). Target accessibility prediction yielded 324 accessible regions, with a single stranded probability > 0.5, of which 78 coincided with conserved regions. Some of the interesting annotations in these regions included sites for protein-protein interactions, the RNA binding groove, and the proton ion channel.
The influenza virus has evolved to adapt to its host through variations in the GC content and conservation percentage of the conserved regions. Nineteen universal conserved functional motifs were discovered, of which some were accessible regions with interesting biological functions. These regions will serve as a foundation for universal drug targets as well as universal vaccine design.
Keywords: Influenza A; Pattern recognition; Drug design.

191. Prostate Boundary Detection in Ultrasound Images using Biologically-Inspired Spiking Neural Network

Aboul Ella Hassanien, Hameed Al-Qaheri and El-Sayed A. El-Dahshan

Applied Soft Computing 11: 2035–2041(2011) IF: 2.097

Pulse-coupled neural networks (PCNNs) are a biologically inspired type of neural networks. It is a simplified model of the cat's visual cortex with local connections to other neurons. PCNN has the ability to extract edges, segments and texture information from images. Only a few changes to the PCNN parameters are necessary for effective operation on different types of data. This is an advantage over published image processing algorithms that generally require information about the target before they are effective. The main aim of this paper is to provide an accurate boundary detection algorithm of the prostate ultrasound images to assist radiologists in making their decisions. To increase the contrast of the ultrasound prostate image, the intensity values of the original images were adjusted firstly using the PCNN with median filter. It is followed by the PCNN segmentation algorithm to detect the boundary of the image. Combining adjusting and segmentation enable us to eliminate PCNN sensitivity to the setting of the various PCNN parameters whose optimal selection can be difficult and can vary even for the same problem. The experimental results obtained show that the overall boundary detection overlap accuracy offered by the employed PCNN approach is high compared with other machine learning techniques including Fuzzy C-mean and Fuzzy Type-II.
Keywords: Prostate segmentation, Bio-inspiring, Pulse-coupled neural networks; Ultrasound images.

192. Wearable and Implantable Wireless Sensor Network Solutions for Healthcare Monitoring

Aboul Ella Hassanien

Sensors, 11: 5561-5595 (2011) IF: 1.774

Wireless sensor network (WSN) technologies are considered one of the key research areas in computer science and the healthcare application industries for improving the quality of life. The purpose of this paper is to provide a snapshot of current developments and future direction of research on wearable and implantable body area network systems for continuous monitoring of patients. This paper explains the important role of body sensor networks in medicine to minimize the need for caregivers and help the chronically ill and elderly people live an independent life, besides providing people with quality care. The paper provides several examples of state of the art technology together with the design considerations like unobtrusiveness, scalability, energy efficiency, security and also provides a comprehensive analysis of the various benefits and drawbacks of these systems. Although offering significant benefits, the field of wearable and implantable body sensor networks still faces major challenges and open research problems which are investigated and covered, along with some proposed solutions, in this paper.
Keywords: Wireless sensor networks; Body area networks; Wearable sensors; Implantable sensors; Healthcare applications; Biosensors; Nanotechnology; Privacy; Security.

193. Multi Swarms for Neighbor Selection in Peer-To-Peer Overlay Networks

Ajith Abraham, Hongbo Liu and Aboul Ella Hassanien 631

Telecommunication Systems, 46: 195-208 (2011) IF: 0.670

Peer-to-peer (P2P) topology has a significant influence on the performance, search efficiency and functionality, and scalability of the application. In this paper, we investigate a multi-swarm approach to the problem of neighbor selection (NS) in P2P networks. Particle swarm share some common characteristics with P2P in the dynamic socially environment. Each particle encodes the upper half of the peer-connection matrix through the undirected graph, which reduces the search space dimension. The portion of the adjustment to the velocity influenced by the individual's cognition, the group cognition from multi-swarms, and the social cognition from the whole swarm, makes an important influence on the particles' ergodic and synergetic performance.
We also attempt to theoretically prove that the multiswarm optimization algorithm converges with a probability of 1 towards the global optima. The performance of our approach is evaluated and compared with other two different algorithms. The results indicate that it usually required shorter time to obtain better results than the other considered methods, specially for large scale problems.
Keywords: Swarm intelligence; P2P swarming networks; Neighbor selection; Particle swarm optimization; Genetic.

194. A Scalable WDM Optical Multicast Benes Interconnection Network with Multi-Channel Wavelength Converters

Haitham Safwat Kamal Hamza

Photonic Networks and Communications 21: 201–213 (2011) IF: 0.600

An optical wavelength division multiplexing (WDM) multicast network interconnects an input signal on a given wavelength to one or more output fibers, possibly on different wavelengths

(via wavelength conversion), while maintaining the signal in the optical domain. A key challenge in the design of scalable multicast networks is to reduce conversion complexity without affecting the switching capability and signal quality. In this article, we propose a scalable WDM multicast Beneš interconnection network with minimized conversion complexity. The proposed network is based on the Copy-and-Route architecture, and it uses multichannel WCs (MCWCs) for wavelength conversion. The conversion complexity of the proposed design is O(F log2 W) (where F is the number of fibers and W is the number of wavelengths per fiber), which is smaller than the O(FW) complexity of the optimal design based on conventional single- channel WCs (SCWCs). We prove that, for W > 64 and for any value of F, the conversion complexity of the new design is strictly less than that of the optimal SCWC-based design regardless of the total number of wavelengths simultaneously converted by each MCWCs. Analyzes of conversion complexity of the proposed design for large values of W confirm considerable savings compared to the optimal SCWC-based design. For instance, for W = 256 and for an arbitrary value of F, a practical implementation of the proposed design achieves 87% reduction in conversion complexity as compared to the optimal SCWC-based design.

Keywords: Optical multicast; Wavelength division multiplexing; Wavelength exchange optical crossbar; Wavelength converters; Beneš networks.

195. On the Design of Asynchronous Optical Packet Switch Architectures with Shared Delay Lines and Converters

Haitham Safwat Kamal Hamza, Tawfik Ismail and Khaled El-Sayed

Photonic Networks and Communications, (2011) IF: 0.600

Optical packet switching (OPS) is a promising technology to enable next-generation high-speed IP networks. A major issue in OPS is packet contention that occurs when two or more packets attempt to access the same output fiber. In such a case, packets may be dropped, leading to degraded overall switching performance. Several contention resolution techniques have been investigated in the literature including the use of fiber delay lines (FDLs), wavelength converters (WCs), and deflection routing. These solutions typically induce extra complexity to the switch design. Accordingly, a key design objective for OPS is to reduce packet loss without increasing switching complexity and delay. In this paper, we investigate the performance of contention resolution in asynchronous OPS architectures with shared FDLs and WCs in terms of packet loss and average switching delay. In particular, an enhanced FDL-based and a novel Hybrid architecture with shared FLDs and WCs are proposed, and their packet scheduling algorithms are presented and evaluated. Extensive simulation studies show that the performance of proposed FDL-based architecture outperforms typical OPS architectures reported in the literature. In addition, it shown that, for the same packet loss ratio, the proposed hybrid architecture can achieve up to 30% reduction in the total number of ports and around 80% reduction in the overall length of fiber as compared to the FDL-based architectures.

Keywords: Optical packet switching; Wavelength division multiplexing; Fiber delay lines; Wavelength converters; Switch architecture.

196. Convert-and-Deliver: A Scalable Multicast Optical Cross-Connect with Reduced Power Splitting Fan-out

Haitham Safwat Kamal Hamza

Journal of Supercomputing, (2011) IF: 0.545 642

Powerful computing systems interconnected via high-bandwidth wavelength division multiplexing (WDM) fibers are becoming inevitable to meet the needs of emerging computation and communication applications. Enabling multicast over WDM links requires the use of multicast-capable optical cross-connects (MC-OXCs) equipped with power splitters to replicate and interconnect an input signal on a particular wavelength to one or more output fibers, possibly on different wavelengths. All existing design approaches for FW ×FW strictly nonblocking MC-OXCs with F fibers, each carries W wavelengths require the use of power splitters with a fanout degree of O(FW). For typical large values of F and W, complex and power consuming active devices are needed to compensate for the lost power due to splitting. In this paper, we propose a new class of strictly nonblocking MC-OXC, namely, the Convert-and-Deliver (CAD) cross-connect to reduce power consumption. The new CAD OXC uses power splitters with a fan-out degree of only O(F) instead of O(FW). It is shown that, making the fan-out degree independent of W in the proposed design does not only reduce splitting power loss considerably, but it also enhances the scalability of the design. In particular, for any value of F, upgrading the number of wavelengths per fiber does not incur any changes to the fan-out degree or the power loss in the used splitters; a feature that cannot be obtained with any existing MC-OXC design approach.

Keywords: Optical multicast; WDM; Optical cross-connects (OXC); Wavelength; Converters; Multicast converters; Strictly nonblocking switching.

197. A Block-wise-based Fragile Watermarking Hybrid Approach using Rough Sets and Exponential Particle Swarm Optimization

Lamiaa M. El Bakrawy, Neveen I. Ghali, Tai-hoon Kim and Aboul ella Hassanien

International Journal of Future Generation Communication and Networking, 4 (4): 77-88 (2011)

In this paper, we propose a fragile watermarking hybrid approach using rough set kmeans and exponential particle swarm optimization (EPSO) systems. It is based on a block-wise dependency mechanism which can detect any alterations made to the protected image. Initially, the input image is divided into blocks with equal size in order to improve image tamper localization precision. Then feature sequence is generated by applying rough k-means and EPSO clustering to create the relationship between all image blocks and cluster all of them since EPSO is used to optimize the parameters of rough k-means. Both feature sequence and generated secret key are used to construct the authentication data. Each resultant 8-bit authentication data is embedded into the eight least significant bits (LSBs) of the corresponding image block. We gives experimental results which show the feasibility of using these optimization algorithms for the fragile watermarking and demonstrate the accuracy of the proposed approach. The

performance comparison of the approach was also realized. The performance of a fragile watermarking approach has been improved in this paper by using exponential particle swarm optimization (EPSO) to optimize the rough kmean parameters. The proposed approach can embed watermark without causing noticeable visual artifacts, and does not only achieve superior tamper detection in images accurately, it also recovers tampered regions effectively. In addition, the results show that the proposed approach can effectively thwart different attacks, such as the cut-and paste attack and collage attack, while sustaining superior tamper detection and localization accuracy.
Keywords: Fragile Watermarking; Rough sets; Exponential particle swarm optimization.

198. ArSLAT: Arabic Sign Language Alphabets Translator

Nashwa El-Bendary, Hossam M. Zawbaa, Mahmoud S. Daoud, Aboul Ella Hassanien and Kazumi Nakamatsu

International Journal of Computer Information Systems and Industrial Management Applications, 3: 498-506 (2011)

This paper presents an automatic translation system for gestures of manual alphabets in the Arabic sign language. The proposed Arabic Sign Language Alphabets Translator (ArSLAT) system does not rely on using any gloves or visual markings to accomplish the recognition job. As an alternative, it deals with images of bare hands, which allows the user to interact with the system in a natural way. The proposed ArSLAT system consists of five main phases; pre-processing phase, best-frame detection phase, category detection phase, feature extraction phase, and classification phase. The used extracted features are translation, scale, and rotation invariant in order to make the system more flexible. Experiments revealed that the proposed ArSLAT system was able to recognize the Arabic alphabets with an accuracy of 91.3% and 83.7% using minimum distance classifier (MDC) and multilayer perceptron (MLP) classifier, respectively.
Keywords: Arabic Sign Language; Minimum Distance Classifier (MDC); Multilayer Perceptron (MLP) Classifier; Feature Extraction; Classification.

199. PCA-based home videos annotation System

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

Int. J. Reasoning-based Intelligent Systems,3(2):71-79 (2011)

This paper presents a semi-automatic home videos annotation system that searches into video contents and retrieves video shots for a specific person. The proposed system is composed of four phases; namely (a) shot detection phase, (b) face detection and recognition phase using the Principal Component Analysis (PCA) feature extraction algorithm based on Haar-like features, (c) face clustering and annotation phase, and (d) retrieval phase. The proposed system is simple and provides a user-friendly interface. It greatly reduces workload and enhances the accuracy of annotating person's faces in home videos.
Keywords: PCA; Principal component analysis; Face detection; Face recognition; Clustering; Haar-like features; Annotation; Home videos.

200. Rough colour quantisation

Aboul Ella Hassanien

International Journal of Hybrid Intelligent Systems, (2011) IF: 0.545

Colour quantisation algorithms are essential for displaying true colour images using a limited palette of distinct colours. The choice of a good colour palette is crucial as it directly determines the quality of the resulting image. Colour quantisation can also be seen as a clustering problem where the task is to identify those clusters that best represent the colours in an image. In this paper, we use a rough c-means clustering algorithm for colour quantisation of images. Experimental results on a standard set of images show that this rough colour quantisation approach performs significantly better than other, purpose built colour reduction algorithms.
Keywords: Rough sets; Color quantization.

201. A Load Aware Routing Protocol for Mobile Ad hoc Networks

Yasser A. Dahab, Hesham N. El mahdy and Imane A. Saroit

CiiT International Journal of Wireless Communication, 3 (4): 254-260 (2011)

Head of Line blocking phenomenon is common in First in First Out (FIFO) nature queues. Head of line blocking problem becomes significant in wireless ad hoc networks using directional antennas as it uses FIFO queue which consists of packets intended for different directions.
A packet on the top of the queue may block the remaining packets if it finds the medium busy in its intended direction, where as the packets in the queue intended for other directions may find the medium to be idle. In this paper we propose a method to address the Head of Line blocking problem that can be used for Medium Access Control protocol for wireless Ad Hoc networks using Directional Antennas.
The present proposal is about processing the data packets in the queue ready for transmission in other directions when the data packet on top of the queue finds the channel busy in its intended direction. This method is independent of mechanisms used for sensing and transmission by a MAC protocol for directional antennas thus can be part of any MAC protocol using directional antennas with out much change to the protocol.
We propose Individual queues for each beam direction and also propose to transmit all the packets waiting at a time once the medium is idle in the intended direction. Our results indicate that the method outperforms other methods proposed for avoiding head of line blocking while increasing throughput and reducing the end-to-end delay.
Keywords: Copyright protection; Video watermarking; Realtime video watermaring extraction.

202. An Assessment of Ultra Wide Band As an Alternative Controller for Bluetooth to Support High Rate Applications on Battery Powered Devices

Shady S. Khalifa, Hesham N. Elmahdy, Imane Aly Saroit and S.H. Ahmed

CiiT International Journal of Wireless Communication, 3 (7): 546-552 (2011)

Bluetooth is a low-cost, low-power wireless technology initially designed for cable replacement. With the new mobile lifestyle based on battery powered devices, Bluetooth came short in satisfying the needs of the high-rate applications due to its' limited data rate. Introducing BluetoothV3.0+HS specification in 2009, Bluetooth can now meet those demands by switching to an alternative controller based on IEEE802.11g radio. To this date there is no published work on the performance of IEEE802.11g as an alternative Bluetooth controller. Also, there has been no work related to the simulation of BluetoothV3.0 using the popular NS2 simulator. In this study, we present an implementation of BluetoothV3.0 in the NS2 simulator, discuss the shortcomings of IEEE802.11g as an alternative Bluetooth controller and propose a new alternative Bluetooth controller based on Time Hopping Impulse Radio Ultra Wide Band (TH IR-UWB) technology. The results showed that though IEEE802.11g provides high throughput than Bluetooth, it failed to do so in an energy efficient manner and is highly affected by interference. UWB succeeded to meet the goals of providing multiple high data-rate, low-power and immunity to interference, making UWB a better choice as a Bluetooth controller for high-rate applications running on battery powered devices.

Keywords: Bluetooth; Energy Efficiency; IEEE802.11g; NS2 Simulation; Ultra Wide Band.

203. A Real Time Watermarking Algorithm for H.264

Taha Mahdy, Hesham N. Elmahdy and Hoda Onsi

CiiT International Journal of Digital Image Processing, 3 (1): 34-42 (2011)

Digital watermarking is intended to protect digital media against unauthorized usages. The watermark is embedded in streamed videos for copyright protection purposes. In video streaming, the watermark embedding and detection time is the main concern. The distribution of the watermarking key is another important issue. The research aims to present a real time watermarking scheme for copyright protection in H.264 compressed videos.

The proposed scheme is invisible, blind, robust, and preserves the original video bit rate. The watermarking process doesn't require any key distribution. In this paper, a new H.264 model is introduced.

The context adaptive variable length codes (CAVLC) blocks are statistically modeled. Based on the resulted CAVLC model, some of the CAVLC blocks are selected for watermarking using a user defined threshold. The watermark is embedded in the CAVLC block structure. In watermark embedding, the block's total coefficients number (TCN) is modified. The simulation results show that, the average embedding and extraction time is zero. Moreover, high bit capacity is achieved compared to other work. The PSNR values of the watermarked videos are up to 40 dB.

The embedded watermark is invisible, robust, and the embedding locations are totally hidden from the attacker. The detection algorithm is blind. Furthermore, the total file size is decreased by 8% after watermarking. So, the algorithm is more appropriate for internet applications.

Keywords: Copyright protection; Video watermarking; Realtime video watermaring extraction.

204. Web Image Mining Age Estimation Framework

Mohamed Y. El Dib and Hoda M. Onsi

ICGST-GVIP journal, 11: 1-8 (2011)

In this paper, we introduce a fully automated age estimation engine that is capable of collecting images using human age related text queries from Flickr photo sharing website that has various ancestry groups and different image qualities, 37000 images were downloaded from this step. We use the Active Shape Model for robust face detection; it acts also as a removal step for non-face images.

After that, we use the bio-inspired features (BIF) to extract the facial aging information. We introduce a universal labeler algorithm to label Flickr images automatically. Finally, we use the web image collection as a training dataset, and the standard databases as testing datasets showing the superiority of our proposed image web mining algorithm, over the state-of-the-art methods

Keywords: Human Age estimation; Active Shape; Fractal Feature Extraction.

1-2-04. *Dept. of Operations Research and Decision Support*

205. Dynamic Room Pricing Model for Hotel Revenue Management Systems

Heba Abdel Aziz, Mohamed Saleh, Mohamed Rasmy and Hisham El Shishiny

Egyptian Informatics Journal, 12: 177-183 (2011) IF: 3.000

This paper addresses the problem of room pricing in hotels. We propose a hotel revenue management model based on dynamic pricing to provide hotel managers with a flexible and efficient decision support tool for room revenue maximization. The two pillars of the proposed framework are a novel optimization model, and a multi-class scheme similar to the one implemented in airlines.

Our hypothesis is that this framework can overcome the limitations associated with the research gaps in pricing literature; and can also contribute significantly in increasing the revenue of hotels. We test this hypothesis on three different approaches, and the results show an increase in revenue compared to the classical model used in literature.

Keywords: Revenue management systems; Dynamic pricing; Optimal hotel rooms allocation; Demand elasticity.

206. A Hybrid Dynamic Framework for Supply Chain Performance Improvement

Nedaa Agami, Mohamed Saleh and Mohamed Rasmy

IEEE Systems Journal, available online, (2011) IF: 0.629

Improving supply chain performance has become a critical issue for gaining a competitive edge for companies. Many critical drawbacks prevent the existing performance measurement systems from making a significant contribution to the development and improvement of supply chain management and thus, several researches are still needed in this area. In an attempt to fill this gap, an enhanced process-based approach for measuring, managing and hence improving supply chain performance is presented. The proposed framework is dynamic, continuous and hybrid. It integrates various sciences, methodologies and tools namely; Systems Thinking, Strategic Planning, Optimization, Balanced Scorecards, SCOR model and Theory of Constraints Thinking Processes into a cohesive performance measurement system. In this study, a comparison between the proposed approach and currently existing systems is provided highlighting how each methodology contributed in the enhancement.

Keywords: Optimization; Performance improvement; Supply chain; Theory of contraints thinking processes (TOCTP); Systems thinking.

1-3. Institute of Statistical Studies and Research

1-3-01. *Dept. of Applied Statistics and Econometrics*

207. A Wealth Index of Households Living Conditions in Mauritania

El-Houssainy Abdel Bar Rady and Ahmed Amin El-Sheikh

InterStat Journal, (2011)

Evaluating poverty reduction requires repeated measures of the living standards of the poor. In this paper, the possibility of constructing the asset index by using data of Mauritanian Survey on Household Living Conditions (SHLC, 2008) will be investigated and the relation between household socio-economic positions classified by using asset index and traditional money-metric measures, household expenditure will be considered.

Keywords: Classification; Correlations; Expenditure; Living standards; Principal component analysis; Socio-economic status and wealth index.

208. Robust Cross Validation in Sur Ridge Estimators and Sur Robust Ridge Estimators

El-Houssainy Abdel Bar Rady, Sayed M. El Saye, Alaa A. Abdel-Aziz, Naglaa A. Morad and Tarek M. Omara

Journal of Statistical Theory and Applications, (2011)

In many cases SUR model Suffers from outliers and multicollinarity .For that in this paper, we proposed two estimator to avoid this problem ,the first is general Ridge estimator with Ridge parameter taking into account the outliers. These Ridge parameter depend on robust cross validation in place of classical cross validation. The second estimator is general Robust Ridge estimator which depend on replacing least squares method of ridge estimator by S-estimator method. In these estimator ,we used the same robust cross validation criteria for ridge estimator. Furthermore, we introduced algorithm to compute general Ridge estimator, Robust estimator and general Robust Ridge estimator for (SUR) model and conducted a set of simulation study for a several equations with n observations and k variables .In these simulation study, we used the median ASE(average squared error) criterion to measure the goodness of fit at the several factors.

Keywords: Seemingly unrelated regression (SUR); S-estimators; Ridge estimators; Robust Ridge estimators.

1-3-02. *Dept. of Applied Statistics and Econometrics*

209. Web-Based Applications Quality Factors: A Survey And A Proposed Conceptual Model

Doaa Nabil, Abeer Mosad and Hesham A. Hefny

Egyptian Informatics Journal, 12: 211–217 (2011) IF: 3.000

Web-Based Applications (WBA) are fast becoming more widespread, larger, more interactive, and more essential to the international use of computers. The most successful WBA companies are beginning to realize that key critical factors of success or failure of any WBA must be highly dependable on delivering on a high quality web site. To attain the desired quality of WBA, it is necessary to suggest a model that organizes and enables the identification of WBA quality perspectives. This paper addressesWBAquality model and categorizes its quality factors. The software is an essential part of any WBA. ISO9126 standard for software engineering product quality states that the main purpose of software quality evaluation is to provide quantitative reference for software products evaluation that is reliable, understandable, and acceptable. The main weakness point here is the lack of a formal specification of key factors for WBA quality. Traditional quality models are not adequate for WBA because they do not address all problems associated with the new features of WBA. Therefore, ISO9126 and different quality models of software were investigated and partially used as an initial step to identify a conceptual quality model for WBA. WBA have common characteristics with traditional software packages, and other distinct characteristics that are particular to WBA. In this paper a proposed conceptual quality model to organize WBA quality factors in terms of its sub factors was.

Keywords: Web Based Applications; Quality; Quality assurance; Quality models.

210. Recognition for Old Arabic Manuscripts Using Spatial Gray Level Dependence (SGLD)

Ahmad M. Abd Al-Aziz, Mervat Gheith and Ayman F. Sayed

Egyptian Informatics Journal, 12: 37–43 (2011) IF: 3.000

Texture analysis forms the basis of object recognition and classification in several domains, one of these domains is historical document manuscripts because the manuscripts hold our culture heritage and also large numbers of undated

manuscripts exist. This paper presents results for historical document classification of old Arabic manuscripts using texture analysis and a segmentation free approach. Themain objective is to discriminate between historical documents of different writing styles to three different ages: Contemporary (Modern) Age, Ottoman Age and Mamluk Age. This classification depends on a Spatial Gray-level Dependence (SGLD) technique which provides eight distinct texture features for each sample document. We applied Stepwise Discriminant Analysis and Multiple discriminant analysis methods to decrease the dimensionality of features and extract training vector features from samples. To classify historical documents into three main historical age classes the decision tree classification is applied.
The system has been tested on 48 Arabic historical manuscripts documents from the Dar Al-Kotob Al- Masria Library. Our results sofar yield95.83%correct classification for the historical Arabic documents.
Keywords: Spatial gray-level dependence (SGLD); Old Arabic manuscripts recognition; Document analysis; Segmentation free approach.

211. INVOGRID: A Framework and Environment for Building Instant Virtual Organizations

Mohamed Atwany, Magdy Aboul Ela and Mervat Gheith

Canadian Journal on Artificial Intelligence, Machine Learning and Pattern Recognition, 2 (1): (2011)

Instant virtual organizations represent an important construct for supporting flexible, one-time collaboration amongst partnering organizations, where an instant virtual organizations change its structure or behavior in an adaptive manner, which represents a major challenge for VO builders, as no existing research provides a single framework for dealing with aspects related to VO modeling and management, business process integration, service composition, semantic interoperability, and VO security. This paper introduces INVOGRID, a framework and environment that support modeling, formation and execution of instant virtual service organizations situated within a VO breeding environments.
Keywords: Virtual Organizations; Coalition Formation; Virtual Organization Breeding Environment; Multi-agent systems; Semantic Web; Model-Driven Engineering; Domain- Specific Software Architecture; Grid.

212. The Influence of Culture on Systems Usability

Perihan Elbaz, Galal Hassan Galal-Edeen and Mervat Gheith

Int.J. of Software Engineering, IJSE , 4 (2): 93-114 (2011)

Usable interfaces are a result of focus on understanding users and their goals, tasks, characteristics, individual differences and environment. These differences between individuals result partly from differences between culture and subcultures. The goal of this paper is to set the scene for research into the influence of culture on the design of information systems for usability. This paper proposes a framework that includes extracting local usability guidelines for Arab culture and subcultures based on the issues gleaned from user acceptance test (UAT) reports. The proposed framework adapts a number of UCD methods and phases to suit projects' circumstances. This adaptation is supported by a proposed UCD team structure. After applying the proposed framework on Web application projects that serve different sectors. The application of the proposed framework led to a decrease of UAT bugs by 95.25%, a decrease of development costs by 30-60%, a decrease in development time by 20-30%, and an increase of customer confidence and satisfaction. Systems' usability also increased as evidenced by the results obtained from usability tests using an evaluation checklist, and user interface analyses.
Keywords: Culture; Usability; User-centered design.

3-3-01. *Dept. of Mathematical Statistical*

213. The Optimal Preventive Maintenance Policy for the Multistate System Profit

A. F. Attia, E. D. Abou Elela and H. A. Hosham

Communications in Statistics-Theory and Methods, 40: 1-11 (2011) IF: 0.351

This article introduces the three state system, assuming the exponential distribution of failure times and repair times. For this system Markov process is used to evaluate the point availability, steady state availability and average availability of the system. We improve an optimization model to evaluate the optimal numbers of preventive maintenance that maximize the expected profit values of the three state system and use these numbers to increase the steady state availability and the average availability.
Keywords: Availability; Laplace transformation; Multistate system; Markov process; Preventive maintenance.

214. Exponential Distribution as a Stress-Strength Model with Type-I Censored Data from a Bayesian Viewpoint

Abdallah, M. Abdelfattah and Marwa O. Mohamed

Pakistan Journal of Statistics and Operation Research, 7(2): 169–182 (2011)

In this paper, the Bayes estimate is derived for the parameters of the exponential model. The estimate is obtained using the squared error loss and LINEX loss function. The risk with the estimate of under LINEX loss function has been made. Finally, numerical study is given to illustrate the results.
Keywords: Exponential distribution; Bayes' estimator; LINEX loss function; Reliability function; Stress-strength model; Risk function; Squared error; Loss function.

215. Estimating and Planning Accelerated Life Test Using Constant Stress for Generalized Logistic Distribution Under Type-I Censoring

A. F. Attia, H. M. Aly and S. O. Bleed

ISRN Applied Mathematics, (2011)

The optimal designs and statistical inference of accelerated life tests under type-I are studied for constant stress-accelerated life tests (CSALTs). It is assumed that the lifetime at design stress

tests (CSALTs). It is assumed that the lifetime at design stress has generalized logistic distribution. The scale parameter of the lifetime distribution at constant stress levels is assumed to be an inverse power law function of the stress level.
The maximum likelihood (ML) estimators of the model parameters, Fisher information matrix, the asymptomatic variance-covariance matrix, the confidence bounds, the predictive value of the scale parameter, and the reliability function under the usual conditions are obtained under type-I censoring. Moreover, the optimal design of the accelerated life tests is studied according to the D-optimality criterion to specify the optimal censoring time. Finally, the numerical studies are introduced to illustrate the proposed procedures.
Keywords: Accelerated life test; Type-I Censoring; Logistic Distribution; Constant Stress.

216. The Optimal Warranty and Preventive Maintenance Policy for the Four-State System

A. F. Attia, E. D. Abou Elela and H. A. Hosham

International Scholarly Research Network ISRN Applied Mathematics, (2011)

This article introduces a complete view for the multistate system considering the four-state system. The exponential distribution for failure times and repair times is considered and the steady state availability is established via the Markov process.
This article introduces different warranty and preventive maintenance policies and the cost of these policies for the manufacturer and the buyer. The proposed models are illustrated through numerical examples.
Keywords: Availability; Laplace transformation; Multistate system Markov process; Preventive maintenance.

217. Parameter Estimation for Kappa Distribution with Four-Parameter Under Type II Censored Samples

Samir, K. Ashour, El-sayed, A. Elsherpieny and Yassmen, Y. Abdelall

Australian Journal of Basic and Applied Sciences, 5 (7): 174-180 (2011)

In this paper, maximum likelihood estimators (MLE's) for the unknown parameters and the corresponding asymptotic variance covariance matrix of the four-parameter kappa distribution are obtained under type II censored sample. Results obtained by Winchester (2000) in the complete case may be considered as a special case from present results. An illustrative example is carried out by using a simulated data.
Keywords: Four-parameter kappa distribution; Maximum likelihood estimators; Type II censored

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218. Parameters Estimation of the Weighted Non-Central Chi-Square Distribution with one degree of freedom Under Type II Censored Samples

Elsayed A. Elsherpieny and Yassmen Y. Abdelall

International Journal of Science and Advanced Technology, 1 (9): 77–81 (2011)

In this paper, maximum likelihood estimators (MLE's) for the three unknown parameters and the corresponding asymptotic variance covariance matrix of the weighted non-central chi-square distribution with one degree of freedom are obtained under type II censored sample. Results in the complete case may be considered as a special case from these results. An illustrative example will be carried out.
Keywords: Weighted non-central chi-square distribution; Maximum likelihood estimators; Type II censored sample; Asymptotic variance covariance matrix.

219. Exponentiated ModifiedWeibull Distribution

I. Elbatal

Economic Quality Control, 26: 189–200 (2011)

In this paper we consider the exponentiated modified Weibull distribution. The modified Weibull distribution, Weibull distribution and the exponentiated exponential distribution are found to be particular cases of this family. We derive the analytical shape of the corresponding density functions and hazard rate functions. The rth moment and the moment generating function are determined. Finally the distribution of order statistics and the least squares estimators of the parameters are discussed.
Keywords: Hazard Function; Moments; Order Statistics; Exponentiated Modified; Weibull Distribution.

220. Parameter Estimation of the Hybrid Censored Lomax Distribution

Samir, K. Ashour, Abdallah, M. Abdelfattah and Badiaa S. Khalil

Pakistan Journal of Statistics and Operation Research, 7 (1): 1–20 (2011)

Survival analysis is used in various pfields for analyzing data involving the duration between two events. It is also known as event history analysis, lifetime data analysis, reliability analysis or time to event analysis. One of the difficulties which arise in this area is the presence of censored data. The lifetime of an individual is censored when it cannot be exactly measured but partial information is available. Different circumstances can produce different types of censoring. The two most common censoring schemes used in life testing experiments are Type-I and Type-II censoring schemes. Hybrid censoring scheme is mixture of Type-I and Type-II censoring scheme. In this paper we consider the estimation of parameters of Lomax distribution based on hybrid censored data. The parameters are estimated by the maximum likelihood and Bayesian methods. The Fisher

information matrix has been obtained and it can be used for constructing asymptotic confidence intervals.
Keywords: Lomax distribution; Maximum likelihood estimators; Bayesian inferences; Asymptotic Variance covariance matrix; Type-I censoring; Type-II censoring; Hybrid censoring scheme.

221. Tests Based on Entropy: Extensions and Comparisons

Samir K. Ashour, Essam A. Amin and Mohamed S. Abdallah

Research Journal of Mathematics and Statistics, 3 (1): 51–60 (2011)

The aim of this study of this essay can be summarized in three objectives, first providing new flexible tests based on sampling entropy for testing the exponential and uniform distribution, second a new test for symmetric based on metric entropy measure using m space was proposed, finally Monte Carlo simulations studies for comparisons of all entropy's tests under the study were performed. Actual it is shown that the performance of the proposed parametric goodness of fit tests is well in most cases comparing with nonparametric tests, further the new symmetric test produces in general exceptionally strong performance with respect to other parametric tests.
Keywords: Entropy; Goodness of fit; Likelihood tests; M-space; Nonparametric; Symmetry; Test of power.

1-3-04. *Dept. of Mathematical Statistical*

222. An Alternative Differential Evolution Algorithm For Global Optimization

Ali W. Mohamed, Hegazy Z. Sabry and Motaz Khorshid

Journal of Advanced Research, (2011) IF: 3.000

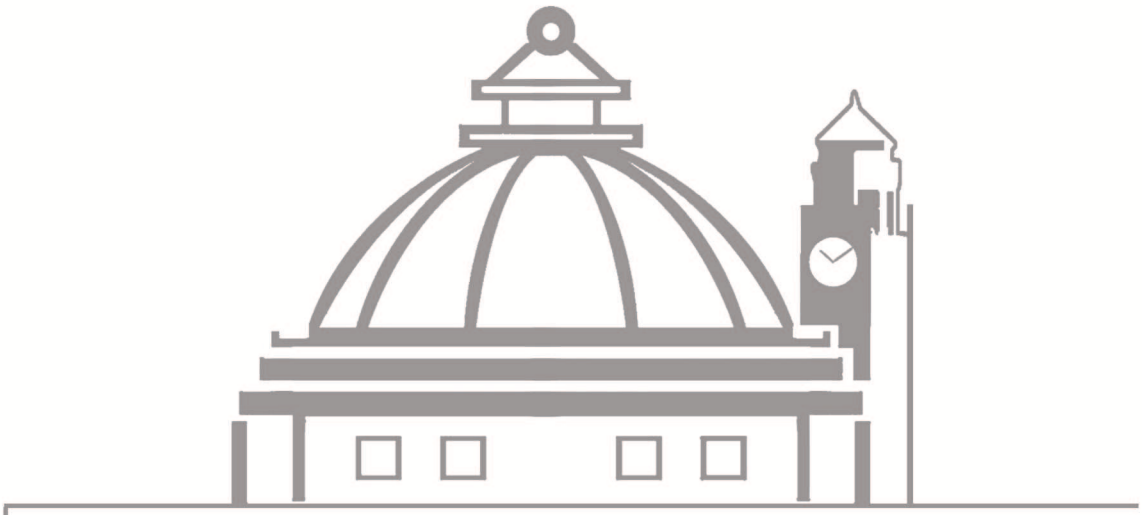
The purpose of this paper is to present a new and an alternative differential evolution (ADE) algorithm for solving unconstrained global optimization problems. In the new algorithm, a new directed mutation rule is introduced based on the weighted difference vector between the best and the worst individuals of a particular generation. The mutation rule is combined with the basic mutation strategy through a linear decreasing probability rule. This modification is shown to enhance the local search ability of the basic DE and to increase the convergence rate. Two new scaling factors are introduced as uniform random variables to improve the diversity of the population and to bias the search direction. Additionally, a dynamic non-linear increased crossover probability scheme is utilized to balance the global exploration and local exploitation. Furthermore, a random mutation scheme and a modified Breeder Genetic Algorithm (BGA) mutation scheme are merged to avoid stagnation and/or premature convergence. Numerical experiments and comparisons on a set of well-known high dimensional benchmark functions indicate that the improved algorithm outperforms and is superior to other existing algorithms in terms of final solution quality, success rate, convergence rate, and robustness.
Keywords: Differential evolution; Directed mutation; Global optimization; Modified BGA mutation; Dynamic non-linear crossover.

223. A Particle Swarm Approach for Solving Stochastic Optimization Problems

Ali Wagdy Mohamed, Hegazy Zaher and Motaz Korshid

Applied Mathematics & Information Sciences, 5 (3): 3795-4015 (2011) IF: 0.642

The objective of this paper is to investigate how to improve standard Particle Swarm Optimization (PSO) by hybridization of statistical techniques in order to be able to solve complex stochastic continuous optimization problems with different dimensions. We present a new approach that combines (PSO) and two statistical procedures Ranking and Selection (R&S) and Mean Square Error Criterion (MSE). In this approach, (PSO) is adopted to guide the optimization process .Additionally; Ranking and Selection (R&S) procedure is used to identify the best particles. Meanwhile, Mean Square Error Criterion (MSE) provides information about the relationship among particles and has a vital role in exploration and exploitation search space. Based on 17 well-known benchmark functions with noise, numerical experiments and comparisons are carried out. The comparative results show that the proposed hybrid approach outperforms other existing algorithms in terms of final solution quality, speed of convergence, stability and robustness.
Keywords: Particle swarm optimization; Stochastic optimization; Ranking and selection; Mean square error criterion.



(2)
Social & Humanity Sciences Sector

2-1. Faculty of Economics and Political Science

2-1-01. *Dept. of Statistics*

224. The Performance Of Multivariate CUSUM Control Charts with Estimated Parameters

Mahmoud A. Mahmoud and Petros E. maravelakis

Journal of Statistical Computation and Simulation, 1–18 (2011) IF: 0.469

In the present article, we study the effect of estimating the vector of means and variance-covariance matrix on the performance of two of the most widely-used multivariate cumulative sum (CUSUM) control charts, the MCUSUM chart proposed by Crosier (1988) and the MC1 chart proposed by Pignatiello and Runger (1990). Using simulation, we investigate and compare the in-control and out-of-control performance of the competing charts in terms of the average run length (ARL) measure. The in-control and out-of-control performance of the competing charts deteriorates significantly 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. We recommend the use of the MC1 chart over the MCUSUM chart if the parameters are estimated from a small number of Phase I samples.
Keywords: Average run length; CUSUM; Estimation effect; Multivariate control charts; Statistical.

225. Simple Linear Profiles

Mahmoud A. Mahmoud

Statistical Analysis of Profile Monitoring, (2011)

In many calibration applications, the functional relationship between the measured and real values is given by a simple linear regression model. Obviously, in these situations simple linear profile monitoring techniques could be used to establish a control scheme. Chapter 2 is devoted to Phase I and Phase II control charting methods for monitoring simple linear profiles. The calibration problem in the optical imaging systems can be considered as a representative example of such profiles. Another helpful example on simple linear profile is introduced by Mestek et al. (1994). The main focus of this example is to study the calibration curves in the photometric determination of Fe3+ with sulfosalicylic acid. Detailed description about this example is also provided in this chapter.
Keywords: Profile Monitoring; Statistical Process control.

2-1-02. *Dept. of Economics*

226. Promoting Economic Growth By Broadband Development in Emerging Countries: An Empirical Study

Mona F. Badran and Hosein F. Badran

IEEE Xplore 12 December, (2011)

Emerging countries play an important role in the global economy. It is a firmly held fact among economists and policy makers that emerging countries will be leading the global growth in the future. Broadband infrastructure is vital for these economies to transform them to knowledge -based economies. This study aims at examining the impact of broadband infrastructure on economic growth in 22 emerging countries including Arab countries from 1998-2008.
The empirical study shows that there is a positive impact of broadband uptake on economic growth. In addition, the contribution of this paper is also in the introduction of a telecom competition index, which became significant once it was controlled for FDI as a percent of GDP.
Thus, governments are suggested to create an enabling environment and open their markets for more competition, in order to induce the establishment of more broadband and telecom networks in their respective countries.
Keywords: Emerging countries; Economic growth; Fixed broadband penetration; Internet traffic growth; Competition; Panel data; Fixed effects Random effects.

2-2. Faculty of Commerce

2-2-01. *Dept. of Accounting*

227. Accounting and Stock Market Effects of Internationalaccounting Standards Adoption in an Emerging Economy

Mohamed A. Elbannan

Reviewof Quantitative Finance and Accounting 36: 207-245 (2011)

This study examines the impact of the mandatory adoption of the 1997 and2006 Egyptian accounting standards on earnings quality and firm valuation. Extantresearch finds that IAS-based standards have positive effects on financial statement attributes(e.g., earnings management) and capital market-related variables (e.g., firm valuation)in some countries, and negative or neutral effects in others. Research conducted inthis area on emerging markets is scant, and none in Egypt, which has adopted in 1997 anIAS-based standards (later revised twice in 2002 and 2006).
Using a sample of Egyptianlisted firms around the time of introducing the 1997 and 2006 EAS versions, I findinsignificant empirical evidence that earnings management decreases post adoption of eachof the EAS versions under investigation. Additionally, I find that firm valuation (Tobin's q)was significantly negatively affected by both EAS versions under investigation in thisstudy. I attribute these results to the lack of compliance by financial statement preparers,improper regulatory enforcement mechanisms, the poor accounting infrastructure, and theinadequate practitioner training, claimed by prior literature.
Keywords: International accounting standards; International financial reportingstandards; Earnings quality; Tobin's q; Accruals; Emerging markets; Egypt.

2-2-02. *Dept. of Business Administration*

228. Antecedents of Privacy Concerns And Their Online Actual Purchase Consequences: A Cross-Country Comparison

Abeer A. Mahrous

Int. J. Electronic Marketing and Retailing, 4 (4): 248-269 (2011)

The paper develops a framework that shows the sequential interaction between possible causes and consequences of privacy concerns. It analyses how different levels of privacy concerns are developed and their influence on actual purchase behaviour. Theory of planned behaviour was adapted to explain the relationship between privacy concerns and online buying behaviour. Data were gathered from internet users in Egypt, UK and USA. The results indicate that online privacy concerns vary across a host of factors such as individual culture, demographic variables, internet experience, and contextual variables. Furthermore, there is significant association between privacy concerns and attitudes toward shopping online, and there is a clearly significant relationship between attitudes toward internet shopping, perceived behaviour control and actual internet purchases in all three countries.

Keywords: Online privacy concern; Internet purchasing behaviour; Theory of planned behaviour; TPB; Individual culture.

229. Exploring Determinants Influencing the Intention to Use Mobile Payment Service

Amira F. A. Mahran and Hala M. Labib Enaba

International Journal of Customer Relationship Marketing and Management, 2 (4): 17-37 (2011)

Mobile services are becoming increasingly commonplace in everyday life; however, Mobile payment (M-payment) is not among frequently used mobile services. The slowness of the diffusion of this service is the point of departure of the current research. The authors discuss why consumers are slow in adopting M-payment service and develop a proposed model that measures the customer's attitude and intention to use this technology in Egypt. Different theories from diverse fields are reviewed to formulate the study's conceptual framework. Empirical data were collected via an online survey for a sample of 490 students in "open education", a type of e-distance learning. The results suggest that although the most important determinants influencing the customer's attitude toward the service are perceived behavioral control and perceived usefulness, those influencing the intention to use it are perceived innovativeness, perceived expressiveness, facilitating condition, perceived usefulness, and social pressure. The results of the research differ from those of previous studies because of the effect of the Egyptian culture. Service providers can benefit from the results when formulating the marketing strategies to increase the usage of this service, improving mobile commerce.

Keywords: Customer Relationship Management; M-Payment, Mobile Commerce; Mobile Services, Structural Equation Modeling; Technology Acceptance Models; Technology Diffusion.

230. Managing Complexity of Customer-Service Provider Relationships: Lessons from the Egyptian Banking Industry

Tamer Hamed Safwat Elsharnouby

VDM Verlag Dr. Müller, (2011)

This book critically examines the relationship between consumers and banks in Egypt. It provides a dyadic point of view exploring what constitutes a relationship for the consumer and the bank. The book addresses new forms of interactions: utilitarian (fragile, functional and imposed interactions) and communal (interpersonal relationships and friendships, and institutional relationships). Three key influences on consumer trust in Egyptian banking are highlighted: the online banking environment, trustworthiness of banking personnel and bank's flexibility and responsiveness. The existence of bank's opportunism in consumer relationships is evident with different forms and effects. Relationships and friendships with consumers were talked about and responded to by banks in different ways influencing their structures and practices. The book highlights the relevance and significance of friendship in consumer-bank interactions in Egypt. It illuminates the richness and complexity of the relationship concept in consumer markets, and underscores the importance of an in-depth understanding of the cultural context in which relationships are formed and nurtured.

Keywords: Relationship marketing; Qualitative research; Banking; Egypt.

231. Brand Equity in Higher Education

Maha Mourad, Christine Ennew and Wael Kortam

Marketing Intelligence and Planning, (2011)

Purpose: The potential to provide customers with information about experience and credence qualities in advance of purchase has resulted in widespread recognition of the significance of brands in relation to consumer choice in the service sector. Arguably. what is of particular significance in this process is brand equity – the value that the consumer ascribes to the brand. The main objective of this research is to enhance academic understanding of brand equity in the higher education (HE) sector and explore the implication for management practice. **Design/ methodology/ approach**: quantitative data collected via a self- completion survey are used to test a model of brand equity in the context of HE. The empirical setting is Egypt which. following liberalization. Has a mixture of public and private provision and an increasingly competitive environment. it provides an example of an emerging market where building brand equity is likely to be an important component of organizational strategy.

Findings: The results provide partial support for the proposed conceptual model, with image – related determinants of brand equity being far more significant than awareness – related determinants.**Practical implication**: for those involved in marketing service brands, the asymmetric impact of various determinants of brand equity provides guidance on how and where to focus marketing efforts. **Originality/ Value**: The distinctive of this research arises from the examination of brand equity in the context of an emerging service sector market with a mix public and private provision.

232. Discovering A Transformational Science of Marketing in Corporate, Social and Knowledge Perspectives: is not it About Time that A Marketing Scholar Becomes A Nobel Laureate?

Ola Tarak, Abeer Mahrous and Wael Kortam

Journal of American Science, 7 (6): 695-703 (2011)

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 n 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. Therefore, this paper aims to develop a conceptual framework for segmenting E-ticketing purchasers, based on hybrid segmentation bases. The conceptual framework, based on exploratory evidence from the Egyptian market, identifies the segmentation bases on which the E-ticketing non-purchasers are classified into perspective purchasers and persistent non-purchasers.

Keywords: Transformational Science of Marketing in Corporate; Social; Knowledge; Perspective; Nobel.

233. Measuring Islamic-Driven Buyer Behavioral Implications: A Proposed Market-Minded Religiosity Scale

Mariam Abou-Youssef, Wael Kortam, Ehab Abou-Aish and Noha El-Basiouny

Journal of American Science, 7 (8): 728-741 (2011)

Islam is one of the major monotheistic religions in the world. Its Importance is growing as the number of Muslim adherents is increasing, current around 1.57 billion worldwide. The wealth of Muslim Arab countries is Affecting the global economy as well as the international trade. Since religiosity has a major impact on consumer behavior, it was paramount to have an Islamic Behavioral Religiosity scale, measuring the degree of Muslim' religiosity from the behavioral perspective. The Islamic Behavioral Religiosity Scale (IBRS) could be used by marketers to assess the degree of consumer` religiosity and it could be linked to consumer behavior and work as a predictor to purchase patterns. The scale presented in this paper is a modification to the Islamic religiosity scale presented in 2007 by change-Ho C.Ji and Yodi Ibrahim. The scale was modified to include all divisions of Islam; belief, worship, legislation, and morality as well as behavior measurement. The modified scale was evaluated twice.Frist time was using a sample of 284 Muslim respondents in May and June 2010 and the second time was using 400 Muslim respondents in November and December 2010.

Keywords: Religion; Religiosity; Islamic religiosity scale; Islam.

234. The Adoption of Internet Marketing Innovations in a Business-to-Business Context: A Conceptual Framework

Rania Hussein, Christine Ennew and Wael Kortam

Journal of American Science, 7 (9): 960-968 (2011)

This paper seeks to explain the adoption of marketing innovations in a business to business context. The analysis draws on existing research in a B2C context which highlights the importance of both personal characteristics and perceived attributes of the innovation. A distinctive B2B model is developed drawing on Roger's innovation adoption model, the resource based view of the firm as well as theoretical and empirical foundations in previous innovation adoption literature to study the adoption of online marketing in the tourism sector. The model developed suggests that besides Rogers, perceived attributes of the innovation framework , an understanding of adoption decision can be augmented by also considering organization specific characteristics which are consistent with a resource based view of the firm as well as individual characteristics. The model is testified drawing on the results of empirical work conducted with small business in the tourism sector in Egypt. Given the exploratory nature of the research , a qualitative methodology in the form of in-interviews was employed. In total aeries of twelve in –depth interviews were conducted on convenience sample of travel companies in Egypt These were semi-structured interviews conducted with either the general manager of marketing manager of these companies. These interviews provided in – depth information and insights into respondents, thoughts and opinions about the factors affecting internet adoption that were used fore comparison with the factors proposed in the conceptual model. following the interviews the transcripts were analyzed based first on within-case approach, followed by across- case approach as suggested by Miles and Huber man (1994) In addition to the attributes of the innovation specific resources such as (company size, human recourse and capabilities and strategic orientation) and individual manager factors such as (support, attitude toward change, risk) were identified as likely to have an important influence on the adoption of online marketing.

Keywords: Innovation; Internet; Tourism; Perceived attributes of innovations; Resource-based view of the firm.

235. Using Knowledge –Based Marketing as a Framework or Managing Intellectual Marketing Capital in Higher Education Institutions

Wael Kortam and Maha Mourad

Journal of American Science, 7 (9): 779-786 (2011)

The purpose of this paper is to use the new paradigm of knowledge-based marketing to improve the academic understanding and managerial practice of the processes of creating and sustaining intellectual capital with in the boundaries of the marketing function and activities in Egyptian universities. The objective of the research is to help in developing a conceptual framework of knowledge based marketing with especial focus on the Higher Education marketing. This is done through a comprehensive literature review in conjunction with two phases of exploratory studies. The first phase includes ten in- depth interviews with university

policy makers, entrepreneurs and marketers that represent the institutional role in the proposed framework. The second phase includes ten in– depth interviews with managers responsible for designing and running the IT –Based knowledge management systems to represent the technical role in the proposed framework.
Keywords: Knowledge-based marketing; Marketing higher education; Intellectual marketing capital, Egyptian higher education.

2-2-03. *Dept. of Business Management*

236. Customer Relationship Management and its Relationship to the Marketing Performance

Hisham Sayed Soliman

International Journal of Business and Social Science, 2 (10): 166-182 (2011)

Purpose: This paper aims at exploring the theoretical foundations of customer relationship management and its relationship to the marketing performance from the several perspectives.
Design/methodology/approach: CRM was derived from systematic comparative analysis of the relevant relationship marketing literature , there are additional elements that relating to the important of focus on main customers , the organizational efficiency and customer knowledge management elements and their influence on the marketing performance.
Finding : the study finings concluded positive relationship between CRM and marketing performance . in additional to , being effect of the dimensions of CRM on marketing performance in financial institutions .
Originality / value: the study treats the question of CRM and its relationship marketing performance for marketing academicians and professionals by investigating structural relationship among focus on main customers , the organizational efficiency and customer knowledge management, and marketing performance
Keywords: Customer Relationship Management (CRM); Marketing Performance; Relationship Marketing.

2-3. Faculty of Arts

2-3-01. *Dept. of Arabic Language*

237. Interdiscursivity between Political and Religious Discourses in A Speech By Sadat: Combining CDA and Addressee Rhetoric

Emad Abdul-Latif

Journal of Language and Politics, 10 (1): 50-67 (2011)
IF: 0.195

Religion and politics have a complicated relationship in the Arab world. Interdiscursivity within political speeches between religious and political discourses is a manifestation of this complexity. This article argues that this sort of interdiscursivity imposes hard restrictions on the responses of Muslim addressees. Muslims' responses to Islamic sacred texts are inherently restricted because disagreement with divine texts amounts to heresy. Accordingly, their responses to political speeches that present themselves as semi-religious texts are highly restricted as well. I will analyze a speech by the late Egyptian president Sadat to show how potential and actual responses could be controlled by creating intertextual links with the Qur'an and adopting the genre of Islamic religious sermons. I combine analytical tools from critical discourse analysis and what I refer to as "addressee rhetoric" to investigate the relationship between interdiscursivity and addressee response.
Keywords: Addressee rhetoric; Anwar al-Sadat; Arab political discourse; Interdiscursivity; Intertextuality; Qur'an; Addressee response.

2-3-02. *Dept. of English*

238. Artistic Interpretations of Downtown Cairo

Mounira Soliman

Journal of Postcolonial Writing, 47 (4): 391-403 (2011)

Towards the end of the 19th century and the beginning of the 20th, Khedive Ismail's vision of a modern Cairo, modeled on European aesthetic standards, slowly emerged, giving birth to a Paris-like "Wust-al-balad" (Downtown Cairo), a commercial, business and entertainment center. From its inception, Wust-al-balad would become an exclusive locale, catering to a cosmopolitan community of the colonial British army, expats, and elite and wealthy upper class Egyptians, ultimately ostracizing the underprivileged poorer population housed in the stagnant and neglected old Fatimid Cairo. This in turn created a sociological schism that would result in the popular notion of the "double city". Many historians have argued against this concept of duality, claiming that Ismail's idea of modernity in fact included all of Cairo, as evident in his original plan for the city's development. However Wust-al-balad, from the moment of its creation until the mid-20th century, points to a different reality, one that would be challenged by the advent of the 1952 revolution and the attempts to nationalize Egypt. From that point on the place would lose its western and cosmopolitan nature, slowly falling into its current state of decrepitude. This article focuses on studying the socio-political shift undergone by Wust-al-balad and its implications as represented in three media: Radwa Ashour's novel Qit'a min Urubba [2003; A Part of Europe], Mohamed Khan's film Banat Wist El Balad [2005; Downtown Girls], and the soft rock band Wust El Balad, founded in 1999. The article attempts to show how they all use Wust-al-balad physically and symbolically to revisit the concept of the "double city" and the duality experienced by the Egyptian citizen residing in Cairo in the 21st century.
Keywords: Egypt; Downtown Cairo; Modernity; Nostalgia.

239. BB= BlackBerry or Big Brother: Digital Media and the Egyptian Revolution

Walid El Hamamsy

Journal of Postcolonial Writing, 47 (4): 454-466 (2011)

This article examines the use of digital media in the 2011 Egyptian revolution (25 January–11 February), termed by many analysts and commentators a "Facebook revolution", "Twitter revolution", "digital revolution" or "electronic revolution".

Such appellations highlight the role of the youth who organized and mobilized for the revolution and the essential role played by digital media. Disengaging from the controversial debate over whether Egypt's revolution was instigated by social media or simply used them for its purposes, the article demonstrates the uncontestable role that social networks, text messages, and satellite news channels played as a tool of control and manipulation, on the one hand, and a mode of resistance, on the other.

Delineating some key reasons why the Egyptian revolution came to be associated with digital media, the article shows the government's reaction to the threat posed by such media through analysis of a key moment on the night of 27 and 28 January 2011, when the Egyptian government decided to cut off all Internet and smart phone connections. Through a detailed chronology of the development of events during that period of blockage, the article analyzes the government's decision along two axes: manipulation through blockage and manipulation through propaganda and brainwashing. It concludes by showing how the government's attempts to sabotage the revolution came in the end to be used subversively by the protestors as means of resistance. It injected the revolution with more momentum, and in fact inadvertently led to its success.

Keywords: Egyptian revolution; Digital media; Despotism; Propaganda; Tunisian revolution; Resistance.

240. Egyptian Colloquial Poetry: A Neglcted Genre?

Randa Aboubakr

From New Meanings to New Aesthetics: Turning Points in Modern Arabic Literature, (2011)

A look upon the contemporary field of Arabic studies in Egypt and the Western world reveals that Egyptian colloquial poetry (and Arabic dialect poetry in general) has not received adequate attention. Drawing upon the post-Marxist ideas of value.

cultural capital and the literary field, as well as on recent critiques of postcolonial thought and postmodern cultural studies, I propose here that the subtly hegemonic grip of some of the major intellectual currents during the latter decades of the twentieth century (particularly postmodernism and postcolonial cultural studies} has markedly contributed to making this poetry appear 'backward' and 'unsophisticated, hence to relegating it to the background

As a way out of the current impasse facing its study, I here propose an approach drawing on the work of post-Marxist cultural critics who have envisaged the re¬integration of issues of class and the sociology of the author in the study of literary production, as wel1 as the shifting of focus to the materiality and historicity of "local" experiences in an increasingly global world. A concomitant endeavour, l propose, would be the revival of the project of 'resistance literature' and 'committed literature', and the evolution of a 'comparative poetics' of the 'genre'. sporadic attempts at which can already be seen in the scholarship of Arabic literature.

Keywords: Modern arabic literature; Egyptian colloquial Poetry; Postmodernism cultural capital; Postcolonial cultural studies.

2-3-03. *Dept. of French*

241. Du "Big Brother" à la "Star Academy" : Manipulation des Mentalités, Manipulation des Notions

Farida Gad El Hak

Interstudia, (2011)

Cette communication s'inscrit dans le cadre d'une réflexion beaucoup plus vaste portant sur l'analyse de notions véhiculées à travers le discours français/occidental(comme celles de "civilisation", "mondialisation", "identité", "altérité", "dialogue des cultures", "choc des civilisations", "réforme", "mémoire", "témoignage", etc.) . Plutôt que d'essayer de cerner le sens de la notion en question, c'est surtout le mode de fonctionnement de celle-ci dans le discours, ainsi que son "instrumentalisation" qui fait l'objet de l'analyse. A l'instar du sociologue français Edgar Morin qui a parlé de "maîtres mots" pour désigner ces termes qui gouvernent le langage politique et qu'il qualifie de" "mots pourris"(qui ont perdu leur vertu et leur fécondité)" , je pourrais dénommer "maîtres concepts"(ou" maîtres notions") ceux/celles qui dominent la scène discursive, et qui perdent peu à peu leur sens premier.

242. AI-KlIhf-Sourate XVIII-Nouvel Essai de Lecture d'une Sourate du Coran

Heba Machhour

Editors Albouraq, 19: 421-429 (2011)

The Koran is a sacred text. We try in this reading of the sura "AI-Kahf' a close look at the poetic quality in this text. We analyze the elements and modalities of a single world language and poetic. Our reading is trying to be an act of analysis of polysemy and wealth of the Koranic text to "assist-as proposed byJacques Berque- an advanced Islamic studies on a new interdisciplinary field." We also try this by reading this text closer founder of a religion C'Jlld a civilization of a contemporary reading area. We read of structures, networks of meaning, particular jobs and inspiring language. The Koran is a place of truth and significance that allows and requires reading and weaving methods. And we arrive at the end of our research to a new approach of the sacred text that can be applied to other places and other suras.

Keywords: Koran; Polysemy; Interdisciplinary fields.

243. Ecrire en Français: à la Recherche de quelle identité? L'exemple d'Out-el-Kouloub el-Demerdachia

Manal Khedr

Dire le social dans le roman francophone contemporain, (2011)

Out-el-Kouloub el-Demerdachia (1892-1968) est une femme, égyptienne, romancière, d'expression française dont les récits apparaissent comme le miroir mémoriel d'une époque. La qualité de ses romans mérite une réflexion. Car elle se pose surtout en termes culturels et sociologiques ; et ce, par la transposition littéraire de la vie quotidienne, la narration

biographique et la chronique sociale. Ce sont des documents de première main dans la mesure où ils apportent un témoignage précieux sur la société égyptienne au milieu du XXe siècle. En effet, nous nous situons ici dans la première moitié du siècle dernier où l'amalgame « roman » et « femme » était une nouveauté.
"Madame" Out-el-Kouloub rejoint le courant réformateur provoqué par Qassem Amin (1863-1908) au début du siècle, celui qui a inspiré le premier roman égyptien et même arabe, Zeinab, de Haykal (1888-1956). L'intérêt de son œuvre réside dans la lucidité étonnante des opinions qu'elle renferme, le réalisme des descriptions qu'elle contient et la modération des solutions qu'elle envisage. Par cette lucidité, Out-el-Kouloub a contribué, bien avant la lettre, à la genèse d'une conscience « féministe » dans ces milieux francophones d'avant-garde .
Pour nous, Out-el-kouloub el Demerdachia est une écrivaine authentiquement égyptienne. Son œuvre « est un carrefour » où se rencontrent l'écriture française et l'âme égyptienne.
Keywords: Bladder cancer; Schistosomiasis.

244. Sémantique Et Symbolisme Des Idéologies Dans Raza De Bronce De Alcides Arguedas, El Alquimista De Paulo Coelho Et L'enfant Des Loups De Régine Déforges

Mona Saraya

Inter- TExtes, (2011)

Introduit dans le roman, le plurilinguisme y est soumis à une elaboration littéraire. Les voix sociales et historiques qui peuplent le langage (tous ses mots, toutes ses forces), qui lui donnent des significations concrètes, précises, s'organisent dans le roman en un harmonieux système stylistique, traduisant la position socioidéologique différenciée de l'auteur au sein du plurilinguisme de son époque»

2-3-04. *Dept. of German*

245. Die literarische Darstellung einer deutsch-türkischen Erfahrung des Berliner Mauerfalls Anhand Von Yadé Karas Roman Selam Berlin

Dalia Aboul Fotouh Salama

Cross cultural communication, 239-256 (2011)

The topic of this study is based on an analysis of the novel Selam Berlin of Jadé Kara by focusing on the literary treatment of the effects of the reunion of Germany from a German-Turkish perspective.
Considering the background of East and West, Turkish and German present, the new Berlin-image that Kara features in her novel from the perception of Turkish migrants, will be reconstructed.
Keywords: Jadè Kara; Selam berlin; Metropole; German literature; Intercultural perspective.

246. Postkolonialistische Perspektiven in der deutschen und arabischen Literatur. Zu Uwe Timms Morenga und Baha Tahers Oase des Sonnenuntergangs

Dalia Aboul Fotouh Salama

Interkulturelle Kommunikation. Perspektiven einer anwendungsorientierten Germanistik. Beiträge einer internationalen Fachkonferenz in Kairo, (2011)

The interpretation of literary texts from cross-cultural perspectives is influenced by postcolonial and cultural studies which appeared in the 80s and 90s of the 20th in the Anglo-American world. An important basis for the development of this line of research, with a time lag in the German literature is the realization that most processes of migration and intercultural relationships in the globalized world of our days are to be only understood buy considering the fact that it is always an interactions between members of formerly colonized nations and former colonial masters. The theorists of the postcolonial discourse plead for a new reading of imperialism on the experience of colonization, to question the previously constructed knowledge. Aim of this paper is to analyze the German novel Morenga by Uwe Timm and the Arab novel Sunset Oasis by Baha Taher in the new frame of a post-colonial literature by putting the light on the literary representation of the relationship between the colonized and the colonizing people.
Keywords: Uwe timm; Morenga; Baha taher; Sunset oasis; German literature; Intercultural perspective; Postcolonialism.

247. Die Herausbildung der Städte und ihr Einfluss auf die mittelalterliche deutsche und arabisch-islamische Literatur

Dina Aboul Fotouh Salama

Cross cultural communication, 53-72 (2011)

The aim of this study is to show the influence of the evolution of German and Arabic-Islamic cities on literature during medieval age. Life in the city, accompanied by social and cultural changes, had led to diverse preferences in German and Arabic-Islamic literature, which will be reflected and proved by giving a survey on various forms and themes. The study describes the beginning of the city in the medieval German-speaking Europe and the Arab region in order to explore the relevance of urban changes on culture and literary life. After defining the medieval concept and meaning of the city as a term in both cultures, its specific influence on culture and on life, its general literary tendencies, similarities and differences between medieval German and Arabic-Islamic Culture were depicted, through a socio-cultural perspective, the study comes to the conclusion, that life in the city accompanied changes in political, economic and social relations which had its impact and caused shifts on the literary field of both; the late medieval German and Arab-Islamic society. These shifts are due to mainly city-specific heterogeneity, which in turn resulted in a substantive diversification and differentiation of literature. On the other hand literature produced in the city has integrated certain homogeneity, which relates to the typical situation of change like the given possibility of education by building

schools. These homogeneities, the didactic train, the turn to more manageable prose and the preference for shorter generic forms, which are filled with moral, religious, historical, technical or universal human content, are pointed out and described briefly. The study has shown the ambiguity of literary production that alternates between the rejection of traditional contents and forms that evoked creative innovative themes and various genres and on the other hand the nostalgically Imitation of traditional works. The study comes to the conclusion that the scientific and cultural progress was related to the Arabs in the Islamic Middle Ages, and especially with the fruitful exchange that enabled the multi-cultural cities. The importance of the city, which allows the mingle between different lifestyles and identities and different cultures can provide chances for encounter through a dialogue of cultures, which is the true secret of cultural flourishing and social progress.

Keywords: Arabic-islamic cities; Medieval cities; Medieval german literatur; Arabic islamic literature; Medieval literary forms and themes; Intercultural perspective.

248. Interkulturelle Kommunikation in Ägypten

Fatma Zakaria Muhammad Massoud

Iudicium Publishing House, 147-160 (2011)

The submitted study deals with the issue of East and West as portrayed in German literature. In the reconstruction of a mirror-relationship between both cultures by applying a dialectic and dynamic mirror-image philosophical approach in the analysis of this topic in contemporary works of German literature, the paper adopts the obligatory necessity of a two-way-interaction concept between both cultural and literary heritages. The 'Other' has become a vital issue in modern and contemporary German literature and thus not only contributing to its development but also enhancing and promoting the chances of cultural dialogue.

Keywords: Germanistik; Modern and contemporary german literature; Cross cultural communication studies; Applied german studies; The self and the other.

2-3-05. *Dept. of Greek and Latin Studies*

249. L'hypotexte et l'hypertexte chez quelques poètes dans la littérature alexandrine

Ophelia Fayez Riad

Tôzai, Humanisme et langues, (2011)

Hypotexte and Hypertexte are the words used in the notion of intertextuality proposed by Julia Kristeva and emerged in the critic discourse at the end of 1960 and rapidly imposed to be an oblige passage in most literary analysis.

There are three axes in this research: First: The Hypertexte in few works of some alexandrian poets like Theocritus who rewrote the hypotexte of Euripides's work "Bacchae" in his poem XXVI:"Bacchae"and he rewrote in his poem XIII the myth of "Hylas" from the "Argonautica" of Appollonius of Rhodes. The poem XV " The Syracusans" of Theocritus is the hypotexte of the hypertexte of Bion " The Epitaph of Adonis". Second: The alexandrian Hypotexte in the roman Hypertexte like Ovide who rewrote in his poem " Metamophoses" book IX from the hypotexte poem " Hecale" of Callimachus's "Aitia" and Book XIV from the idyll VI ' The Cyclop" of Theocritus. Ovide in his poem "Fasti" especially the myth of Athena is from the hypotexte of Callimathus the myth V "the Bath of Pallas" and finally the letters 20,21 entitled " Acontius Cydippae" from the hypotexte of Callimachus's "Aitia" " Acontius and Cydippe". Many examples of the roman hypertexte of the poets : Virgile 's eclogues' from Theocritus "s"Hylas" "' Heracles the Child" " Cyclop" and "Thyrsis", Catullus's " Coma of Berenice" from " The Hair of Berenice" of Callimachus, Propertius " The Elegy" book 4 from the hypotexte of Callimachus 'hymn V " The Bath of Pallas". Third: The alexandrian hypotexte in the hypertexte of some french poets like: Jean La Fontaine, (17th century), André Chénier (18th century),Lamartine (18th century), Alfred de Vigny (18th century),Leconte de Lisle (19th century) who rewrote some of their poems from the alexandrian hypotexte :Theocritus, Callimachus, Bion.

The Alexandrian litterature plays, then, a double role in the hypertexte and hypotexte. Alexander The Great knew well to execute by his predecessors The Ptolemies, the internationalism of Alexandria that th politic system is the "Cosmopolitism" The Library, the Academy and the Heritage of Alexandria was obviously the means the most effective for reach this purpose.

Keywords: The Literary Criticism; The Aleandrian Literature; Roman poets; French poets.

2-3-06. *Dept. of Philosophy*

250. Hermetical Cosmology as an Esoteric Path

Hoda El Khouly

Ordre et liberté: L'univers cosmique et humain, (2011)

The aim of this paper is to provide an insight into the hermetist movement of late antiquity as an esoteric world view. The ancient hermetist beliefs regarded the celestial cosmos as the ruling influence determining the evolution of all life forms. "Cosmos" signified both "order" and "beauty"; "genesis" and "becoming" also stemmed from the same word. Our primary interest is in the writings of the hermetic tradition, which dwelled first and foremost on the Divine. Lastly, our inquiry considers the hermetical perception of cosmogony according to which the universe is not a random collection of physical objects, but rather a connective tissue linking various parts of a unified whole.

251. The Spartan Citizen according to Plato's Laws

Hoda El Khouly

Academy of Athens, Research Centre on Greek Philosophy, (2011)

The purpose of this paper is to shed light on the meaning and role of the ancient Spartan citizen. Our chief concern will be Plato's comparison between the Athenian and the Spartan citizen, throughout the Laws, Plato's last and longest dialogue, but we shall also keep an aye to other platonic dialogues, which refer to the Spartan citizen.

252. The Effect of Wasta on Perceived Competence and Morality in Egypt

Mohamad Saad Mohamad and Ahmed A. Mohamed

Cross Cultural Management: an International Journal, (2011)

Purpose: Wasta is an Arabic word that means the intervention of a patron in favor of a client in attempt to obtain privileges or resources from a third party. In Arab countries, wasta is often used to obtain employment, thus causing unequal opportunity. The purpose of this paper is to study the attributions that people make regarding the competency and morality of wasta users. The main hypothesis is that those that use wasta in obtaining employment will be perceived as less competent and moral than those that do not.
Design/methodology/approach: The study is designed as a factorial quasi-experiment, with three independent variables; wasta, employee qualification and socioeconomic status. The dependent variables are perceived competency and morality. Data were gathered from 421 Egyptian undergraduate business students attending a public and a private university.
Findings: In support of the hypotheses, subjects discounted the competency and morality of employees that used wasta to obtain the job. Additionally, subjects from lower socioeconomic groups evaluated wasta users more positively than more affluent subjects.
Originality/value: This is the first study that attempts to use attribution theory to examine the effects of wasta on perceptions of competency and morality. The study may be useful in identifying the disadvantages of using wasta, thus reducing its use.
Keywords: Egypt; University students; Employment; Human resources; Competences; Business ethics; Wasta; Attribution theory; Human resources in arab countries.

253. Where is philosophy?

Yomna T. ElKholi

International Student Centre, Yokohama National University, (19): 132- 146 (2011)

Philosophy is an abstract reflection of the human civilization, wherein there are the concepts, values and norms of modernity. Through interaction with them, positively and negatively, we can evaluate endeavors of modernization during the last two centuries.Japanese modernization is one of the most powerful endeavors, being leader in Eastern Asia. Yet Japanese studies in Egypt and in the Arab world in general do not give the academic philosophy in modern and contemporary Japan relevant attention.Therefore, this paper aims to show that the academic philosophy in Modern and contemporary Japan is sincere reflection of the Japanese modernization, its development and stages, up to the present period.The beginning of the story of academic philosophy in Japan parallels with the beginnings of her story with modernization, settlement of philosophy associated with the settlement of modernity, and achievements in philosophy are equivalent to the actual achievement of modernization.When Japan became captive of extreme hot nationalism and militaristic imperialism, philosophy emerging in Japan was a mirror of all this. The Japanese modernization had matured, so appeared the associated philosophical problem, namely problem of tradition/modernization. Herein, Japan made her contribution through "Kyoto School", which was a real addition to the global philosophy. Its founder, Nishida Kitarō, joined the ranks of the great worldwide philosophers. With the overwhelming defeat in World War II, Japanese philosophy introduced the strongest expression of feelings of regret, especially by Tanabe Hajime, who was another figure of "Kyoto School" and the founder of the philosophy of science in Japan. For several reasons, German philosophy had prevailed in modern Japan, but when the American conquest, sweeping and then coalition occurred, trends of philosophy in Japan turned mainly toward Anglo-American philosophy. Finally, because Japan escalates rates of progress in the fields of modernization, industrialization, science and technology, this in turn reflected in the current philosophy in Japan in twenty-first century. Therefore, we may agree that philosophy in Japan, modern and contemporary, deserves the attention of scholars in Japanese studies, as well as in philosophy.
Keywords: Contemporary philosophy; Japanese studies in arab world; Japanese philosophy; Japanese modernity; Kyoto School; Modern philosophy; Tradition/modernization.

2-4. Faculty of Archaeology

2-4-01. *Dept. of Conservation*

254. Bioremediation of Some Deterioration Products from Sandstone of Archeological Karnak Temple Using Stimulated Irradiated Alkalo-Thermophilic Purified Microbial Enzymes

Neveen Saleh Ebrahem and Hala Afifi Mahmood

Geomicrobiology Journal, 28: 56–67 (2011) IF: 1.830

The archeological temples of Karnak in Luxor city are the most important records of the history and civilization of Egypt that belonged to the Middle Kingdom to the reign of the Ptolemies. Many parts in Karnak temple are suffering from different types of biological deterioration products (visible fungal colonies, blood drops, and celluloytic wild bees' nests). The deteriorated samples of archeological sandstone of Karnak temple were analyzed by X-ray diffraction (XRD) followed by energy dispersed X-ray analyses (EDX), Fourier Transform Infrared Spectroscopy (FTIR) investigations, scanning electronmicroscope (SEM) and polarizing microscope (PLM). The major component was quartz. In vitro antagonistic activity of Trichoderma reesei against deteriorative isolated fungal species on Karnak Temple stone was carried out. Trichoderma reesei and Fusarium oxysporum, a cellulolytic and fibrinolytic microorganism, were subjected to mutagenesis using three types of radiations (UV, gamma and laser radiation). Stimulation of cellulytic and fibrinolytic microbial enzymes were obtained after 5- and 7.5-min exposure times to laser irradiation in absence of the photosensitizer, respectively. Cellulolytic and fibrinolytic enzymes recovered from non-irradiated and irradiated microbial cells were purified to homogeneity by salting out with ammonium sulphate, dialysis and chromatography through (Sephadex G-200, Sephadex G-100 and diethylaminoethyl cellulose columns) and test for

purity by simple polyacrylamide gel electrophoresis technique was carried out. The enzymes recovered from irradiated hyperproducing mutantmicrobes was found more efficient accompanied with low molecular weights compared with the non-irradiated purified enzymes. Characterization of the irradiated purified efficient enzymes revealed that the enzymes were alkalo-thermophilic.

Keywords: Temples of Karnak; Bioremediation; T. reesei; F. oxysporum; Wild bees'nests; Bat drops; Radiation; Enzyme purification.

255. Basketry Accessories: Footwear, Bags and Fans in Ancient Egypt

N.M.N. El Hadidi and R. Hamdy

Journal of Archaeological Science, (38): 1150-1161
IF: 1.710 (2011)

Ancient Egyptians had - by the New Kingdom - developed many basket making and matting techniques. These techniques were not only used for making all types and sizes of baskets and mats, but were also adopted for making other accessories such as bags, fans and different types of footwear, that seem to have been heavily used. Materials and techniques of nine objects consisting of 2 sandals, 2 shoes, 2 bags, 2 fans and a model of a mat at the Agricultural Museum in Giza were carefully studied. In some cases the object was made of one plant, but in other cases more than one plant were identified. The materials used for making the different objects were identified using light microscope. Four plant materials were identified in the studied objects; Hyphaene thebaica Mart., Phoenix dactylifera L., Cyperus papyrus L. and Desmostachya bipinnata (L.) Stapf., in addition to a gypsum layer in one of the sandals. Five different techniques were used in making the different objects; both bags were made using the twining technique. The soles of the sandals were made using either a plaiting or sewing technique. Cordage was used in the manufacture in some of the objects. The fans were made using the binding and sewing technique.

Keywords: Sandals; Shoes; Bags; Fans; Plant materials; New Kingdom; Ancient Egypt; Binding; Plaiting; Sewing techniques.

256. Characterization of Plasters from Ptolemaic Baths: New Excavations Near the Karnak Temple Complex, Upper Egypt

H. H. Marey Mahmoud, M. F. Ali, E. Pavlidou, N. Kantiranis and A. EL-Badry

Archaeometry, 53 (4): 693–706 (2011) IF: 1.581

The aim of the present work is to characterize plasters from Ptolemaic baths recently discovered in front of the Karnak temple complex, by the excavations of an Egyptian–French team. The characterization was carried out by means of optical microscopy (OM), 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). The results allowed the identification of the chemical composition and structure of these plasters. In addition, samples of red, yellow, black and white pigments were examined and identified. The results helped in providing an image concerning some materials used during the Ptolemaic era in ancient Egypt.

Keywords: Plasters; Ptolemaic baths; The Karnak Temple Complex; SEM–EDS; XRD, FT–IR; Calcite; Aragonite; Bone black.

257. Effect of Burial Environment on Crocodile Bones from Hawara Excavation, Fayoum, Egypt

Gomaa Abdel-Maksoud and Mohamed Abdel-Hady

Journal of Cultural Heritage,12: 180-189 (2011) IF: 1.162

Many different archaeological materials were found in Hawara (Fayoum, Egypt) during the excavation of the Egyptian–Polish mission in 2008. A complete crocodile skeleton, and many incomplete crocodiles werefound in this area. The skeletons of these crocodiles suffered from salt crystallization, erosion, pitting, change of the color, etc. This study focuses on the mechanism of deterioration processes that affects bone and tusks. Surface modification, change of color, study of soil components and bone crystallinity, degradation of collagen, pH, bone histology, and the surface morphology were investigated by visual examination, UV spectrophotometry, X-ray diffraction, FTIR, pH meter, polarized light microscope (PLM) and scanning electron microscope (SEM), respectively. The results revealed that soluble salt (sodium chloride) and insoluble salt (calcium sulfate) played an important role in the deformation of bone. FTIR proved that archaeological bones undergo changes in their chemical stability. Differing colors, and cracks on the surface of the bones indicate that they were exposed to different temperatures.

Keywords: Effect of burial environment on crocodile bones from Hawara excavation; Fayoum, Egypt.

258.A new approach for Conservation Treatment of A Silk Textile in Islamic Art Museum, Cairo

Harby E. Ahmed and Yassin E. Ziddan

Journal of Cultural Heritage, 12: 412-412 (2011) IF: 1.162

The paper presents strategies for the conservation of historical textiles in Egypt that have been in uncontrolled storage and display. The silk textile is highly decorated, multicoloured and dates to the Ottoman period, and was exhibited in case # 12014. The textile has various types of deterioration. An examination and analysis of the textile was undertaken in order to develop a plan of conservation treatment. FTIR was used to identify the kinds of dyes and organic stains, and XR-D was used to identify mordants and dust. Light microscope and SEM were used to identify the kind of fibers, their condition and surface morphology. The effects of cleaning materials on the natural dyes were tested. The researcher designed a new metallic frame support system which has advantages over the wooden frames commonly used in Egypt. This presentation will review the conservation treatment step by step. Poultices were used to remove all the sticking cardboard and adhesive. Old conservation repairs were removed. Separated parts were supported. Cleaning included mechanical and wet cleaning. New silk fabrics dyed with natural dyes were used to complete the missing parts. The textile was supported on new linen fabric which was stretched on a metal frame. The method of

exhibition will be discussed. Photographs are included to document the conservation process.
Keywords: Textil; Silk; Adhesive; Stains; Cleaning; Poultice; Support; Frame; Dyes.

259. An Investigation Into the Removal of Starch Paste Adhesives from Historical Textiles by using the Enzyme α-amylase

Harby E. Ahmed and Fragiskos N. Kolisis

Journal of Cultural Heritage, 12: 169-179 (2011) IF: 1.162

The α-amylase enzyme has been reported during the last decade to be used for removal of the excess starch adhesive paste, which is usually used to fix textiles on paper, textiles, wood panels, or other rigid support materials. The final aim of this work was the application of _-amylase in order to remove the old starch from historical textiles in an attempt to conserve them under mild conditions. An extensive study was undertaken using various types of textiles in order to identify the optimum condition for the use of the enzyme, in relation to time, concentration, temperature and pH, before any other attempt. The first step was to simulate the textile ageing. The fabrics were coated with starch paste adhesive, and then a process of artificial thermal ageing was made on samples for different periods of time. After that the enzyme was applied to the samples, at different concentrations and at different intervals. This study also presents interesting results concerning the effect of the enzymatic treatment on the mechanical and optical parameters of linen, silk and cotton, dyed with madder or turmeric dye mordanted with CuSO4 or ferric citrate. Finally, the removal of enzymatic residues from textiles after the treatment has been studied. The application section has been fulfilled by using the whole process in a piece of a historical carpet from fabric adhered with starch. This piece of carpet is in the museum of the Faculty of Applied Arts, Helwan University in Egypt.
Keywords: Enzyme; Starch; Textiles; Ageing; Treatment; Investigation; Conservation.

260. Analytical Techniques used for the Evaluation of a 19th Century Quranic Manuscript Conditions

Gomaa Abdel-Maksoud

Journal of Measurement, 44 (9): 1606-1617 (2011) IF: 0.853

The manuscript studied here dates to 19th century, and consists of paper pages and leather bookbinding. This study aims to use analytical techniques in order to identify the components of the manuscript and to explain its deterioration process. Visual assessment, isolation and identification of fungi, pH measurements, and investigation of the surface morphology by a scanning electron microscope (SEM) were used to explain paper and leather deterioration. X-ray diffraction with EDAX, Fourier Transform Infrared Spectroscopy (FTIR), and chemical analysis were used to identify pigments, binder of pigments, ash, lignin, and the a-cellulose content of papers. The shrinkage temperature measurement was used to explain the deterioration process of leather. SEM was used to identify the type of animal skin used for the bookbinding and high performance liquid chromatography (HPLC) was used to identify the vegetable tanning material used with the bookbinding. The results revealed that the ink used was a mixture of carbon with iron gall. The pigments used on the paper were gold leaf or gold shell, cobalt oxide, and mercuric sulfide for the gold, blue and red colors respectively. Sodium chloride was the main salt crystallized on the surface of paper. Calcium carbonate was the filler used in the paper making process. Cotton fibers may have been used as a raw material in the creation of paper. The values of the shrinkage temperature and pH were lower than in normal conditions, indicating that the leather bookbinding suffers from deterioration. *Aspergillus sp.*, and *Penicillium sp.* were the most dominant fungi found on the manuscript. Goat skin was identified as the animal skin of the bookbinding, and Acacia Arabica was identified the tanning material used with the bookbinding. The condition of the manuscript studied with its components play an important role in its deterioration.
Keywords: Analytical techniques used for the evaluation of a 19th century quranic manuscript conditions.

261. Analysis and Conservation of an Eighteenth/ Nineteenth Century Vegetable-tanned Parchment Manuscript

Gomaa Abdel-Maksoud

Journal of the Society of leather Technologists and Chemists (SLTC), 95 (2): 47-58 (2011) IF: 0.561

This paper describes the use of analytical techniques to examine an eighteenth/nineteenth century vegetable-tanned Hebrew parchment manuscript which had been discovered during excavations in Tanta City, Egypt. The manuscript was assessed visually, moisture content was determined, its pH, amino acid content and shrinkage temperature were measured. The ink was analyzed by x-ray diffraction and atomic absorption. The binding medium of the ink and tannin material of the manuscript studied were identified. Biological deterioration was also assessed. The solubility of the ink used on the manuscript was tested. The manuscript was surface cleaned, consolidated, humidified, flattened and lined. The disinfection was also applied. The results of the analyses quantified the deterioration and helped developing a conservation strategy. The conservation treatment improved the appearance and increased the strength of the manuscript.
Keywords: Analysis and conservation of an Eighteenth/ nineteenth century vegetable-tanned parchment manuscript.

262. Investigation Techniques and Conservation Methods for A Historical Parchment Document

Gomaa Abdel-Maksoud

Journal of the Society of leather Technologists and Chemists (SLTC), 95 (1): 22-34 (2011) IF: 0.561

The historical document studied dates back to the Mamluk period (807 – 848 AH). It Consists of seven pieces and preserved in the National Archives stores. The document suffers from serious damage. Many aspects of deterioration were recorded such as discoloration, warping, stains of different sources, missed parts and gaps. This study aims to document aspects of deterioration, explain the deterioration mechanism and apply some methods of conservation.

Non-destructive methods of investigation such as isolation and identification of fungi, shrinkage temperature by using microscope with hot table technique and Fourier Transform Infrared attenuated total reflection (FTIR-ATR) were used for damage assessment of the document. The conservation methods used were fixing of ink, disinfection, cleaning processes, flattening and tensioning, repair of parchment document, sewing, and preparing the document for storage. Results of investigation techniques proved that the deterioration varied in different pieces of the document. The conservation methods improved the appearance and revealed aesthetic values of the document.

Keywords: Investigation techniques and conservation methods for a historical parchment document.

263. A Review on the Materials used During the Mummification Processes in Ancient Egypt

Gomaa Abdel-Maksoud and Abdel-Rahman El-amin

Mediterranean Archaeology and Archaeometry, 11 (2): 129-150 (2011)

Mummification is considered one of the most important in the history of ancient Egyptian civili-zation. The artificial mummification process started in the Fourth Dynasty during the Old Kingdom reached its peak in the New Kingdom. This review focuses on the usage of mummification materi-als such as Natron salt, Coniferous resin, Mastic, Myrrh, Beeswax, Bitumen, Cassia, Onions, Lichen, Henna and Gum Arabic in ancient Egypt to determine their effectiveness in the preservation of the body. For each material, the chemical formula, the history, and the role in the preservation of the body are presented. It is shown that natron salt was the most important material to desiccate a corpse, and that the vegetable materials mentioned above have anti-bacterial properties that pro-tected the body from microbial attack.

Keywords: A review on the materials used during the mummification processes in Ancient.

264. Damage Caused By Insects During the Mummification Process: an Experimental Study

Gomaa Abdel-Maksoud and Ezz Eldin Abed al-Sameh Al-Shazly

Journal of Archaeological and Anthropological Sciences, 3: 291-308 (2011)

The process of mummification had been known since the Fourth Dynasty of the Old Kingdom (ca. 2600 BC) and continued to develop throughout ancient Egyptian history. Although mummification protected the body from decay, especially by microbes, some mummification techniques left the body susceptible to insect attack. Certain types of insects have been detected in the mummies. In scholarly publications, most authors have dealt with microorganisms, while few have concerned themselves in depth with the effect of insects on the mummies. This study aims to discuss the significance of insects and the changes they affected to the mummies during embalming. To achieve this goal, experiments were carried out replicating various mummification techniques using albino Wistar rats. Analysis and investigative techniques used included visual observation, Fourier transform infrared spectroscopy, investigation of the surface morphology by a scanning electron microscope, and color change by a spectrophotometer. The following insects could be identified as being present during the second and third processes of mummification: Dermestes maculatus, Necrobia rufipes, Saprinus gilvicornis, Chrysomya albiceps, Wohlfahrtia magnifica, and Attagenus fasciatus. In addition, the majority of our findings confirmed that the degradation by insects increased with the second and third methods of mummification. Finally, the experimental study conducted using the mummification techniques of the New Kingdom (ca. 1570–1070 BC) indicated that they were more resistant to insect attack than the other types.

Keywords: Damage caused by insects during the mummification process: an experimental study.

265. Strategy for Preservation of Ptolemaic Wrapped Mummy's Linen in Tuna El-Gebel Excavation, Egypt. A Case Study

Harby E. Ahmed

International Journal of Conservation Science, 2: 155–164 (2011)

This research shows the practical strategies which were chosen for maintenance an conservation of textiles discovered in Tuna el -Gebel excavations, Egypt. This process represents the first aid to these objects, hidden in tombs over thousands of years. Thus, the operations carried out are very important in detecting the state of conservation of these remains of human activity. They also aimed at reducing the damage caused by storage conditions through thousands of years. The challenge that conservators of historic textiles face in this case is the decrease of the available and necessary possibilities for conducting the process of restoration in the best way. On the other hand, leaving these textiles without a conservation process may double the causes of damage in the textiles leading eventually to their complete loss.. The process of restoration has been recorded step by step, from the historical records of textiles to the cleaning processes. Moreover, the choice of a new holder for displaying textile pieces in museum and their placement in it are discussed.

Keywords: Linen textile; Excavation; Conservation; Mummies; Cleaning; Support; Black ink.

266. Analytical Investigation of Pigments, Ground Layer and Media of Cartonnage Fragments from Greek Roman Period

Hala Afifi Mahmood

Mediterranean Archaeology and Archaeometry Journal, 28: 56–67 (2011)

Some cartonnage fragments from Hawara, Fayoum Excavation were examined to identify pigments, media and grounds. It belonged to the Greek-Roman period. They were studied by X-ray diffraction (XRD), Energy dispersive X ray analysis (EDS) equipped with Scanning electron microscopy (SEM) and Fourier transform infrared spectroscopy (FTIR). These techniques were used to identify the composition and morphology of grounds, nature of pigments and media used in

cartonnage fragments. The coarse ground layer was composed of calcite and traces of quartz. The fine ground layer used under the pigments directly was composed of calcite only. Carbon black was used as black pigment while lead oxide as red pigment, showing the influence of Roman and Greek pigments on Egyptian art in these later periods. Blue colorant was identified as cuprorivaite and yellow pigment was goethite. Animal glue was used in the four pigments as medium colored.
Keywords: Fayoum; Hawara; Cartonnage; Pigments; FTIR.

267. Analytical Study of Ground Painting Layers and Conservation Processes of an Egyptian Painted Coffin

Hala Afifi Mahmood

Journal of Life Sciences, 5 (8): 661-669 (2011)

The aim of this study is to examine and present the results of the scientific examinations carried out on the ground layers with paint samples collected from the decorated surfaces of the wooden coffin dated back to the late period from Saqqara excavation that belonged to the Ministry of Antiquities. Many analytical methods were performed as optical microscopy, scanning electron microscopy coupled with energy-dispersive X-ray analysis (ESEM-EDX), X-ray diffraction analysis as well as fourier transform infrared spectroscopy have been used to both characterise the inorganic composition and the binding media used. The analytical results showed that the materials composition and technique used to plaster applied on the wooden surface are in good agreement with the information gathered through the historical survey. The coffin was in bad and poor condition. There was cracking on the surface and in the structure, serious flaking, cupping of some pigments and serious damage in both the wooden support and gesso layer. Conservation treatment processes carried out included consolidation of lifting areas of the paint film, disturbing restoration materials, repair of cracks in the wooden support and a dry surface cleaning of the pigments.
Keywords: Wooden coffin; pigments; Saqqara; EDX; SEM; Conservation; Chemical composition; Deterioration aspect.

268. Comparative Study on Fungal Deterioration and Ozone Conservation of El-Anfoushi and Al-Shatby Archeological Tombs- Alexandria- Egypt

Hala Afifi Mahmood and Neveen Saleh Ebrahem

Journal of American Science, 7 (12): 776- 784 (2011)

Physical, chemical and biological factors playing a combined role in weathering of archeological tombs. El-Anfoushi and Al-Shatby archeological tombs is are located in Alexandria district in Egypt and suffering from biodeterioration aspects. Three xerophilic fungi (Eurotium amstelodami, E. chevalieri, E. repens), and six non-xerophilic strains (Alternaria *alternata, Aspergillus terrus, A. versicolor, Cladosporium herbarum, Fusarium moniliforme and Penicillium chrysogenium)* were isolated from Al-Shatby and El-Anfoushi archeological tombs, respectively. Analyses of the samples of the building material of the two tested tombs and were investigated by Environmental Scanning Electron Microscope (ESEM) Equipped with Energy Dispersive X-Ray Analysis (EDX). *A. versicolor* followed by *A. terrus* recorded the highest significant deterioration of the samples of limestone building material of the two tombs (3.7 and 2.5 cm halo zone, respectively). Atomic absorption was used to detect the release of calcium from the tested limestone samples after fungal degradation. The relation of fungal deterioration efficiency of alkaline limestone rock and pH sensitivity was recorded. Ozone as a powerful oxidizing disinfecting agent was applied on the isolated deteriorated fungal species. All isolated non xerophytes were most sensitive to 3 ppm of ozone after 150 min exposure time, while extending of the exposure time up to 210 min was required to stop the growth of the three isolated resistant xerophytes.
Keywords: Fungi; Conservation; Ozone; Alexandria tombs.

269. A Preliminary Diagnostic Study of the Chromatic Alterations of the Wall Paintings of the Festival Hall of Thutmosis III, Karnak Temples Complex, Upper Egypt

H.H. Marey Mahmoud, N.A. Kantiranis, M.F. Ali and J.A. Stratis

Restoration of Buildings and Monuments,17(1): 49-60 (2011)

The festival hall of Thutmosis III (c.1504–1450 BC) is one of the minor temples found in the complex of Karnak temples at Luxor (about 670 km south of Cairo). The chromatic alterations of the wall paintings at the festival hall were evaluated through the analysis of weathered pigment samples and several damaged layers covering the painted surfaces. The analytical techniques utilised in this study were optical microscopy (OM), scanning electron microscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), X-ray powder diffraction analysis (XRPD), micro-Raman and Fourier transform infrared spectroscopies (μ-Raman and FT–IR). The obtained results showed that the chromatic alterations of the studied wall paintings are resulting mainly from the impact of the environmental conditions of the region, the penetration of the groundwater beneath the walls of the temple and the degradation of the materials used in old restorations of the temple. This research confirms the importance of a plan for environmental improvements to be drawn up.
Keywords: Karnak temples complex; Chromatic alterations; Wall paintings; SEM–EDS; μ-Raman.

270. A Preliminary Investigation of Ancient Pigments from the Mortuary Temple of Seti I, EL-Qurna (Luxor, Egypt)

H. H. Marey Mahmoud

Mediterranean Archaeology and Archaeometry, 11 (1): 99-106 (2011)

The present paper aims to apply different analytical techniques to characterize some ancient pigments from the first group of samples collected on the wall paintings of the mortuary temple of Seti I (c.1291–1278 BC), El-Qurna (Luxor, Egypt). The analytical characterization has been carried out by means of optical microscopy (OM), scanning electron microscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), μ-Raman spectroscopy and Fourier transform infrared

spectroscopy (FTIR). The results allowed the identification of different pigments used in the polychromatic decorations of the temple and to establish a preliminary analytical database of the chromatic palette used in this period of the Egyptian history. The present paper aims to apply different analytical techniques to characterize some ancientpigments from the first group of samples collected on the wall paintings of the mortuary temple of Seti I (c.1291–1278 BC), El-Qurna (Luxor, Egypt). The analytical characterization has been carried out by means of optical microscopy (OM), scanning electron microscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), μ-Raman spectroscopy and Fourier transform infrared spectroscopy (FTIR). The results allowed the identification of different pigments used in the polychromatic decorations of the temple and to establish a preliminary analytical database of the chromatic palette used in this period of the Egyptian history.

Keywords: El‐Qurna; Mortuary temple of Seti I; Pigments; SEM–EDS; μ-Raman; FTIR.

271. Characterization of Ancient Egyptian Wall Paintings, the Excavations of Cairo University at Saqqar

Hussein Marey Mahmoud, Nikolaos Kantiranis, Mona. Ali and John Stratis

International Journal of Conservation Science,3 (3) 145–154 (2011)

The present study aims at characterizing some Egyptian wall paintings discovered during them excavations of Cairo University (since 1988 and recently in 2005) at Saqqara area in the south of Cairo. There, a number of tombs dating back to the 19th dynasty (c.1293–1185BC) were discovered. The walls of these tombs are carved with bass and raised reliefs and painted with different colours. The characterization of the wall paintings was done by means of optical microscopy (OM), scanning electron microscopy (backscattered electron mode, BSE) equipped with an energy dispersive X-ray detector (EDS), micro XRF spectrometry (μ-XRF) and X-ray diffraction analysis (XRD). The analysis of the examined samples indicated that the blue pigment is Egyptian blue (Cuprorivaite), the green pigment is Egyptian green, the red pigment is red ochre, and the yellow pigment is a blended layer of yellow ochre and orpiment (As_2S_3). The results will help in providing an image concerning some painting materials used during the new Kingdom in ancient Egypt.

Keywords: Wall paintings; Excavations, Saqqara; Cross-sections; μ-XRF; BSE−EDS.

272. Investigation and Conservation of a Historical Woman's Coat Decorated with Fur Parts

Omar Abdel-Kareem

Journal of Textile and Apparel Technology and Management, 7 (2): (2011)

Treatment, preservation, restoration, display and storage of composite objects such as historical costumes are not easy subjects. The type of materials such as fibers, dyes, finishes, leather, fur, paper and metal threads, and the complexity of structure make the risk of damage too great. Most of methods that are commonly used in the conservation of historical textile objects are designed for flat textiles. Many costume items can be safely conserved by using special conservation processes adapted and designed for historical three-dimension textile objects. This study aims to establish a strategic plan for the conservation of a historical outdoor woman's coat. Also to develop and adapt some textile conservation processes which could be applied to the conservation of historical costumes containing different materials. The coat was investigated using different methods such as SEM and HPLC. Examination of the woman's coat indicated that the object was very soiled with additional stains and extensive damage especially to the decoration and fur parts. Given the condition of the object some suggested cleaning methods were evaluated to predict the most suitable method that can be used for cleaning of this object from dirt and soils. A further study was carried out to evaluate some selected methods suggested to reinforce the coat. The study recommends that surface cleaning with suitable chemicals can be used locally to remove staining. After cleaning the object, the consolidation process can be adapted to mount the object on a new linen fabric with stitches. The woman's coat should be displayed according to standard methods that are recommended for displaying the three dimensional textiles. Finally guidelines are suggested for controlling and preventing the deterioration of the coat in a display showcase.

Keywords: Historical woman's coat; Conservation processes; SEM; HPLC; Surface cleaning; Mounting: Stitches; Display.

273. Thermoluminescence Dating of Pottery Objects from Tell Al-Husn, Northern Jordan

S. Khasswneh, Z. al-Muheisen and R. Abd-Allah

Mediterranean Archaeology and Archaeometry,11 (1): 41-49 (2011)

The present paper aims to apply different analytical techniques to characterize some ancient pigments from the first group of samples collected on the wall paintings of the mortuary temple of Seti I (c.1291–1278 BC), El-Qurna (Luxor, Egypt). The analytical characterization has been carried out by means of optical microscopy (OM), scanning electron microscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), μ-Raman spectroscopy and Fourier transform infrared spectroscopy (FTIR). The results allowed the identification of different pigments used in the polychromatic decorations of the temple and to establish a preliminary analytical database of the chromatic palette used in this period of the Egyptian history. The present paper aims to apply different analytical techniques to characterize some ancientpigments from the first group of samples collected on the wall paintings of the mortuary temple of Seti I (c.1291–1278 BC), El-Qurna (Luxor, Egypt). The analytical characterization has been carried out by means of optical microscopy (OM), scanning electron microscopy (SEM) equipped with an energy dispersive X-ray detector (EDS), μ-Raman spectroscopy and Fourier transform infrared spectroscopy (FTIR). The results allowed the identification of different pigments used in the polychromatic decorations of the temple and to establish a preliminary analytical database of the chromatic palette used in this period of the Egyptian history.

Keywords: Tell al-Husn; Pottery; Thermoluminescence; Dating; Late Bronze Age.

2-4-02. *Dept. of Egyptology*

274. Atherosclerosis in Ancient Egyptian Mummies: The Horus Study

Adel H. Allam, Randall C. Thompson, L. Samuel Wann, Michael I. Miyamoto, Abd el-Halim Nur el-Din and Gomaa Abdel-Maksoud

Journal of the American College of Cardiology, 4 (4): 315-327 (2011) IF: 5.528

Objectives: The purpose of this study was to determine whether ancient Egyptians had atherosclerosis.
Back Ground: The worldwide burden of atherosclerotic disease continues to rise and parallels the spread of diet, lifestyles, and environmental risk factors associated with the developed world. It is tempting to conclude that atherosclerotic cardiovascular disease is exclusively a disease of modern society and did not affect our ancient ancestors.
Methods: We performed whole body, multislice computed tomography scanning on 52 ancient Egyptian mummies from the Middle Kingdom to the Greco-Roman period to identify cardiovascular structures and arterial calcifications. We interpreted images by consensus reading of 7 imaging physicians, and collected demographic data from historical and museum records. We estimated age at the time of death from the computed tomography skeletal evaluation.
Results: Forty-four of 52 mummies had identifiable cardiovascular (CV) structures, and 20 of these had either definite atherosclerosis (defined as calcification within the wall of an identifiable artery, n = 12) or probable atherosclerosis (defined as calcifications along the expected course of an artery, n = 8.(Calcifications were found in the aorta as well as the coronary, carotid, iliac, femoral, and peripheral leg arteries. The 20 mummies with definite or probable atherosclerosis were older at time of death (mean age 45.1 ±9.2 years) than the mummies with CV tissue but no atherosclerosis (mean age 34.5 ± 11.8 years, $p < 0.002$). Two mummies had evidence of severe arterial atherosclerosis with calcifications in virtually every arterial bed. Definite coronary atherosclerosis was present in 2 mummies, including a princess who lived between 1550 and 1580 BCE. This finding represents the earliest documentation of coronary atherosclerosis in a human. Definite or probable atherosclerosis was present in mummies who lived during virtually every era of ancient Egypt represented in this study, a time span of >2,000 years.
Conclusions: Atherosclerosis is commonplace in mummified ancient Egyptians.
Keywords: Atherosclerosis; Arterial calcifications; Egyptian mummies.

275. "Un scarabée inédit du roi Amenhotep III à Touna El- Gebel "

Hassan Nasr el-Dine

Annales du Service des Antiquités de l'Égypt, 42: 227-335 (2011)

Une étude d'un scarabée du roi Amenhotep III. Cette publication corrige une faute sur les collections de ce roi. Cet article fait corriger le travail de Blankenberg sur le scarabée provenant de Touna el-Gebel.

Keywords: Tuna al-Gebel necropolis; Scarabée; Amehotep; Ashmonein; Basse Epoque.

276. Die Oberbauten Des Ibiotapheion Von Tuna El-Gebel

Dieter Kessler, Partick Brose, Mahmoud Ebeid, Abd el-Halim Nur el-Din and Frank Steinmann

Verlag Patrick Brose, (2011)

This book sheds the light on the work of the joint archaeological mission of Cairo and München Universities- working in Tuna el-Gebel necropolis, in Middle Egypt- outside the animal galleries of the main Hermopolitan Ibiotapheion. The work was directed to the cultic and administrative connection of the new temple above the animal galleries which was dated to the time of Alexander IV and of the many new Early Ptolemaic cult places for deified ibises and baboons underground with the numerous mud brick buildings lying to the east of the temple. It became now evident that the temple above the animal galleries was an Osireion, a cult place for the yearly repeated Osirian renewal processions, with the cult of the resting gods Osiris-Baboon and Osiris-Ibis and their resurrection attached to it.
Keywords: Tuna al-Gebel necropolis; the Ibeiotapheion; the priests' house; the temple of Osiris-Baboon.

277. N-trt (m-Dr.t) in the Demotic Inscriptions on the Ibis Coffins and Sarcophagi from the Galleries of Tuna el-Gebel Necropolis

Mahmoud Ebeid

Annales du Service des Antiquités de l'Égypt., 42: 127–143 (2011)

A palaeographical study on the various forms of the compound preposition N-trt (m-Dr.t) "by, in the hand of" in the demotic inscriptions written on the exteriors of the coffins and sarcophagi dedicated to burring the sacred animals in the subterranean galleries of Tuna al-Gebel necropolis**,** and its role in the ibis inscriptions**.** In addition to the role of the persons mentioned after this prepositions in the necropolis, whether males or females, who were officials in the ibis organization in Tuna al-Gebel necropolis.
Keywords: Tuna al-Gebel necropolis; The Ibeiotapheion; the sacred animals; the palaeography.

2-4-03. *Dept. of Restoration and Conservation*

278. an Innovative Stretcher for Canvas Paintings

Osama M. El-Feky

e-conservation, 21: 57–65 (2011)

One of the most important deterioration factors of paintings on canvas is the inadequate fixation to a stretcher frame. In addition, metallic nails are often used, causing corrosion and tears in canvas edges, etc. Climatic changes will cause expansion or shrinkage, leading to a sagging or rippling canvas resulting in the need for the painting to be re-stretched.

Paintings with a fragile stretcher need to be stretched on a new one. The objective of this study aimed to invent a new stretcher frame avoiding the drawbacks of the traditional ones, made of plexiglass which is a transparent material. This frame consists of four sides with chamfered inner edges and mitered corners with slot and tenon joints that can be expanded by using a control unit containing eight gears. The sides can be moved easily by turning the gears, which aids the adjustment of the painting when it expands or contracts. Around the new stretcher frame there are four plexiglass pieces which are covered by toothed rubber and eight straps for fixing the oil painting to the frame.

Keywords: Oil painting; Stretcher frame; Conservation.

279. Diagnosis of Building Materials Affected by Air Pollution and Clay Minerals in Sabil Alkazlar – Cairo - Egypt

Mostafa Attia Mohie and Abubakr Moussa

Le Polletain de Institute Francais de Archeologie Orientale, (2011)

In this study, pigment materials in the Sabil Alkazlar were studied using XRD, SEM-EDAX, light optical microscope, UV analysis and FTIR in order to determine their mineralogical and chemical composition and to evaluate how these pigments were affected by air pollution and clay minerals. The pigments revealed are golden pigment as gold (Au), black as bone black, and red pigment as cinnabar (HgS). The wooden ceiling collating the rendering layer on which the pigments were applied is composed of anhydrite and gypsum mixed with sand. Lead sulfide was detected in the examined cinnabar red sample which indicates the effect of lead as a pollutant on the deterioration of the wall paintings. Clay minerals detected in the plaster layer on the ceiling in the Sabil are kaolinite and a smectite - illite mixed layer. The detection of halite in all the studied samples indicates the effect of rising groundwater on the studied ceiling. The wall paintings in the Sabil Alkazlar were created using tempera technique with a rabbit skin glue medium. The artist used the multilayer style using the *gesso grosso* and the *gesso sotile* techniques.

Keywords: Sabil Alkazlar; Pigments; Air Pollution; Clay Minerals; Gold; Cinnabar; Bone Black; Xrd; Sem-Edax; Ftir; Cross Section.

2-5. Institute of African Research and Studies

2-5-01. *Dept. of Geography*

280. Recent Trends of Temperature Change Under Hot and Cold Desert Climates: Comparing the Sahara (Libya) and Central Asia (Xinjiang, China)

B. Mamtimin, A.M.M. Et-Tantawi, D. Schaefer, F.X. Meixner and M. Domroes

Journal of Arid Environments,75 (11): 1105–1113 (2011)
IF: 1.535

According to trend computations at three stations each in Sahara desert (Libya), characterized by a "hot" desert type ("BWh", according to the Koeppen climate classification), and in Central Asia (Xinjiang, China) identified as a "cold" desert type ("BWk", after Koeppen), increasing annual temperatures were detected over the period 1955e2005 corresponding with global temperature warming. From 1955e1978, negative (decreasing) temperature trends were, however, observed at all three hot desert stations and at two of the three cold desert stations. From 1979e2005, strikingly positive temperature trends were seen at all six stations. In seasonal respects, winter (December to February) and summer (June to August) show different temperature trends over the period 1955e2005: the hot desert experienced an increasing temperature trend at a greater extent in summer than in winter; vice-versa, in the cold desert positive trends were computed for winter and negative for summer. It can also be observed that mostly hot desert warming occurred in summer, opposite to cold desert warming in winter.

Keywords: Climate change; Cold desert; Hot desert; Libya and Xinjiang; Temperature trend.

2-5-02. *Dept. of Natural Resources*

281. Efficiency of Bioagents in Controlling Root-Knot Nematode on *Acacia* Plants in Egypt

Amira Sh. Soliman, Samaa M. Shawky and M.N.A. Omar

American-Eurasian J. Agric. and Environ. Sci., 10 (2): 223-229 (2011)

A greenhouse experiment was conducted to assess the influence of *Azospirillum brasilense*, *Pseudomonas fluorescens*, *Azotobacter chroorcoccum*, mixed genera of *Arbascular mycorrhizae* (AM) fungi and oxamyl for controlling *Meloidogyne incognita* on *Acacia farnesiana* (L.) Willd and *A. saligna* (Labill), in a complete randomize design, in two seasons (2009 and 2010). Final nematode population (juveniles in soil, developmental stages, females, egg masses and eggs number in root) and number of galls and rate of buildup of root-knot nematode were determined. Growth parameters (plant height, number of branches/plant, dry weights of shoots (stems + leaves) as well as roots/plant and root length); nodulation parameters (number and dry weight of nodules/plant, as well as nitrogenase activity) and chemical analysis (N , P, K, protein, total carbohydrates percentages and total chlorophylls (a+b) and carotenoids contents in leaves) were also determined. Results indicated that both oxamyl and *Arbascular mycorrhizae* were the most effective treatments in decreasing the final nematode population in both soil and roots, number of galls and rate of buildup of root-knot nematode. Also, they recorded the maximum plant growth, nodulation parameters and chemical components in the leaves of the two species. While, the least effective one was *Azospirillum brasilense*. *Pseudomonas fluorescens* and *Azotobacter chroorcoccum* occupied an intermediate position. In conclusion, mixed genera of Arbascular mycorrhizae fungi can be used for controlling *Meloidogyne incognita* on *Acacia farnesiana* and *Acacia saligna* instead of nematicide that cause severe pollution of ecosystems.

Keywords: Acacia farnesiana; Acacia saligna; Meloidogyne incognita; Bioagents; Azospirillum brasilense; Pseudomonas fluorescens; Azotobacter chroorcoccum; Arbascular mycorrhizae fungi and oxamyl.

282. Response of Snapdragon Plants to Pinching and Growth Retardants Treatments

Nermeen T.A. Shanan and Amira Sh. Soliman

American-Eurasian Journal of Sustainable Agriculture, 5 (2): 150-157 (2011)

This study was carried out aiming to have compact and well branched snapdragon plants to be used as commercial pot plant. The effect of different growth retardants (PGRs) and leaf pinching stages were taken into consideration.

Results indicated that, pinching the plants at 3-leaves stage and treated with Paclobutrazol (PBZ) caused a remarkable reduction in plant height by (9.27 and 8.88%) than P-chlorophenoxy-iso butyric acid (PCIB). PBZ at 150 mg L-1 or PCIB at 50 mg L-1 was exhibit the lowest gibberellic acid (GA3) and indole acetic acid (IAA) accompanied with the highest abscisic acid (ABA) concentrations. The plants treated by 150 mg L-1 PBZ and pinched at 7-leaves stage, the shortest inflorescence length (11.3 and 10.01 cm) was obtained. At this stage, the greatest number of branches/plant was recorded with 50 mg L-1 PBZ and 150 mg L-1 PCIB.

Anatomically, there was a positive relationship between increasing of PGR concentrations and the reduction occurred in the stem diameter, since as the concentrations of PGR increased, the reduction of stem diameter increased.

Keywords: Abscissic acid; Antirrhinum majus; Anatomy; Gibberellic acid; Indole acetic acid; Paclobutrazol; P-chlorophenoxy-iso butyric acid.

2-6. Institute of Eductional Studies and Research

2-6-01. *Dept. of Technology of Education*

283. The Development of Educational Activities Based on Web for Graduate Students According to Standards of Electronic Learning and Education

Amal Abd Elftah Ahmed swidan

Российский Университет дружбы народов -Факультет гуманитарных и социальных наук Кафедра иностранных языков-Языковой аспект интеграции и самоидентификации в современном мире-Материалы межвузовской конференции- МОСКВА, (2011)

Development: In this research, researcher defined development procedurally as a process based on the study, analysis and research to gain access to the list of the standards of electronic learning and education in order to develop some educational activities of General education Diploma to the best form, so this leads to achieve purpose efficiently, economically at a time, effort and cost. This requires a change in form and content of educational activities according to the standards of electronic learning and education.

Educational activities based on the web: It is defined as educational activities based on web- procedural as the method of teaching and learning using the World Wide Web, and it works all modes of communication in harmony and cohesion with the methods of communication to deliver the educational activities of the decisions and experiences of the learner over the web in a manner synchronous or asynchronous at anytime, anywhere.

E-Learning: Researcher defined procedural as content delivery technology using electronic communication networks which allowing the learner to interact with that content, with colleagues and mentor, according to the standards of electronic learning and education.

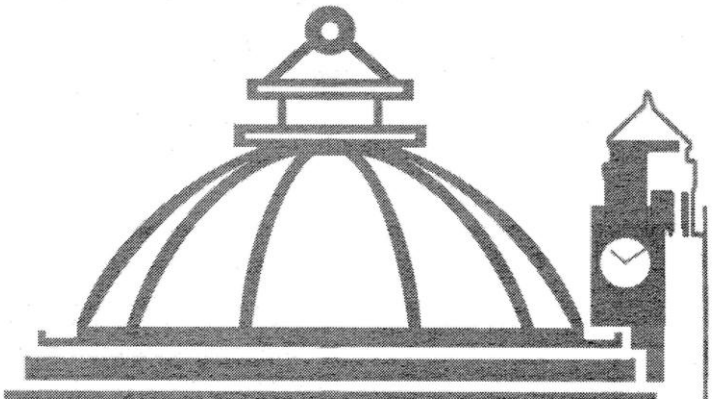
284. What do We Know and What Do We Need to Know About Arab Gulf EFL/ESL Students' Writing?

Muhammad M. Abdel Latif

Perspectives: TESOL ARABIA English Language Teaching Periodical, (2011)

Critical reviews of research related to Arab Gulf EFL/ESL students' writing can help us identify what we already know and what we need to know about their English writing needs. The study reported in this paper tried to synthesize the key findings of previous related research on this student population, show how English writing research has developed in Arab Gulf countries, and highlight the questions answered by this research and the ones left unanswered. Eighty related studies were critically reviewed. These studies investigated a variety of EFL/ESL research areas which were classifies into four categories: error and discourse analysis, instructional techniques and practices evaluation, writing process, and writing assessment. The critical review of these studies showed that while the increasing number of related studies conducted in the last three decades used a variety of quantitative and qualitative research methods, and dealt with varied issues, EFL/ESL writing research in the Arab Gulf countries is quantitatively and qualitatively still lagging far behind similar research conducted in some parts of the world such as Western Europe, North America and South-East Asia. Accordingly, there is a need for some new orientations of EFL/ESL writing research in the Arab Gulf countries. Future related studies should make use of a variety of research methods, particularly qualitative ones, and to address the neglected research area identified.

Keywords: English writing; Writing reesearch; English language teaching; ESL; EFL.



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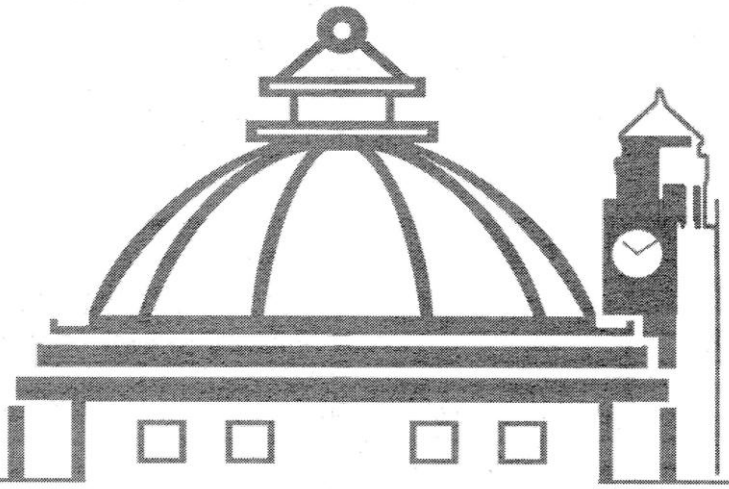

Appendix

Appendix 1

Statistical Data

List of top 10 authors according to the number of publications
(Year 2011)

Rank	Name	Faculty	No. of Pub.
1	Ahmed M. Soliman	Engineering	19
2	Olfat Gamil Shaker	Medicine	19
3	Taymour Mostafa	Medicine	16
4	Abd El-Aty Mustafa Abd El-Aty	Veterinary Medicine	14
5	Ahmed Galal Helmi	Science	13
6	Tamer Mohamed Atef	Medicine	13
7	Rafat Milad Mohareb	Science	12
8	Ahmed Gumaa Ahmed Radwan	Engineering	11
9	Hisham Gaber Al-Anani	Medicine	11
10	Morteda Hassan Fakhri Shabrawi	Medicine	11
11	Maher Zaki Dmitry El-Sabba	Science	11
12	Ahmed Abdel-Rahman Abdel-Bari	Pharmacy	10

Statistical Data

List of top 10 authors according to the sum of their impact factor
(Year 2011)

Rank	Name	Faculty	Sum IF
1	Nvien Abdel Moneim Suleiman	Medicine	57.566
2	Hisham Gaber Al-Inany	Medicine	40.523
3	Ahmed Galal Helmi	Science	39.598
4	Olfat Gamil Shaker	Medicine	35.853
5	Abd El-Aty Mostafa Abd El-Aty	Veterinary Medicine	32.181
6	Sahar Abdu Salim Nasr	Medicine	31.707
7	Mona Bakr Mohammad	National Institute of Laser Enhanced Sciences	30.420
8	Tymour Mostafa Ibrahim	Medicine	24.670
9	Raafat Milad Mohareb	Science	21.572
10	Fakiha Mohammed El-Tayeb Heykal	Science	21.035
11	Mostafa Ibrahim Fakhri Abdel Hamid	Pharmacy	18.869
12	Maher Zaki Dmitry Elsaba	Science	18.053

Statistical Data

List of top 10 authors according to highest single impact factor
(Year 2011)

Rank	Name	Faculty	Max. IF
1	**Nvien Abdel Moneim Suleiman**	**Medicine**	**36.377**
2	**Sahar Abdu Salim Nasr**	**Medicine**	**25.430**
3	**Sami Abbas Madbouli**	**Science**	**10.880**
4	**Ayman Samir Mohammed Yasin**	**Pharmacy**	**9.771**
5	**Mostafa Ibrahim Fakhri Abdel Hamid**	**Pharmacy**	**9.023**
6	**Hesham Gaber Al-Inany**	**Medicine**	**8.755**
7	**Mona Bakr Muhammad**	**National Institute of Laser Enhanced Sciences**	**8.508**
8	**Yasser Mohammed Metwally Abdul Rahman**	**Pharmacy**	**7.836**
9	**Ali Yahia El-Laithi**	**Science**	**7.622**
10	**Mohammad Ali Haider**	**Pharmacy**	**7.164**
11	**Hossam Mostafa Abdel-Halim Sherif**	**Medicine**	**7.022**

Statistical Data

List of faculties with highest score of impact factor
(Year 2011)

Faculty	Count	%	Tot IF	%	Avg.	Max	Min
Science	388	25.94	533.304	28.10	1.37	10.88	0.052
Medicine	305	20.39	537.678	28.33	1.76	36.377	0.158
Engineering	175	11.70	155.536	8.19	0.89	5.101	0.158
Pharmacy	202	13.50	290.616	15.31	1.44	9.771	0.13
Agriculture	109	7.29	69.958	3.69	0.64	4.411	0.263
Veterinary Medicine	123	8.22	87.953	4.63	0.72	4.976	0.082
National Cancer Institute	35	2.34	61.089	3.22	1.75	6.188	0.682
National Institute of Laser Enhanced Sciences	28	1.87	72.917	3.84	2.60	8.508	0.347
Economics and Political Science	3	0.20	0.469	0.02	0.16	0.469	0.469
Arts	15	1.00	0.195	0.01	0.01	0.195	0.195
Statistical Studies and Research Institute	17	1.14	9.993	0.53	0.59	3	0.351
Archaeology	25	1.67	16.11	0.85	0.64	5.528	0.561
Computers and Information	31	2.07	34.124	1.80	1.10	4.877	0.545
Oral and Dental Medicine	17	1.14	20.5	1.08	1.21	3	0.77
Physical Therapy	3	0.20	5.993	0.32	2.00	2.239	1.718
Nursing	5	0.33					
Commerce	10	0.67					
Educational Studies and Research	2	0.13					
African Research and Studies Institute	3	0.20	1.535	0.08	0.51	1.535	1.535
Total	**1496**	**100**	**1897.97**	**100**			

Statistical Data

List of number of publications

(2006-2011)

Faculty	2006	2007	2008	2009	2010	2011	Total
Science	142	162	241	242	290	388	**1465**
Medicine	49	64	124	154	226	305	**922**
Engineering	56	79	109	140	131	175	**690**
Pharmacy	27	40	77	104	126	202	**576**
Agriculture	8	14	35	83	75	109	**324**
Veterinary Medicine	11	20	47	53	86	123	**340**
National Cancer Institute	9	16	16	27	37	35	**140**
National Institute of Laser Enhanced Sciences	13	11	9	21	27	28	**109**
Economics and Political Science	13	14	13	8	10	3	**61**
Arts	7	7	17	15	15	15	**76**
Statistical Studies and Research Institute	8	6	11	7	4	17	**53**
Archaeology	1	2	5	16	19	25	**68**
Computers and Information	2	3	4	11	6	31	**57**
Oral and Dental Medicine			1	15	19	17	**52**
Physical Therapy					1	3	**4**
Nursing			1	4	2	5	**12**
Commerce	4	2	1	4	6	10	**27**
Mass Communication			1		3		**4**
Educational Studies and Research					2	2	**4**
African Research and Studies Institute		1	2			3	**6**
Dar Al-Oloum	1						**1**
Total	**351**	**441**	**814**	**926**	**1089**	**1496**	**4991**

Appendix 2

Top 50 authors of Cairo University
(According to no. of publications)

Rank	Author Name	Affiliation	No. of Pub
1	**Ahmed A. Shafik**	Kasr El-Aini School of Medicine, Dept. of Surgery and Experimental Research	534
2	**Ahmed M. Soliman**	Dept. of Electronics and Communication Engineering	359
3	**Yousry M. Issa**	Dept. of Chemistry	198
4	**H. Khalifa**	Dept. of Chemistry	178
5	**Ahmed A. M. Moala**	Faculty of Agriculture, Dept. of Physics	177
6	**Hesham G. Al-Inany**	Dept. of Obstetrics and Gynecology	141
7	**Waheed A. Badawy**	Dept. of Chemistry	131
8	**Ahmad S. A. S. Shawali**	Dept. of Chemistry	127
9	**Said R. Grace**	Faculty of Engineering, Dept. of Engineering Mathematics	123
10	**Yasser M. Kadah**	Faculty of Engineering, Dept. of Biomedical Engineering	119
11	**Gehad Genidy Mohamed**	Dept. of Chemistry	103
12	**A. M. Abd El-Aty**	Dept. of Pharmacology	100
13	**Shafik, Ismail A. Ismail A.**	Kasr El-Aini School of Medicine, Dept. of Surgery and Experimental Research	99
14	**Amir F. Atiya**	Faculty of Engineering, Dept. of Computer Engineering	96
15	**Badr, Yahia A. kh.**	Dept. of Physics	90
16	**Abdou Osman Abdelhamid**	Dept. of Chemistry	89
17	**Mohamed A. Zayed**	Dept. of Chemistry	88
18	**Mohamed El-Nadi**	Dept. of Physics	85
19	**Kamal Mohammed Dawood**	Dept. of Chemistry	82
20	**Fathy A. Abdel-Ghaffar**	Cairo University, Department of Zoology	78
21	**Amr Amin Adly**	Faculty of Engineering, Electrical Power and Machines Department	78
22	**Mohamed T. Khayyal**	Faculty of Pharmacy, Dept. of Pharmacology	75
23	**Rashika R. El Ridi**	Faculty of Science, Dept. of Zoology	74
24	**Taymour Mostafa**	Kasr El-Aini School of Medicine, Faculty of Medicine	74

Rank	Author Name	Affiliation	No. of Pub
25	**Mohammed Talaat Abdel Aziz**	Faculty of Pharmacy, Departments of Pharmacology and Toxicology	73
26	**Magdy W. Sabaa**	Dept. of Chemistry	71
27	**Hussien M. Khaled**	National Cancer Institute	69
28	**Maher Zaki Elsabee**	Dept. of Chemistry	68
29	**Ahmad M. Farag**	Dept. of Chemistry	67
30	**Gamal Esmat**	Kasr El-Aini School of Medicine	67
31	**Mohamed Abdel Harith**	Natl. Inst. of Laser Enhanced Sci.	76
32	**Rafat Milad Mohareb**	Dept. of Chemistry	66
33	**Elshafei, Abdel Latif**	Electrical Power and Machines Dept.	63
34	**Samir I. Shaheen**	Faculty of Engineering, Dept. of Computer Engineering	62
35	**Olfat Gamil Shaker**	Dept. of Biochemistry	62
36	**Amr M. Shaarawi**	Faculty of Engineering, Dept. of Engineering Mathematics	61
37	**Abdel Rahman Zekri**	National Cancer Institute	61
38	**Ahmed A. Soliman**	Dept. of Chemistry	60
39	**Rany M. Shamloul**	Dept. of Andrology	59
40	**Mohamed Shaarawy**	Kasr El-Aini School of Medicine, Dept. of Obstetrics and Gynecology	59
41	**Rashad S. Barsoum**	Cairo Kidney Center	55
42	**El- Tawil, Magdy A.**	Faculty of Engineering, Dept. of Engineering Mathematics	54
43	**Samy A. Madbouly**	Dept. of Chemistry	54
44	**Sherif Mourad Sherif**	National Research Council Canada, Institute for Microstructural Sciences	52
45	**Youssef F. Rashed**	Dept. of Structural Engineering	51
46	**Nadia Ahmed Mohamed**	Dept. of Chemistry	47
47	**Mohamed Saada El-Deab**	Faculty of Science, Dept. of Chemistry	46
48	**Ahmed H. H. Elghandour**	Dept. of Chemistry	44
49	**Ahmed Mohamed Galal**	Dept. of Chemistry	44
50	**Mohamed Mahmoud Abdel-Kader**	Dept. of Physics	35

Top 50 authors of Cairo University
(According to total no. of citations)

Rank	Author Name	Affiliation	Tot. Citation
1	**Ahmed A. Shafik**	Kasr El-Aini School of Medicine, Dept. of Surgery and Experimental Research	3197
2	**Ismail, M. Y.**	Faculty of Science, Department of Physics	1695
3	**Ahmed M. Soliman**	Faculty of Engineering, Dept. of Electronics and Communication Engineering	1387
4	**Said S. E. H. Elnashaie**	Dept. of Chemical Engineering	1373
5	**Amir F. Atiya**	Faculty of Engineering, Dept. of Computer Engineering	1333
6	**Waheed A. Badawy**	Dept. of Chemistry	1328
7	**Hesham G. Al-Inany**	Dept. of Obstetrics and Gynecology	1238
8	**Mohamed Saada El-Deab**	Faculty of Science, Dept. of Chemistry	1205
9	**Yousry M. Issa**	Faculty of Science, Department of Chemistry	1150
10	**Ahmed A. M. Moala**	Faculty of Agriculture, Dept. of Physics	1049
11	**Aziz, Ramy K.**	Cairo University Faculty of Phamacy	1001
12	**Ahmad S. A. S. Shawali**	Dept. of Chemistry	995
13	**Gehad Genidy Mohamed**	Dept. of Chemistry	992
14	**Farag, Mohamed Ali**	Cairo University Pharmacognosy Department	950
15	**Hussien M. Khaled**	Department of Medical Oncology	930
16	**Rabab M. Gaafar**	National Cancer Institute	843
17	**Kamal Mohammed Dawood**	Dept. of Chemistry	843
18	**Rashad S. Barsoum**	Cairo Kidney Center	752
19	**Mohamed Mohamed Shoukry**	University of Erlangen-Nuremberg, Institute of Inorganic Chemistry	748
20	**Ahmad M. Farag**	Dept. of Chemistry	682
21	**Gamal Esmat**	Kasr El-Aini School of Medicine	677
22	**Said R. Grace**	Faculty of Engineering, Dept. of Engineering Mathematics	661
23	**Mohamed Shaarawy**	Kasr El-Aini School of Medicine, Dept. of Obstetrics and Gynecology	632
24	**A. M. Abd El-Aty**	Dept. of Pharmacology	617
25	**Magdy W. Sabaa**	Dept. of Chemistry	604
26	**Khaled M. Ismail**	Dept. of Chemistry	639
27	**Yasser M. Kadah**	Faculty of Engineering, Dept. of Biomedical Engineering	585

Rank	Author Name	Affiliation	Tot. Citation
28	**Ahmed Mohamed Galal**	Dept. of Chemistry	547
29	**Rashika R. El Ridi**	Faculty of Science, Dept. of Zoology	538
30	**Ayman Wahba Erian**	Faculty of Science, Dept. of Chemistry	513
31	**Samy A. Madbouly**	Dept. of Chemistry	510
32	**Nadia Ahmed Mohamed**	Dept. of Chemistry	501
33	**Taymour Mostafa**	Kasr El-Aini School of Medicine, Faculty of Medicine	491
34	**Abdel Rahman Zekri**	National Cancer Institute	486
35	**Rany M. Shamloul**	Dept. of Andrology	478
36	**Mohamed T. Khayyal**	Faculty of Pharmacy, Dept. of Pharmacology	471
37	**Maher Zaki Elsabee**	Dept. of Chemistry	471
38	**Ahmed A Soliman**	Dept. of Chemistry	465
39	**Nadia Mokhtar**	National Cancer Institute	435
40	**Nour Tawfik Abdel-Ghani**	Faculty of Science, Dept. of Chemistry	435
41	**Radwan S. Farag**	Dept. of Biochemistry	432
42	**Amr Amin Adly**	Faculty of Engineering, Electrical Power and Machines Department	431
43	**Mohamed Abdel Harith**	Natl. Inst. of Laser Enhanced Sci.	413
44	**Mohamed A. Zayed**	Dept. of Chemistry	398
45	**Badr, Yahia A kh**	Dept. of Physics	394
46	**Amal El-Beshlawy**	Dept. of Biochemistry, Genetics and Molecular Biology	383
47	**Sherif Mourad Sherif**	National Research Council Canada, Institute for Microstructural Sciences	383
48	**Rafat Milad Mohareb**	Dept. of Chemistry	365
49	**Hala G. El-Shobaky**	Faculty of Science, Dept. of Chemistry	327
50	**Olfat Gamil Shaker**	Dept. of Biochemistry	262
51	**Elshafei, Abdel Latif**	Electrical Power and Machines Dept.	235

Top 50 authors of Cairo University
(According to h-index)

Rank	Author Name	Affiliation	h-index
1	**Ahmed M. Soliman**	Faculty of Engineering, Dept. of Electronics and Communication Engineering	25
2	**Gehad Genidy Mohamed**	Dept. of Chemistry	20
3	**Hesham G. Al-Inany**	Dept. of Obstetrics and Gynecology	19
4	**Mohamed Saada El-Deab**	Faculty of Science, Dept. of Chemistry	19
5	**Ahmed A. Shafik**	Kasr El-Aini School of Medicine, Dept. of Surgery and Experimental Research	18
6	**Hussien M. Khaled**	National Cancer Institute	18
7	**Yousry M. Issa**	Dept. of Chemistry	18
	Ismail, M. Y.	Faculty of Science, Department of Physics	18
8	**Kamal Mohammed Dawood**	Dept. of Chemistry	17
9	**Waheed A. Badawy**	Dept. of Chemistry	16
10	**Mohamed Shaarawy**	Kasr El-Aini School of Medicine, Dept. of Obstetrics and Gynecology	16
11	**Said S. E. H. Elnashaie**	Dept. of Chemical Engineering	16
12	**Ahmad M. Farag**	Dept. of Chemistry	15
13	**Abdel Rahman Zekri**	National Cancer Institute	15
14	**Ahmad S. A. S. Shawali**	Dept. of Chemistry	15
15	**Ahmed Mohamed Galal**	Dept. of Chemistry	14
16	**Ramy K. Aziz**	Cairo University Faculty of Phamacy	14
17	**Ahmed A. M. Moala**	Faculty of Agriculture, Dept. of Physics	14
18	**Farag, Mohamed Ali**	Cairo University Pharmacognosy Department	14
19	**Khaled M. Ismail**	Dept. of Chemistry	14
20	**Fawzy A. Attaby**	Dept. of Chemistry	14
21	**Amir F. Atiya**	Faculty of Engineering, Dept. of Computer Engineering	13
22	**Mohamed Mohamed Shoukry**	University of Erlangen-Nuremberg, Institute of Inorganic Chemistry	13
23	**Magdy W. Sabaa**	Dept. of Chemistry	13
24	**Samy A. Madbouly**	Dept. of Chemistry	13
25	**Rany M. Shamloul**	Dept. of Andrology	13
27	**A. M. Abd El-Aty**	Dept. of Pharmacology	13

Rank	Author Name	Affiliation	h-index
28	**Nadia Ahmed Mohamed**	Dept. of Chemistry	13
29	**Gamal Esmat**	Kasr El-Aini School of Medicine, Faculty of Medicine	12
30	**Rabab M. Gaafar**	National Cancer Institute	12
31	**Rashad S. Barsoum**	Cairo Kidney Center	12
32	**Rashika R. El Ridi**	Faculty of Science, Dept. of Zoology	12
33	**Taymour Mostafa**	Kasr El-Aini School of Medicine, Faculty of Medicine	12
34	**Mohamed A. Zayed**	Dept. of Chemistry	12
35	**A. H. M. Elwahy**	Dept. of Chemistry	11
36	**Yasser M. Kadah**	Faculty of Engineering, Dept. of Biomedical Engineering	11
37	**Said R. Grace**	Faculty of Engineering, Dept. of Engineering Mathematics	11
38	**Barsoum, B. Barsoum**	Department of Chemistry	11
39	**Badr, Yahia A. kh.**	Dept. of Physics	11
40	**Ahmed A. Soliman**	Dept. of Chemistry	11
41	**Olfat Gamil Shaker**	Dept. of Biochemistry	10
42	**Youssef F. Rashed**	Dept. of Structural Engineering	10
43	**Hala G. El-Shobaky**	Faculty of Science, Dept. of Chemistry	10
44	**Abdel-Ghani, Nour Tawfik**	Dept. of Chemistry	10
45	**Doha, Eid H.**	Dept. of Mathematics	10
46	**Mohamed Abdel Harith**	Natl. Inst. of Laser Enhanced Sci.	10
47	**Ahmed H. H. Elghandour**	Dept. of Chemistry	9
48	**Mosselhi, A. N. Mosselhi**	Dept. of Chemistry	9
49	**Mohamed T. Khayyal**	Faculty of Pharmacy, Dept. of Pharmacology	9
50	**Elshafei, Abdel Latif**	Electrical Power and Machines Dept.	8

Appendix 3

Top 5 authors of Cairo University Faculties
(According to no. of publications from Top 50)

1- Kasr El-Aini School of Medicine,

Rank	Author Name	No. of Pub
1	**Ahmed A. Shafik**	534
2	**Hesham G. Al-Inany**	141
3	**Ismail A. Shafik**	99
4	**Taymour Mostafa**	74
5	**Mohamed Shaarawy**	59

2- Faculty of Engineering,

Rank	Author Name	No. of Pub
1	**Ahmed M. Soliman**	359
2	**Said R. Grace**	123
3	**Yasser M. Kadah**	119
4	**Amir F. Atiya**	96
5	**Amr Amin Adly**	78

3- Faculty of Science,

Rank	Author Name	No. of Pub
1	**Yousry M. Issa**	198
2	**H. Khalifa**	178
3	**Waheed A. Badawy**	131
4	**Ahmad S. A. S. Shawali**	127
5	**Gehad Genidy Mohamed**	103

4- Faculty of Pharmacy,

Rank	Author Name	No. of Pub
1	**Mohamed T. Khayyal**	75
2	**Mohammed Talaat Abdel Aziz**	73
3	**Ramy K. Aziz**	31
4	**Ahmed M. Kassem**	16

5- National Cancer Institute,

Rank	Author Name	No. of Pub
1	**Hussein M Khaled**	69
2	**Abdel Rahman N Zekri**	61
3	**Rabab M Gaafar**	31

6- Natl. Inst. of Laser Enhanced Sci.

Rank	Author Name	No. of Pub
1	**Badr, Yahia A. kh.**	90
2	**Mohammed A Harith**	76

7- Faculty of Veterinary Medicine,

Rank	Author Name	No. of Pub
1	**Ahmed A. M. Moala**	**177**
2	**A.M. Abdel Aty**	100

Top 5 authors of Cairo University Faculties (According to total no. of citations from Top 50)

1- Kasr El-Aini School of Medicine,

Rank	Author Name	Tot. Citation
1	**Ahmed A. Shafik**	3197
2	**Hesham G. Al-Inany**	1238
3	**Gamal Esmat**	677
4	**Mohamed Shaarawy**	632
5	**Taymour Mostafa**	491

2- Faculty of Engineering,

Rank	Author Name	Tot. Citation
1	**Ahmed M. Soliman**	1387
2	**Amir F. Atiya**	1333
3	**Said R. Grace**	657
4	**Yasser M. Kadah**	585
5	**Amr Amin Adly**	431

3- Faculty of Science,

Rank	Author Name	Tot. Citation
1	**Waheed A. Badawy**	1328
2	**Yousry M. Issa**	1150
3	**Gehad Genidy Mohamed**	992
4	**Ahmad S. A. S. Shawali**	990

4- National Cancer Institute,

Rank	Author Name	Tot. Citation
1	**Hussein M. Khaled**	930
2	**Rabab M. Gaafar**	843
3	**Abdel Rahman Zekri**	486
4	**Nadia Mokhtar**	435

5- Faculty of Pharmacy,

Rank	Author Name	Tot. Citation
1	**Ramy K. Aziz**	1001
2	**Mohamed T. Khayyal**	471
3	**Ahmed M. Kassem**	248

6- Natl. Inst. of Laser Enhanced Sci.,

Rank	Author Name	Tot. Citation
1	**Mohamed Abdel Harith**	413
2	**Yahia A. kh. Badr**	394

7- Faculty of Veterinary Medicine,

Rank	Author Name	Tot. Citation
1	**A.M. Abdel Aty**	617

8- Faculty of Agriculture,

Rank	Author Name	Tot. Citation
1	**Ahmed A. M. Moala**	1049

Top 5 authors of Cairo University Faculties
(According to h-index from Top 50)

1-Faculty of Engineering,

Rank	Author Name	h_Index
1	**Ahmed M. Soliman**	25
2	**Amir F. Atiya**	13
3	**Said R. Grace**	11
4	**Yasser M. Kadah**	11
5	**Youssef F. Rashed**	10

2- Faculty of Science,

Rank	Author Name	h_Index
1	**Gehad Genidy Mohamed**	20
2	**Mohamed S. El-Deab**	19
3	**Waheed A. Badawy**	16
4	**Ahmad S. A. S. Shawali**	15
5	**Ahmad M. Farag**	15

3- Kasr El-Aini School of Medicine,

Rank	Author Name	h_Index
1	**Hesham G. Al-Inany**	19
2	**Ahmed A. Shafik**	18
3	**Mohamed Shaarawy**	16
4	**Taymour Mostafa**	12
5	**Gamal Esmat**	12

4- National Cancer Institute,

Rank	Author Name	h_Index
1	**Hussein M. Khaled**	18
2	**Abdel Rahman Zekri**	15
3	**Rabab M. Gaafar**	12

5- Faculty of Pharmacy,

Rank	Author Name	h_Index
1	**Ramy K. Aziz**	14
2	**Mohamed T. Khayyal**	9
3	**Ahmed M. Kassem**	9

6- Natl. Inst. of Laser Enhanced Sci.

Rank	Author Name	h_Index
1	**Yahia A. Kh. Badr**	11
2	**Mohamed Abdel Harith**	10

7- Faculty of Veterinary Medicine,

Rank	Author Name	h_Index
1	**A. M. Abdel Aty**	13