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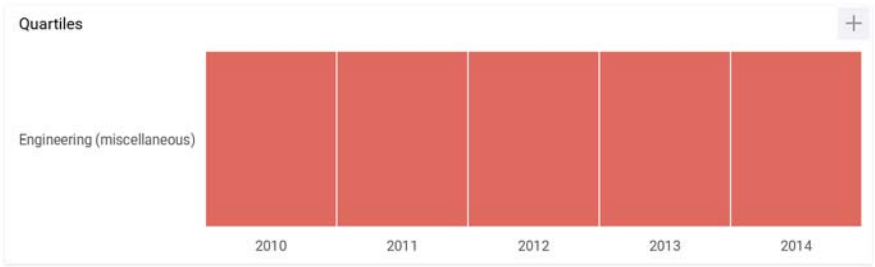

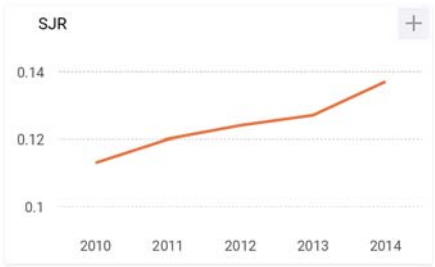

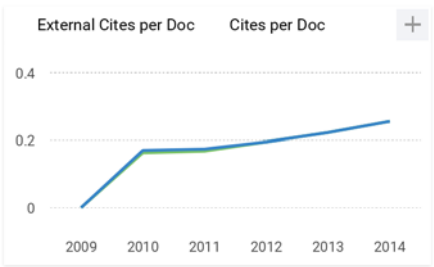

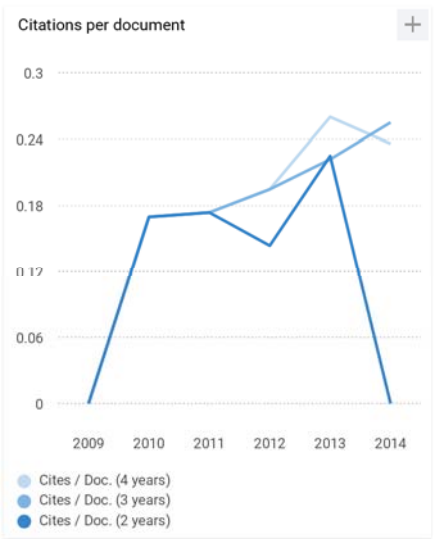

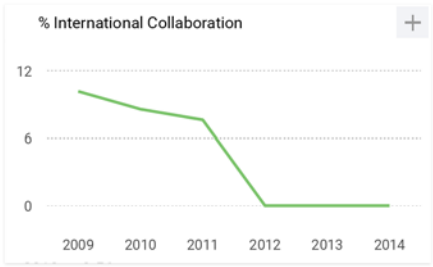

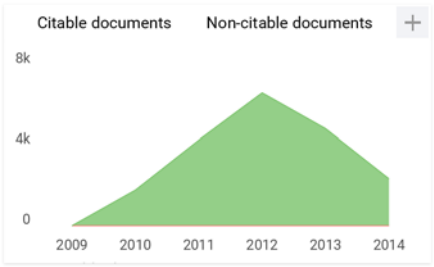

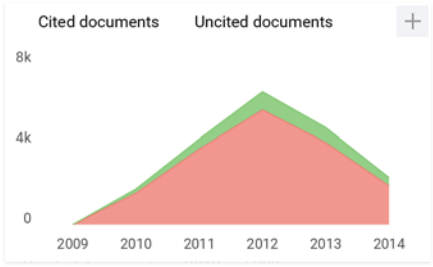

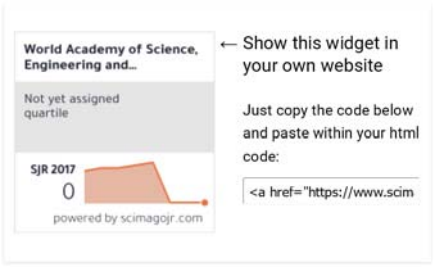

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International Science Index

Commenced in January 1999 | **Frequency**: Monthly | **Edition**: International | **Paper Count**: 228

228 An Empirical Validation of the Linear- Hyperbolic Approximation of the I-V Characteristic of a Solar Cell Generator

Authors: A. A. Penin

Abstract:
An empirical linearly-hyperbolic approximation of the I - V characteristic of a solar cell is presented. This approximation is based on hyperbolic dependence of a current of p-n junctions on voltage for large currents. Such empirical approximation is compared with the early proposed formal linearly-hyperbolic approximation of a solar cell. The expressions defining laws of change of parameters of formal approximation at change of a photo current of family of characteristics are received. It allows simplifying a finding of parameters of approximation on actual curves, to specify their values. Analytical calculation of load regime for linearly - hyperbolic model leads to quadratic equation. Also, this model allows to define soundly a deviation from the maximum power regime and to compare efficiency of regimes of solar cells with different parameters.

Keywords: a solar cell generator, I − V characteristic, p − n junction, approximation

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/5024

227 Clustering based Voltage Control Areas for Localized Reactive Power Management in Deregulated Power System

Authors: Saran Satsangi, Ashish Saini, Amit Saraswat

Abstract: In this paper, a new K-means clustering based approach for identification of voltage control areas is developed. Voltage control areas are important for efficient reactive power management in power systems operating under deregulated environment. Although, voltage control areas are formed using conventional hierarchical clustering based method, but the present paper investigate the capability of K-means clustering for the purpose of forming voltage control areas. The proposed method is tested and compared for IEEE 14 bus and IEEE 30 bus systems. The results show that this K-means based method is competing with conventional hierarchical approach

Keywords: Voltage control areas, reactive power management, K-means clustering algorithm

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7514

226 A Novel System of Two Coupled Equations for the Longitudinal Components of the Electromagnetic Field in a Waveguide

Authors: Arti Vaish, Harish Parthasarathy

Abstract: In this paper, a novel wave equation for electromagnetic waves in a medium having anisotropic permittivity has been derived with the help of Maxwell-s curl equations. The x and y components of the Maxwell-s equations are written with the permittivity ( ) being a 3 × 3 symmetric matrix. These equations are solved for Ex , Ey, Hx, Hy in terms of Ez, Hz, and the partial derivatives. The Z components of the Maxwell-s curl are then used to arrive to the generalized Helmholtz equations for Ez and Hz.

Keywords: Electromagnetism, Maxwell's Equations, Anisotropic permittivity, Wave equation, Matrix Equation, Permittivity tensor.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4089

225 On an Open Problem for Definable Subsets of Covering Approximation Spaces

Authors: Mei He, Ying Ge, Jingyu Qian

Abstract: Let (U;D) be a Gr-covering approximation space (U; C) with covering lower approximation operator D and covering upper approximation operator D. For a subset X of U, this paper investigates the following three conditions: (1) X is a definable subset of (U;D); (2) X is an inner definable subset of (U;D); (3) X is an outer definable subset of (U;D). It is proved that if one of the above three conditions holds, then the others hold. These results give a positive answer of an open problem for definable subsets of covering approximation spaces.

Keywords: Covering approximation space, covering approximation operator, definable subset, inner definable subset, outer definable subset.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7038

224 Intuitionistic Fuzzy Points in Semigroups

Authors: Sujit Kumar Sardar Manasi Mandal Samit Kumar Majumder

Abstract: The notion of intuitionistic fuzzy sets was introduced by Atanassov as a generalization of the notion of fuzzy sets. Y.B. Jun and S.Z. Song introduced the notion of intuitionistic fuzzy points. In this paper we find some relations between the intuitionistic fuzzy ideals of a semigroup S and the set of all intuitionistic fuzzy points of S.

Keywords: Semigroup, Regular(intra-regular) semigroup, Intuitionistic fuzzy point, Intuitionistic fuzzy subsemigroup, Intuitionistic fuzzy ideal, Intuitionistic fuzzy interior ideal, Intuitionistic fuzzy semiprime ideal, Intuitionistic fuzzy prime ideal.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8848

223 Iterative Methods for Computing the Weighted Minkowski Inverses of Matrices in Minkowski Space

Authors: Xiaoji Liu, Yonghui Qin

Abstract:
In this note, we consider a family of iterative formula for computing the weighted Minskowski inverses A M,N in Minskowski space, and give two kinds of iterations and the necessary and sufficient conditions of the convergence of iterations.

Keywords: iterative method, the Minskowski inverse, A

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11012

222 Analytical Solution for the Zakharov-Kuznetsov Equations by Differential Transform Method

Authors: Saeideh Hesam, Alireza Nazemi, Ahmad Haghbin

Abstract:
This paper presents the approximate analytical solution of a Zakharov-Kuznetsov ZK(m, n, k) equation with the help of the differential transform method (DTM). The DTM method is a powerful and efficient technique for finding solutions of nonlinear equations without the need of a linearization process. In this approach the solution is found in the form of a rapidly convergent series with easily computed components. The two special cases, ZK(2,2,2) and ZK(3,3,3), are chosen to illustrate the concrete scheme of the DTM method in ZK(m, n, k) equations. The results demonstrate reliability and efficiency of the proposed method.

Keywords: Zakharov-Kuznetsov equation, differential transform method, closed form solution.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2172

221 On the Fuzzy Difference Equation xn+1 = A +

Authors: Qianhong Zhang, Lihui Yang, Daixi Liao

Abstract:
In this paper, we study the existence, the boundedness and the asymptotic behavior of the positive solutions of a fuzzy nonlinear difference equations xn+1 = A + k i=0 Bi xn-i , n= 0, 1, · · · . where (xn) is a sequence of positive fuzzy numbers, A,Bi and the initial values x-k, x-k+1, · · · , x0 are positive fuzzy numbers. k ∈ {0, 1, 2, · · ·}.

Keywords: Fuzzy difference equation, boundedness, persistence, equilibrium point, asymptotic behaviour.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1158

220 Non-Polynomial Spline Method for the Solution of Problems in Calculus of Variations

Authors: M. Zarebnia, M. Hoshyar, M. Sedaghati

Abstract: In this paper, a numerical solution based on nonpolynomial cubic spline functions is used for finding the solution of boundary value problems which arise from the problems of calculus of variations. This approximation reduce the problems to an explicit system of algebraic equations. Some numerical examples are also given to illustrate the accuracy and applicability of the presented method.

Keywords: Calculus of variation; Non-polynomial spline functions; Numerical method

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6590

219 Physico-Chemical Environment of Coastal Areas in the Vicinity of Lbod And Tidal Link Drain in Sindh, Pakistan after Cyclone 2a

Authors: Salam Khalid Al-Agha, Inamullah Bhatti, Hossam Adel Zaqoot, Shaukat Hayat Khan, Abdul Khalique Ansari

Abstract: This paper presents the results of preliminary assessment of water quality along the coastal areas in the vicinity of Left Bank Outfall Drainage (LBOD) and Tidal Link Drain (TLD) in Sindh province after the cyclone 2A occurred in 1999. The water samples were collected from various RDs of Tidal Link Drain and lakes during September 2001 to April 2002 and were analysed for salinity, nitrite, phosphate, ammonia, silicate and suspended material in water. The results of the study showed considerable variations in water quality depending upon the location along the coast in the vicinity of LBOD and RDs. The salinity ranged between 4.39–65.25 ppt in Tidal Link Drain samples whereas 2.4–38.05 ppt in samples collected from lakes. The values of suspended material at various RDs of Tidal Link Drain ranged between 56.6–2134 ppm and at the lakes between 68–297 ppm. The data of continuous monitoring at RD–93 showed the range of PO4 (8.6–25.2 µg/l), SiO3 (554.96–1462 µg/l), NO2 (0.557.2–25.2 µg/l) and NH3 (9.38–23.62 µg/l). The concentration of nutrients in water samples collected from different RDs was found in the range of PO4 (10.85 to 11.47 µg/l), SiO3 (1624 to 2635.08 µg/l), NO2 (20.38 to 44.8 µg/l) and NH3 (24.08 to 26.6 µg/l). Sindh coastal areas which situated at the north-western boundary the Arabian Sea are highly vulnerable to flood damages due to flash floods during SW monsoon or impact of sea level rise and storm surges coupled with cyclones passing through Arabian Sea along Pakistan coast. It is hoped that the obtained data in this study would act as a database for future investigations and monitoring of LBOD and Tidal Link Drain coastal waters.

Keywords: Tidal Link Drain, Salinity, Nutrients, Nitrite salts, Coastal areas.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1402

218 Effect of Superplasticizer and NaOH Molarity on Workability, Compressive Strength and Microstructure Properties of Self-Compacting Geopolymer Concrete

Authors: M. Fadhil Nuruddin, Samuel Demie, M. Fareed Ahmed, Nasir Shafiq

Abstract:
The research investigates the effects of super plasticizer and molarity of sodium hydroxide alkaline solution on the workability, microstructure and compressive strength of self compacting geopolymer concrete (SCGC). SCGC is an improved way of concreting execution that does not require compaction and is made by complete elimination of ordinary Portland cement content. The parameters studied were superplasticizer (SP) dosage and molarity of NaOH solution. SCGC were synthesized from low calcium fly ash, activated by combinations of sodium hydroxide and sodium silicate solutions, and by incorporation of superplasticizer for self compactability. The workability properties such as filling ability, passing ability and resistance to segregation were assessed using slump flow, T-50, V-funnel, L-Box and J-ring test methods. It was found that the essential workability requirements for self compactability according to EFNARC were satisfied. Results showed that the workability and compressive strength improved with the increase in superplasticizer dosage. An increase in strength and a decrease in workability of these concrete samples were observed with the increase in molarity of NaOH solution from 8M to 14M. Improvement of interfacial transition zone (ITZ) and micro structure with the increase of SP and increase of concentration from 8M to 12M were also identified.

Keywords: Compressive strength, Fly ash, Geopolymer concrete, Workability

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6346

217 Flat Miniature Heat Pipes for Electronics Cooling: State of the Art, Experimental and Theoretical Analysis

Authors: M.C. Zaghdoudi, S. Maalej, J. Mansouri, M.B.H. Sassi

Abstract: An experimental study is realized in order to verify the Mini Heat Pipe (MHP) concept for cooling high power dissipation electronic components and determines the potential advantages of constructing mini channels as an integrated part of a flat heat pipe. A Flat Mini Heat Pipe (FMHP) prototype including a capillary structure composed of parallel rectangular microchannels is manufactured and a filling apparatus is developed in order to charge the FMHP. The heat transfer improvement obtained by comparing the heat pipe thermal resistance to the heat conduction thermal resistance of a copper plate having the same dimensions as the tested FMHP is demonstrated for different heat input flux rates. Moreover, the heat transfer in the evaporator and condenser sections are analyzed, and heat transfer laws are proposed. In the theoretical part of this work, a detailed mathematical model of a FMHP with axial microchannels is developed in which the fluid flow is considered along with the heat and mass transfer processes during evaporation and condensation. The model is based on the equations for the mass, momentum and energy conservation, which are written for the evaporator, adiabatic, and condenser zones. The model, which permits to simulate several shapes of microchannels, can predict the maximum heat transfer capacity of FMHP, the optimal fluid mass, and the flow and thermal parameters along the FMHP. The comparison between experimental and model results shows the good ability of the numerical model to predict the axial temperature distribution along the FMHP.

Keywords: Electronics Cooling, Micro Heat Pipe, Mini Heat Pipe, Mini Heat Spreader, Capillary grooves.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10387

216 Delay-Dependent H∞ Performance Analysis for Markovian Jump Systems with Time-Varying Delays

Authors: Yucai Ding, Hong Zhu, Shouming Zhong, Yuping Zhang

Abstract:
This paper considers H∞ performance for Markovian jump systems with Time-varying delays. The systems under consideration involve disturbance signal, Markovian switching and timevarying delays. By using a new Lyapunov-Krasovskii functional and a convex optimization approach, a delay-dependent stability condition in terms of linear matrix inequality (LMI) is addressed, which guarantee asymptotical stability in mean square and a prescribed H∞ performance index for the considered systems. Two numerical examples are given to illustrate the effectiveness and the less conservatism of the proposed main results. All these results are expected to be of use in the study of stochastic systems with time-varying delays.

Keywords: H∞ performance, Markovian switching, Delaydependent stability, Linear matrix inequality (LMI)

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8107

215 Differential Sensitivity of Nitrogen-Fixing, Filamentous Cyanobacterial Species to an Organochlorine Insecticide - 6, 7, 8, 9, 10, 10-Hexachloro-1, 5, 5a, 6, 9, 9a-Hexahydro-6, 9- Methano-2, 4, 3-Benzodioxathiepine-3-Oxide

Authors: Nirmal J.I. Kumar, Anubhuti A. Bora, Manmeet K. Amb

Abstract: Application of pesticides in the paddy fields has deleterious effects on non-target organisms including cyanobacteria which are photosynthesizing and nitrogen fixing micro-organisms contributing significantly towards soil fertility and crop yield. Pesticide contamination in the paddy fields has manifested into a serious global environmental concern. To study the effect of one such pesticide, three cyanobacterial strains; Anabaena fertilissima, Aulosira fertilissima and Westiellopsis prolifica were selected for their stress responses to an Organochlorine insecticide - 6, 7, 8, 9, 10, 10-hexachloro-1, 5, 5a, 6, 9, 9a-hexahydro-6, 9-methano-2, 4, 3- benzodioxathiepine-3-oxide, with reference to their photosynthesic pigments-chlorophyll-a and carotenoids as well as accessory pigments-phycobiliproteins (phycocyanin, allophycocyanin and phycoerythrin), stress induced biochemical metabolites like carbohydrates, proteins, amino acids, phenols and enzymes-nitrate reductase, glutamine synthetase and succinate dehydrogenase. All the three cyanobacterial strains were adversely affected by the insecticide doses and inhibition was dose dependent. Reduction in photosynthetic and accessory pigments, metabolites, nitrogen fixing and respiratory enzymes of the test organisms were accompanied with an initial increase in their total protein at lower Organochlorine doses. On the other hand, increased amount of phenols in all the insecticide treated concentrations was indicative of stressed activities of the organisms.

Keywords: biochemical metabolites, endosulfan, enzymes, pigments

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1309

214 Definable Subsets in Covering Approximation Spaces

Authors: Xun Ge, Zhaowen Li

Abstract: Covering approximation spaces is a class of important generalization of approximation spaces. For a subset X of a covering approximation space (U, C), is X definable or rough? The answer of this question is uncertain, which depends on covering approximation operators endowed on (U, C). Note that there are many various covering approximation operators, which can be endowed on covering approximation spaces. This paper investigates covering approximation spaces endowed ten covering approximation operators respectively, and establishes some relations among definable subsets, inner definable subsets and outer definable subsets in covering approximation spaces, which deepens some results on definable subsets in approximation spaces.

Keywords: Covering approximation space, covering approximation operator, definable subset, inner definable subset, outer definable subset.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7856

213 Periodic Solutions for a Higher Order Nonlinear Neutral Functional Differential Equation

Authors: Yanling Zhu

Abstract:
In this paper, a higher order nonlinear neutral functional differential equation with distributed delay is studied by using the continuation theorem of coincidence degree theory. Some new results on the existence of periodic solutions are obtained.

Keywords: Neutral functional differential equation, higher order, periodic solution, coincidence degree theory.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15240

212 Comparison Results of Two-point Fuzzy Boundary Value Problems

Authors: Hsuan-Ku Liu

Abstract:
This paper investigates the solutions of two-point fuzzy boundary value problems as the form x = f(t, x(t)), x(0) = A and x(l) = B, where A and B are fuzzy numbers. There are four different solutions for the problems when the lateral type of H-derivative is employed to solve the problems. As f(t, x) is a monotone function of x, these four solutions are reduced to two different solutions. As f(t, x(t)) = λx(t) or f(t, x(t)) = -λx(t), solutions and several comparison results are presented to indicate advantages of each solution.

Keywords: Fuzzy derivative, lateral type of H-derivative, fuzzy differential equations, fuzzy boundary value problems, boundary value problems.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4449

211 On Certain Estimates Of Rough Oscillatory Singular Integrals

Authors: H. M. Al-Qassem

Abstract:

We obtain appropriate sharp estimates for rough oscillatory integrals. Our results represent significant improvements as well as natural extensions of what was known previously.

Keywords: Oscillatory singular integral, Rough kernel, Singular integral, L^{p} boundedness.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12303

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210 Use of Cell Phone by Farmers and its Implication on Farmers- Production Capacity in Oyo State Nigeria

Authors: Bolarinwa, K. K., Oyeyinka, R. A.

Abstract: Relevant agricultural information disseminator (extension agent) ratio of 1:3500 farm families which become a menace to agricultural production capacity in developing countries necessitate this study. Out of 4 zones in the state, 24 extension agents in each zone, 4 extension agents using cell phones and 120 farmers using cell phone and 120 other farmers not using cell phone were purposively selected to give 240 farmers that participated in the research. Data were collected using interview guide and analysed using frequency, percentage and t-test.. Frequency of contact with agricultural information centers revealed that cell phone user farmers had greater means score of X 41.43 contact as against the low mean X19.32 contact recorded by farmers receiving agricultural information from extension agents not using cell phone and their production was statistically significant at $P < 0.05$. Usage of cell phone increase extension agent contact and increase farmers- production capacity.

Keywords: Cell phone, contact, extension agents and production.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11792

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209 Exterior Calculus: Economic Growth Dynamics

Authors: Troy L. Story

Abstract:
Mathematical models of dynamics employing exterior calculus are mathematical representations of the same unifying principle; namely, the description of a dynamic system with a characteristic differential one-form on an odd-dimensional differentiable manifold leads, by analysis with exterior calculus, to a set of differential equations and a characteristic tangent vector (vortex vector) which define transformations of the system. Using this principle, a mathematical model for economic growth is constructed by proposing a characteristic differential one-form for economic growth dynamics (analogous to the action in Hamiltonian dynamics), then generating a pair of characteristic differential equations and solving these equations for the rate of economic growth as a function of labor and capital. By contracting the characteristic differential one-form with the vortex vector, the Lagrangian for economic growth dynamics is obtained.

Keywords: Differential geometry, exterior calculus, Hamiltonian geometry, mathematical economics.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3779

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208 Controlled Synchronization of an Array of Nonlinear System with Time Delays

Authors: S.M. Lee, J.H. Koo, J.H. Park, S.C. Won

Abstract:
In this paper, we propose synchronization of an array of nonlinear systems with time delays. The array of systems is decomposed into isolated systems to establish appropriate Lyapunov¬Krasovskii functional. Using the Lyapunov-Krasovskii functional, a sufficient condition for the synchronization is derived in terms of LMIs(Linear Matrix Inequalities). Delayed feedback control gains are obtained by solving the sufficient condition. Numerical examples are given to show the validity the proposed method.

Keywords: Synchronization, Delay, Lyapunov method, LMI.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2056

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207 Computational Identification of MicroRNAs and their Targets in two Species of Evergreen Spruce Tree (Picea)

Authors: Muhammad Y.K. Barozai, Ifthikhar A. Baloch, M. Din

Abstract: MicroRNAs (miRNAs) are small, non-coding and regulatory RNAs about 20 to 24 nucleotides long. Their conserved nature among the various organisms makes them a good source of new miRNAs discovery by comparative genomics approach. The study resulted in 21 miRNAs of 20 pre-miRNAs belonging to 16 families (miR156, 157, 158, 164, 165, 168, 169, 172, 319, 390, 393, 394, 395, 400, 472 and 861) in evergreen spruce tree (Picea). The miRNA families; miR 157, 158, 164, 165, 168, 169, 319, 390, 393, 394, 400, 472 and 861 are reported for the first time in the Picea. All 20 miRNA precursors form stable minimum free energy stem-loop structure as their orthologues form in Arabidopsis and the mature miRNA reside in the stem portion of the stem loop structure. Sixteen (16) miRNAs are from Picea glauca and five (5) belong to Picea sitchensis. Their targets consist of transcription factors, growth related, stressed related and hypothetical proteins.

Keywords: BLAST, Comparative Genomics, Micro-RNAs, Spruce

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2964

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206 Optimal Control of Piezo-Thermo-Elastic Beams

Authors: Marwan Abukhaled, Ibrahim Sadek

Abstract:
This paper presents the vibrations suppression of a thermoelastic beam subject to sudden heat input by a distributed piezoelectric actuators. An optimization problem is formulated as the minimization of a quadratic functional in terms of displacement and velocity at a given time and with the least control effort. The solution method is based on a combination of modal expansion and variational approaches. The modal expansion approach is used to convert the optimal control of distributed parameter system into the optimal control of lumped parameter system. By utilizing the variational approach, an explicit optimal control law is derived and the determination of the corresponding displacement and velocity is reduced to solving a set of ordinary differential equations.

Keywords: Optimal control, Thermoelastic beam, variational approach, modal expansion approach

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9408

205 Mechanical Behaviour Analysis of Polyester Polymer Mortars Modified with Recycled GFRP Waste Materials

Authors: M.C.S. Ribeiro, J.P. Meixedo, A. Fiúza, M.L. Dinis, Ana C. Meira Castro, F.J.G. Silva, C. Costa, F. Ferreira, M.R. Alvim

Abstract: In this study the effect of incorporation of recycled glass-fibre reinforced polymer (GFRP) waste materials, obtained by means of milling processes, on mechanical behaviour of polyester polymer mortars was assessed. For this purpose, different contents of recycled GFRP waste powder and fibres, with distinct size gradings, were incorporated into polyester based mortars as sand aggregates and filler replacements. Flexural and compressive loading capacities were evaluated and found better than unmodified polymer mortars. GFRP modified polyester based mortars also show a less brittle behaviour, with retention of some loading capacity after peak load. Obtained results highlight the high potential of recycled GFRP waste materials as efficient and sustainable reinforcement and admixture for polymer concrete and mortars composites, constituting an emergent waste management solution.

Keywords: GFRP waste, Mechanical behaviour, Polymer mortars, Recyclability.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2873

204 A Optimal Subclass Detection Method for Credit Scoring

Authors: Luciano Nieddu, Giuseppe Manfredi, Salvatore D'Acunto, Katia La Regina

Abstract:
In this paper a non-parametric statistical pattern recognition algorithm for the problem of credit scoring will be presented. The proposed algorithm is based on a clustering k- means algorithm and allows for the determination of subclasses of homogenous elements in the data. The algorithm will be tested on two benchmark datasets and its performance compared with other well known pattern recognition algorithm for credit scoring.

Keywords: Constrained clustering, Credit scoring, Statistical pattern recognition, Supervised classification.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/51

203 Performance Comparison of Parallel Sorting Algorithms on the Cluster of Workstations

Authors: Lai Lai Win Kyi, Nay Min Tun

Abstract:
Sorting appears the most attention among all computational tasks over the past years because sorted data is at the heart of many computations. Sorting is of additional importance to parallel computing because of its close relation to the task of routing data among processes, which is an essential part of many parallel algorithms. Many parallel sorting algorithms have been investigated for a variety of parallel computer architectures. In this paper, three parallel sorting algorithms have been implemented and compared in terms of their overall execution time. The algorithms implemented are the odd-even transposition sort, parallel merge sort and parallel rank sort. Cluster of Workstations or Windows Compute Cluster has been used to compare the algorithms implemented. The C# programming language is used to develop the sorting algorithms. The MPI (Message Passing Interface) library has been selected to establish the communication and synchronization between processors. The time complexity for each parallel sorting algorithm will also be mentioned and analyzed.

Keywords: Cluster of Workstations, Parallel sorting algorithms, performance analysis, parallel computing and MPI.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4652

202 Visualization of Code Clone Detection Results and the Implementation with Structured Data

Authors: Kazuaki Maeda

Abstract:
This paper describes a code clone visualization method, called FC graph, and the implementation issues. Code clone detection tools usually show the results in a textual representation. If the results are large, it makes a problem to software maintainers with understanding them. One of the approaches to overcome the situation is visualization of code clone detection results. A scatter plot is a popular approach to the visualization. However, it represents only one-to-one correspondence and it is difficult to find correspondence of code clones over multiple files. FC graph represents correspondence among files, code clones and

packages in Java. All nodes in FC graph are positioned using force-directed graph layout, which is dynami- cally calculated to adjust the distances of nodes until stabilizing them. We applied FC graph to some open source programs and visualized the results. In the author's experience, FC graph is helpful to grasp correspondence of code clones over multiple files and also code clones with in a file.

Keywords: code clone detection, program comprehension, software maintenance, visualization

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4659

201 PI Controller for Automatic Generation Control Based on Performance Indices

Authors: Kalyan Chatterjee

Abstract:
The optimal design of PI controller for Automatic Generation Control in two area is presented in this paper. The concept of Dual mode control is applied in the PI controller, such that the proportional mode is made active when the rate of change of the error is sufficiently larger than a specified limit otherwise switched to the integral mode. A digital simulation is used in conjunction with the Hooke-Jeeve's optimization technique to determine the optimum parameters (individual gain of proportional and integral controller) of the PI controller. Integrated Square of the Error (ISE), Integrated Time multiplied by Absolute Error(ITAE) , and Integrated Absolute Error(IAE) performance indices are considered to measure the appropriateness of the designed controller. The proposed controller are tested for a two area single nonreheat thermal system considering the practical aspect of the problem such as Deadband and Generation Rate Constraint(GRC). Simulation results show that dual mode with optimized values of the gains improved the control performance than the commonly used Variable Structure .

Keywords: Load Frequency Control, Area Control Error(ACE), Dual Mode PI Controller, Performance Index

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9616

200 Efficient and Extensible Data Processing Framework in Ubiquitious Sensor Networks

Authors: Junghoon Lee, Gyung-Leen Park, Ho-Young Kwak, Cheol Min Kim

Abstract:
This paper presents the design and implements the prototype of an intelligent data processing framework in ubiquitous sensor networks. Much focus is put on how to handle the sensor data stream as well as the interoperability between the low-level sensor data and application clients. Our framework first addresses systematic middleware which mitigates the interaction between the application layer and low-level sensors, for the sake of analyzing a great volume of sensor data by filtering and integrating to create value-added context information. Then, an agent-based architecture is proposed for real-time data distribution to efficiently forward a specific event to the appropriate application registered in the directory service via the open interface. The prototype implementation demonstrates that our framework can host a sophisticated application on the ubiquitous sensor network and it can autonomously evolve to new middleware, taking advantages of promising technologies such as software agents, XML, cloud computing, and the like.

Keywords: sensor network, intelligent farm, middleware, event detection

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7610

199 A New Approach to the Approximate Solutions of Hamilton-Jacobi Equations

Authors: Joe Imae, Kenjiro Shinagawa, Tomoaki Kobayashi, Guisheng Zhai

Abstract:
We propose a new approach on how to obtain the approximate solutions of Hamilton-Jacobi (HJ) equations. The process of the approximation consists of two steps. The first step is to transform the HJ equations into the virtual time based HJ equations (VT-HJ) by introducing a new idea of 'virtual-time'. The second step is to construct the approximate solutions of the HJ equations through a computationally iterative procedure based on the VT-HJ equations. It should be noted that the approximate feedback solutions evolve by themselves as the virtual-time goes by. Finally, we demonstrate the effectiveness of our approximation approach by means of simulations with linear and nonlinear control problems.

Keywords: Nonlinear Control, Optimal Control, Hamilton-Jacobi Equation, Virtual-Time

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/14467

198 Optimum Replacement Policies for Kuwait Passenger Transport Company Busses: Case Study

Authors: Hilal A. Abdelwali, Elsayed E.M. Ellaimony, Ahmad E.M. Murad, Jasem M.S. Al-Rajhi

Abstract:
Due to the excess of a vehicle operation through its life, some elements may face failure and deteriorate with time. This leads us to carry out maintenance, repair, tune up or full overhaul. After a certain period, the vehicle elements deteriorations increase with time which causes a very high increase of doing the maintenance operations and their costs. However, the logic decision at this point is to replace the current vehicle by a new one with minimum failure and maximum income. The importance of studying vehicle replacement problems come from the increase of stopping days due to many deteriorations in the vehicle parts. These deteriorations increase year after year causing an increase of operating costs and decrease the vehicle income. Vehicle replacement aims to determine the optimum time to keep, maintain, overhaul, renew and replace vehicles. This leads to an improvement in vehicle income, total operating costs, maintenance cost, fuel and oil costs, ton-kilometers, vehicle and engine performance, vehicle noise, vibration, and pollution. The aim of this paper is to find the optimum replacement policies of Kuwait Passenger Transport Company (KPTCP) fleet of busses. The objective of these policies is to maximize the busses pure profits. The dynamic

programming (D.P.) technique is used to generate the busses optimal replacement policies

Keywords: Replacement Problem, Automotive Replacement, Dynamic Programming, Equipment Replacement, K.P.T.C.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10913

197 On Best Estimation for Parameter Weibull Distribution

Authors: Hadeel Salim Alkutubi

Abstract:
The objective of this study is to introduce estimators to the parameters and survival function for Weibull distribution using three different methods, Maximum Likelihood estimation, Standard Bayes estimation and Modified Bayes estimation. We will then compared the three methods using simulation study to find the best one base on MPE and MSE.

Keywords: Maximum Likelihood estimation, Bayes estimation, Jeffery prior information, Simulation study

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6372

196 Variable Input Range Continuous-time Switched Current Delta-sigma Analog Digital Converter for RFID CMOS Biosensor Applications

Authors: Boram Kim, Shigeyasu Uno, Kazuo Nakazato

Abstract:
Continuous-time delta-sigma analog digital converter (ADC) for radio frequency identification (RFID) complementary metal oxide semiconductor (CMOS) biosensor has been reported. This delta-sigma ADC is suitable for digital conversion of biosensor signal because of small process variation, and variable input range. As the input range of continuous-time switched current delta-sigma ADC (Dynamic range : 50 dB) can be limited by using current reference, amplification of biosensor signal is unnecessary. The input range is switched to wide input range mode or narrow input range mode by command of current reference. When the narrow input range mode, the input range becomes ± 0.8 V. The measured power consumption is 5 mW and chip area is 0.31 mm^2 using 1.2 um standard CMOS process. Additionally, automatic input range detecting system is proposed because of RFID biosensor applications.

Keywords: continuous time, delta sigma, A/D converter, RFID, biosensor, CMOS

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2700

195 Prediction of Basic Wind Speed for Ayeyarwady

Authors: Chaw Su Mon

Abstract:
Abstract— The paper presents a preliminary study on modeling and estimation of basic wind speed (extreme wind gusts) for the consideration of vulnerability and design of building in Ayeyarwady Region. The establishment of appropriate design wind speeds is a critical step towards the calculation of design wind loads for structures. In this paper the extreme value analysis of this prediction work is based on the anemometer data (1970-2009) maintained by the department of meteorology and hydrology of Pathein. Statistical and probabilistic approaches are used to derive formulas for estimating 3-second gusts from recorded data (10-minute sustained mean wind speeds).

Keywords: Basic Wind Speed, Building, Gusts, Statistical and probabilistic approaches

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194 Fuzzy Decision Making via Multiple Attribute

Authors: Behnaz Zohouri, Mahdi Zowghiand, Mohsen haghighi

Abstract:
In this paper, a method for decision making in fuzzy environment is presented.A new subjective and objective integrated approach is introduced that used to assign weight attributes in fuzzy multiple attribute decision making (FMADM) problems and alternatives and fmally ranked by proposed method.

Keywords: Multiple Attribute Decision Making, Triangular fuzzy numbers, ranking index, Fuzzy Entropy.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1836

193 Formulation Development and Moiturising Effects of a Topical Cream of Aloe vera Extract

Authors: Akhtar N, Khan BA, Khan MS, Mahmood T, Khan HMS, Iqbal M, Bashir S

Abstract: This study was designed to formulate, pharmaceutically evaluate a topical skin-care cream (w/o emulsion) of Aloe Vera versus its vehicle (Base) as control and determine their effects on Stratum Corneum (SC) water content and Transepidermal water loss (TEWL). Base containing no extract and a Formulation

containing 3% concentrated extract of Aloe Vera was developed by entrapping in the inner aqueous phase of w/o emulsion (cream). Lemon oil was incorporated to improve the odor. Both the Base and Formulation were stored at 8°C ±0.1°C (in refrigerator), 25°C±0.1°C, 40°C±0.1°C and 40°C± 0.1°C with 75% RH (in incubator) for a period of 4 weeks to predict their stability. The evaluation parameters consisted of color, smell, type of emulsion, phase separation, electrical conductivity, centrifugation, liquefaction and pH. Both the Base and Formulation were applied to the cheeks of 21 healthy human volunteers for a period of 8 weeks Stratum corneum (SC) water content and Transepidermal water loss (TEWL) were monitored every week to measure any effect produced by these topical creams. The expected organoleptic stability of creams was achieved from 4 weeks in-vitro study period. Odor was disappeared with the passage of time due to volatilization of lemon oil. Both the Base and Formulation produced significant ($p \leq 0.05$) changes in TEWL with respect to time. SC water content was significantly ($p \leq 0.05$) increased by the Formulation while the Base has insignificant (p 0.05) effects on SC water content. The newly formulated cream of Aloe Vera, applied is suitable for improvement and quantitative monitoring of skin hydration level (SC water content/ moisturizing effects) and reducing TEWL in people with dry skin.

Keywords: Aloe Vera; Skin; Stratum corneum (SC) water content and Transepidermal water loss (TEWL).

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9843

192 A Hybrid DEA Model for the Measurement of the Enviromental Performance

Authors: A. Hadi-Vencheh, N. Shayesteh Moghadam

Abstract:
Data envelopment analysis (DEA) has gained great popularity in environmental performance measurement because it can provide a synthetic standardized environmental performance index when pollutants are suitably incorporated into the traditional DEA framework. Since some of the environmental performance indicators cannot be controlled by companies managers, it is necessary to develop the model in a way that it could be applied when discretionary and/or non-discretionary factors were involved. In this paper, we present a semi-radial DEA approach to measuring environmental performance, which consists of non-discretionary factors. The model, then, has been applied on a real case.

Keywords: Environmental performance, efficiency, non-discretionary variables, data envelopment analysis.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7083

191 A Pairwise-Gaussian-Merging Approach: Towards Genome Segmentation for Copy Number Analysis

Authors: Chih-Hao Chen, Hsing-Chung Lee, Qingdong Ling, Hsiao-Jung Chen, Sun-Chong Wang, Li-Ching Wu, H.C. Lee

Abstract: Segmentation, filtering out of measurement errors and identification of breakpoints are integral parts of any analysis of microarray data for the detection of copy number variation (CNV). Existing algorithms designed for these tasks have had some successes in the past, but they tend to be O(N2) in either computation time or memory requirement, or both, and the rapid advance of microarray resolution has practically rendered such algorithms useless. Here we propose an algorithm, SAD, that is much faster and much less thirsty for memory – O(N) in both computation time and memory requirement -- and offers higher accuracy. The two key ingredients of SAD are the fundamental assumption in statistics that measurement errors are normally distributed and the mathematical relation that the product of two Gaussians is another Gaussian (function). We have produced a computer program for analyzing CNV based on SAD. In addition to being fast and small it offers two important features: quantitative statistics for predictions and, with only two user-decided parameters, ease of use. Its speed shows little dependence on genomic profile. Running on an average modern computer, it completes CNV analyses for a 262 thousand-probe array in ~1 second and a 1.8 million-probe array in 9 seconds

Keywords: Cancer, pathogenesis, chromosomal aberration, copy number variation, segmentation analysis.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/14262

190 Simulation and Experimentation on the Contact Width of New Metal Gasket for Asbestos Substitution

Authors: Moch. Agus Choiron, Yoshihiro Kurata, Shigeyuki Haruyama, Ken Kaminishi

Abstract: The contact width is important design parameter for optimizing the design of new metal gasket for asbestos substitution gasket. The contact width is found have relationship with the helium leak quantity. In the increasing of axial load value, the helium leak quantity is decreasing and the contact width is increasing. This study provides validity method using simulation analysis and the result is compared to experimental using pressure sensitive paper. The results denote similar trend data between simulation and experimental result. Final evaluation is determined by helium leak quantity to check leakage performance of gasket design. Considering the phenomena of position change on the convex contact, it can be developed the optimization of gasket design by increasing contact width.

Keywords: contact width, simulation, pressure sensitive paper.

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189 Time Series Forecasting Using a Hybrid RBF Neural Network and AR Model Based On Binomial Smoothing

Authors: Fengxia Zheng, Shouming Zhong

Abstract:
ANNARIMA that combines both autoregressive integrated moving average (ARIMA) model and artificial neural network (ANN) model is a valuable tool for modeling and forecasting nonlinear time series, yet the over-fitting problem is more likely to occur in neural network models. This paper provides a hybrid methodology that combines both radial basis function (RBF) neural network and auto regression (AR) model based on binomial smoothing (BS) technique which

is efficient in data processing, which is called BSRBFAR. This method is examined by using the data of Canadian Lynx data. Empirical results indicate that the over-fitting problem can be eased using RBF neural network based on binomial smoothing which is called BS-RBF, and the hybrid model–BS-RBFAR can be an effective way to improve forecasting accuracy achieved by BSRBF used separately.

Keywords: Binomial smoothing (BS), hybrid, Canadian Lynx data, forecasting accuracy.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9356

188 Explicit Delay and Power Estimation Method for CMOS Inverter Driving on-Chip RLC Interconnect Load

Authors: Susmita Sahoo, Madhumanti Datta, Rajib Kar

Abstract: The resistive-inductive-capacitive behavior of long interconnects which are driven by CMOS gates are presented in this paper. The analysis is based on the ¤Ç-model of a RLC load and is developed for submicron devices. Accurate and analytical expressions for the output load voltage, the propagation delay and the short circuit power dissipation have been proposed after solving a system of differential equations which accurately describe the behavior of the circuit. The effect of coupling capacitance between input and output and the short circuit current on these performance parameters are also incorporated in the proposed model. The estimated proposed delay and short circuit power dissipation are in very good agreement with the SPICE simulation with average relative error less than 6%.

Keywords: Delay, Inverter, Short Circuit Power, ¤Ç-Model, RLCInterconnect, VLSI

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7464

187 Performance Analysis of a Dynamic Channel Reservation-Like Technique for Low Earth Orbit Mobile Satellite Systems

Authors: W. Kiamouche, S. Lasmari, M. Benslama

Abstract: In order to derive important parameters concerning mobile subscriber MS with ongoing calls in Low Earth Orbit Mobile Satellite Systems LEO MSSs, a positioning system had to be integrated into MSS in order to localize mobile subscribers MSs and track them during the connection. Such integration is regarded as a complex implementation. We propose in this paper a novel method based on advantages of mobility model of Low Earth Orbit Mobile Satellite System LEO MSS which allows the evaluation of instant of subsequent handover of a MS even if its location is unknown. This method is utilized to propose a Dynamic Channel Reservation DCRlike scheme based on the DCR scheme previously proposed in literature. Results presented show that DCR-like technique gives different QoS performance than DCR. Indeed, an improve in handover blocking probability and an increase in new call blocking probability are observed for the DCR-like technique.

Keywords: cellular layout, DCR, LEO mobile satellite system, mobility model, positioning system

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1096

186 A New Splitting H1-Galerkin Mixed Method for Pseudo-hyperbolic Equations

Authors: Yang Liu, Jinfeng Wang, Hong Li, Wei Gao, Siriguleng He

Abstract:
A new numerical scheme based on the H1-Galerkin mixed finite element method for a class of second-order pseudohyperbolic equations is constructed. The proposed procedures can be split into three independent differential sub-schemes and does not need to solve a coupled system of equations. Optimal error estimates are derived for both semidiscrete and fully discrete schemes for problems in one space dimension. And the proposed method dose not requires the LBB consistency condition. Finally, some numerical results are provided to illustrate the efficacy of our method.

Keywords: Pseudo-hyperbolic equations, splitting system, H1-Galerkin mixed method, error estimates.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9984

185 Performance Analysis of MC-SS for the Indoor BPLC Systems

Authors: Justinian Anatory

Abstract: power-line networks are promise infrastructure for broadband services provision to end users. However, the network performance is affected by stochastic channel changing which is due to load impedances, number of branches and branched line lengths. It has been proposed that multi-carrier modulations techniques such as orthogonal frequency division multiplexing (OFDM), Multi-Carrier Spread Spectrum (MC-SS), wavelet OFDM can be used in such environment. This paper investigates the performance of different indoor topologies of power-line networks that uses MC-SS modulation scheme.It is observed that when a branch is added in the link between sending and receiving end of an indoor channel an average of 2.5dB power loss is found. In additional, when the branch is added at a node an average of 1dB power loss is found. Additionally when the terminal impedances of the branch change from line characteristic impedance to impedance either higher or lower values the channel performances were tremendously improved. For example changing terminal load from characteristic impedance (85 .) to 5 . the signal to noise ratio (SNR) required to attain the same performances were decreased from 37dB to 24dB respectively. Also, changing the terminal load from channel characteristic impedance (85 .) to very higher impedance (1600 .) the SNR required to maintain the same performances were decreased from 37dB to 23dB. The result concludes that MC-SS performs better compared with OFDM techniques in all aspects and especially when the channel is terminated in either higher or lower impedances.

Keywords: Communication channel model; Broadband Powerlinecommunication; Branched network; OFDM; Delay Spread, MCSS;impulsive noise; load

impedance

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184 Applications of Entropy Measures in Field of Queuing Theory

Authors: R.K.Tuli

Abstract: In the present communication, we have studied different variations in the entropy measures in the different states of queueing processes. In case of steady state queuing process, it has been shown that as the arrival rate increases, the uncertainty increases whereas in the case of non-steady birth-death process, it is shown that the uncertainty varies differently. In this pattern, it first increases and attains its maximum value and then with the passage of time, it decreases and attains its minimum value.

Keywords: Entropy, Birth-death process, M/G/1 system, G/M/1system, Steady state, Non-steady state

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183 Performance of Subcarrier- OCDMA System with Complementary Subtraction Detection Technique

Authors: R. K. Z. Sahbudin, M. K. Abdullah, M. Mokhtar, S. B. A. Anas, S. Hitam

Abstract: A subcarrier - spectral amplitude coding optical code division multiple access system using the Khazani-Syed code with Complementary subtraction detection technique is proposed. The proposed system has been analyzed by taking into account the effects of phase-induced intensity noise, shot noise, thermal noise and intermodulation distortion noise. The performance of the system has been compared with the spectral amplitude coding optical code division multiple access system using the Hadamard code and the Modified Quadratic Congruence code. The analysis shows that the proposed system can eliminate the multiple access interference using the Complementary subtraction detection technique, and hence improve the overall system performance.

Keywords: Complementary subtraction, Khazani-Syed code, multiple access interference, phase-induced intensity noise

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182 Embedded Throughput Improving of Low-rate EDR Packets for Lower-latency

Authors: M. A. M. El-Bendary, A. E. Abu El-Azm, N. A. El-Fishawy, F. Shawky, F. E. El-Samie

Abstract: With increasing utilization of the wireless devices in different fields such as medical devices and industrial fields, the paper presents a method for simplify the Bluetooth packets with throughput enhancing. The paper studies a vital issue in wireless communications, which is the throughput of data over wireless networks. In fact, the Bluetooth and ZigBee are a Wireless Personal Area Network (WPAN). With taking these two systems competition consideration, the paper proposes different schemes for improve the throughput of Bluetooth network over a reliable channel. The proposition depends on the Channel Quality Driven Data Rate (CQDDR) rules, which determines the suitable packet in the transmission process according to the channel conditions. The proposed packet is studied over additive White Gaussian Noise (AWGN) and fading channels. The Experimental results reveal the capability of extension of the PL length by 8, 16, 24 bytes for classic and EDR packets, respectively. Also, the proposed method is suitable for the low throughput Bluetooth.

Keywords: Bluetooth, throughput, adaptive packets, EDRpackets, CQDDR, low latency. Channel condition

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181 Improving Classification in Bayesian Networks using Structural Learning

Authors: Hong Choon Ong

Abstract: Naïve Bayes classifiers are simple probabilistic classifiers. Classification extracts patterns by using data file with a set of labeled training examples and is currently one of the most significant areas in data mining. However, Naïve Bayes assumes the independence among the features. Structural learning among the features thus helps in the classification problem. In this study, the use of structural learning in Bayesian Network is proposed to be applied where there are relationships between the features when using the Naïve Bayes. The improvement in the classification using structural learning is shown if there exist relationship between the features or when they are not independent.

Keywords: Bayesian Network, Classification, Naïve Bayes, Structural Learning.

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180 Modeling and Performance Evaluation of LTE Networks with Different TCP Variants

Authors: Ghassan A. Abed, Mahamod Ismail, Kasmiran Jumari

Abstract: Long Term Evolution (LTE) is a 4G wireless broadband technology developed by the Third Generation Partnership Project (3GPP) release 8, and it's represent the competitiveness of Universal Mobile Telecommunications System (UMTS) for the next 10 years and beyond. The concepts for LTE systems have

been introduced in 3GPP release 8, with objective of high-data-rate, low-latency and packet-optimized radio access technology. In this paper, performance of different TCP variants during LTE network investigated. The performance of TCP over LTE is affected mostly by the links of the wired network and total bandwidth available at the serving base station. This paper describes an NS-2 based simulation analysis of TCP-Vegas, TCP-Tahoe, TCPReno, TCP-Newreno, TCP-SACK, and TCP-FACK, with full modeling of all traffics of LTE system. The Evaluation of the network performance with all TCP variants is mainly based on throughput, average delay and lost packet. The analysis of TCP performance over LTE ensures that all TCP's have a similar throughput and the best performance return to TCP-Vegas than other variants.

Keywords: LTE; EUTRAN; 3GPPP, SAE; TCP Variants; NS-2

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179 Variation of Uncertainty in Steady And Non-Steady Processes Of Queuing Theory

Authors: Om Parkash, C.P.Gandhi

Abstract: Probabilistic measures of uncertainty have been obtained as functions of time and birth and death rates in a queuing process. The variation of different entropy measures has been studied in steady and non-steady processes of queuing theory.

Keywords: Uncertainty, steady state, non-steady state, trafficintensity, monotonocity

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6395

178 An Efficient Energy Adaptive Hybrid Error Correction Technique for Underwater Wireless Sensor Networks

Authors: Ammar Elyas babiker, M.Nordin B. Zakaria, Hassan Yosif, Samir B. Ibrahim

Abstract: Variable channel conditions in underwater networks, and variable distances between sensors due to water current, leads to variable bit error rate (BER). This variability in BER has great effects on energy efficiency of error correction techniques used. In this paper an efficient energy adaptive hybrid error correction technique (AHECT) is proposed. AHECT adaptively changes error technique from pure retransmission (ARQ) in a low BER case to a hybrid technique with variable encoding rates (ARQ & FEC) in a high BER cases. An adaptation algorithm depends on a precalculated packet acceptance rate (PAR) look-up table, current BER, packet size and error correction technique used is proposed. Based on this adaptation algorithm a periodically 3-bit feedback is added to the acknowledgment packet to state which error correction technique is suitable for the current channel conditions and distance. Comparative studies were done between this technique and other techniques, and the results show that AHECT is more energy efficient and has high probability of success than all those techniques.

Keywords: Underwater communication, wireless sensornetworks, error correction technique, energy efficiency

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/13453

177 Investigation of SSR Characteristics of SSSC With GA Based Voltage Controller

Authors: R. Thirumalaivasan, M.Janaki, Nagesh Prabhu

Abstract: In this paper, investigation of subsynchronous resonance (SSR) characteristics of a hybrid series compensated system and the design of voltage controller for three level 24-pulse Voltage Source Converter based Static Synchronous Series Compensator (SSSC) is presented. Hybrid compensation consists of series fixed capacitor and SSSC which is a active series FACTS controller. The design of voltage controller for SSSC is based on damping torque analysis, and Genetic Algorithm (GA) is adopted for tuning the controller parameters. The SSR Characteristics of SSSC with constant reactive voltage control modes has been investigated. The results show that the constant reactive voltage control of SSSC has the effect of reducing the electrical resonance frequency, which detunes the SSR.The analysis of SSR with SSSC is carried out based on frequency domain method, eigenvalue analysis and transient simulation. While the eigenvalue and damping torque analysis are based on D-Q model of SSSC, the transient simulation considers both D-Q and detailed three phase nonlinear system model using switching functions.

Keywords: FACTS, SSR, SSSC, damping torque, GA.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1974

176 A Generalized Approach for State Analysis and Parameter Estimation of Bilinear Systems using Haar Connection Coefficients

Authors: Monika Garg, Lillie Dewan

Abstract: Three novel and significant contributions are made in this paper Firstly, non-recursive formulation of Haar connection coefficients, pioneered by the present authors is presented, which can be computed very efficiently and avoid stack and memory overflows. Secondly, the generalized approach for state analysis of singular bilinear time-invariant (TI) and time-varying (TV) systems is presented; vis-╤£a-vis diversified and complex works reported by different authors. Thirdly, a generalized approach for parameter estimation of bilinear TI and TV systems is also proposed. The unified framework of the proposed method is very significant in that the digital hardware once-designed can be used to perform the complex tasks of state analysis and parameter estimation of different types of bilinear systems single-handedly. The simplicity, effectiveness and generalized nature of the proposed method is established by applying it to different types of bilinear systems for the two tasks.

Keywords: Bilinear Systems, Haar Wavelet, Haar ConnectionCoefficients, Parameter Estimation, Singular Bilinear Systems, StateAnalysis.

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175 Gene Expression Data Classification Using Discriminatively Regularized Sparse Subspace Learning

Authors: Chunming Xu

Abstract: Sparse representation which can represent high dimensional data effectively has been successfully used in computer vision and pattern recognition problems. However, it doesn-t consider the label information of data samples. To overcome this limitation, we develop a novel dimensionality reduction algorithm namely dscriminatively regularized sparse subspace learning(DR-SSL) in this paper. The proposed DR-SSL algorithm can not only make use of the sparse representation to model the data, but also can effective employ the label information to guide the procedure of dimensionality reduction. In addition,the presented algorithm can effectively deal with the out-of-sample problem.The experiments on gene-expression data sets show that the proposed algorithm is an effective tool for dimensionality reduction and gene-expression data classification.

Keywords: sparse representation, dimensionality reduction, labelinformation, sparse subspace learning, gene-expression data classification.

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174 A High-Speed and Low-Energy Ternary Content Addressable Memory Design Using Feedback in Match-Line Sense Amplifier

Authors: Syed Iftekhar Ali, M. S. Islam

Abstract: In this paper we present an energy efficient match-line (ML) sensing scheme for high-speed ternary content-addressable memory (TCAM). The proposed scheme isolates the sensing unit of the sense amplifier from the large and variable ML capacitance. It employs feedback in the sense amplifier to successfully detect a match while keeping the ML voltage swing low. This reduced voltage swing results in large energy saving. Simulation performed using 130nm 1.2V CMOS logic shows at least 30% total energy saving in our scheme compared to popular current race (CR) scheme for similar search speed. In terms of speed, dynamic energy, peak power consumption and transistor count our scheme also shows better performance than mismatch-dependant (MD) power allocation technique which also employs feedback in the sense amplifier. Additionally, the implementation of our scheme is simpler than CR or MD scheme because of absence of analog control voltage and programmable delay circuit as have been used in those schemes.

Keywords: content-addressable memory, energy consumption, feedback, peak power, sensing scheme, sense amplifier, ternary.

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173 Genetic Folding: Analyzing the Mercer-s Kernels Effect in Support Vector Machine using Genetic Folding

Authors: Mohd A. Mezher, Maysam F. Abbod

Abstract: Genetic Folding (GF) a new class of EA named as is introduced for the first time. It is based on chromosomes composed of floating genes structurally organized in a parent form and separated by dots. Although, the genotype/phenotype system of GF generates a kernel expression, which is the objective function of superior classifier. In this work the question of the satisfying mapping-s rules in evolving populations is addressed by analyzing populations undergoing either Mercer-s or none Mercer-s rule. The results presented here show that populations undergoing Mercer-s rules improve practically models selection of Support Vector Machine (SVM). The experiment is trained multi-classification problem and tested on nonlinear Ionosphere dataset. The target of this paper is to answer the question of evolving Mercer-s rule in SVM addressed using either genetic folding satisfied kernel-s rules or not applied to complicated domains and problems.

Keywords: Genetic Folding, GF, Evolutionary Algorithms, Support Vector Machine, Genetic Algorithm, Genetic Programming, Multi-Classification, Mercer's Rules

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172 MIMO System Order Reduction Using Real-Coded Genetic Algorithm

Authors: Swadhin Ku. Mishra, Sidhartha Panda, Simanchala Padhy, Cemal Ardil

Abstract:
In this paper, real-coded genetic algorithm (RCGA) optimization technique has been applied for large-scale linear dynamic multi-input-multi-output (MIMO) system. The method is based on error minimization technique where the integral square error between the transient responses of original and reduced order models has been minimized by RCGA. The reduction procedure is simple computer oriented and the approach is comparable in quality with the other well-known reduction techniques. Also, the proposed method guarantees stability of the reduced model if the original high-order MIMO system is stable. The proposed approach of MIMO system order reduction is illustrated with the help of an example and the results are compared with the recently published other well-known reduction techniques to show its superiority.

Keywords: Multi-input-multi-output (MIMO) system.Modelorder reduction. Integral squared error (ISE). Real-coded geneticalgorithm

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171 Modeling and Identification of Hammerstein System by using Triangular Basis Functions

Authors: K. Elleuch, A. Chaari

Abstract: This paper deals with modeling and parameter identification of nonlinear systems described by Hammerstein model having Piecewise nonlinear characteristics such as Dead-zone nonlinearity characteristic. The simultaneous use of both an easy decomposition technique and the triangular basis functions leads to a particular form of Hammerstein model. The approximation by using Triangular basis functions for the description of the static nonlinear block conducts to a linear regressor model, so that least squares techniques can be used for the parameter estimation. Singular Values Decomposition (SVD) technique has been applied to separate the coupled parameters. The proposed approach has been efficiently tested on academic examples of simulation.

Keywords: Identification, Hammerstein model, Piecewisenonlinear characteristic, Dead-zone nonlinearity, Triangular basisfunctions, Singular Values Decomposition

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15363

170 Similarity Measures and Weighted Fuzzy C-Mean Clustering Algorithm

Authors: Bainian Li, Kongsheng Zhang, Jian Xu

Abstract:
In this paper we study the fuzzy c-mean clustering algorithm combined with principal components method. Demonstratively analysis indicate that the new clustering method is well rather than some clustering algorithms. We also consider the validity of clustering method.

Keywords: FCM algorithm, Principal Components Analysis, Clustervalidity

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3579

169 Design of Static Synchronous Series Compensator Based Damping Controller Employing Real Coded Genetic Algorithm

Authors: S.C.Swain, A.K.Balirsingh, S. Mahapatra, S. Panda

Abstract: This paper presents a systematic approach for designing Static Synchronous Series Compensator (SSSC) based supplementary damping controllers for damping low frequency oscillations in a single-machine infinite-bus power system. The design problem of the proposed controller is formulated as an optimization problem and RCGA is employed to search for optimal controller parameters. By minimizing the time-domain based objective function, in which the deviation in the oscillatory rotor speed of the generator is involved; stability performance of the system is improved. Simulation results are presented and compared with a conventional method of tuning the damping controller parameters to show the effectiveness and robustness of the proposed design approach.

Keywords: Low frequency Oscillations, Phase CompensationTechnique, Real Coded Genetic Algorithm, Single-machine InfiniteBus Power System, Static Synchronous Series Compensator.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1136

168 Closed form Delay Model for on-Chip VLSIRLCG Interconnects for Ramp Input for Different Damping Conditions

Authors: Susmita Sahoo, Madhumanti Datta, Rajib Kar

Abstract: Fast delay estimation methods, as opposed to simulation techniques, are needed for incremental performance driven layout synthesis. On-chip inductive effects are becoming predominant in deep submicron interconnects due to increasing clock speed and circuit complexity. Inductance causes noise in signal waveforms, which can adversely affect the performance of the circuit and signal integrity. Several approaches have been put forward which consider the inductance for on-chip interconnect modelling. But for even much higher frequency, of the order of few GHz, the shunt dielectric lossy component has become comparable to that of other electrical parameters for high speed VLSI design. In order to cope up with this effect, on-chip interconnect has to be modelled as distributed RLCG line. Elmore delay based methods, although efficient, cannot accurately estimate the delay for RLCG interconnect line. In this paper, an accurate analytical delay model has been derived, based on first and second moments of RLCG interconnection lines. The proposed model considers both the effect of inductance and conductance matrices. We have performed the simulation in 0.18μm technology node and an error of as low as less as 5% has been achieved with the proposed model when compared to SPICE. The importance of the conductance matrices in interconnect modelling has also been discussed and it is shown that if G is neglected for interconnect line modelling, then it will result an delay error of as high as 6% when compared to SPICE.

Keywords: Delay Modelling; On-Chip Interconnect; RLCGInterconnect; Ramp Input; Damping; VLSI

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9

167 A Subjectively Influenced Router for Vehicles in a Four-Junction Traffic System

Authors: Anilkumar Kothalil Gopalakrishnan

Abstract: A subjectively influenced router for vehicles in a fourjunction traffic system is presented. The router is based on a 3-layer Backpropagation Neural Network (BPNN) and a greedy routing procedure. The BPNN detects priorities of vehicles based on the subjective criteria. The subjective criteria and the routing procedure depend on the routing plan towards vehicles depending on the user. The routing procedure selects vehicles from their junctions based on their priorities and route them concurrently to the traffic system. That is, when the router is provided with a desired vehicles selection criteria and routing procedure, it routes vehicles with a reasonable junction clearing time. The cost evaluation of the router determines its efficiency. In the case of a routing conflict, the router will route the vehicles in a consecutive order and quarantine faulty vehicles. The simulations presented indicate that the presented approach is an effective strategy of structuring a subjective vehicle router.

Keywords: Backpropagation Neural Network, Backpropagationalgorithm, Greedy routing procedure, Subjective criteria, Vehiclepriority, Cost evaluation, Route generation

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/5897

166 A Profit-Based Maintenance Scheduling of Thermal Power Units in Electricity Market

Authors: Smajo Bisanovic, Mensur Hajro, Muris Dlakic

Abstract:
This paper presents one comprehensive modelling approach for maintenance scheduling problem of thermal power units in competitive market. This problem is formulated as a 0/1 mixedinteger linear programming model. Model incorporates long-term bilateral contracts with defined profiles of power and price, and weekly forecasted market prices for market auction. The effectiveness of the proposed model is demonstrated through case study with detailed discussion.

Keywords: Maintenance scheduling, bilateral contracts, market prices, profit.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12806

165 Determination of Non Uniform Sinusoidal Microstrip Leaky-Wave Antenna Radiating Performances in Millimeter Band

Authors: Zahéra Mekkioui

Abstract: Here we have considered non uniform microstrip leaky-wave antenna implemented on a dielectric waveguide by a sinusoidal profile of periodic metallic grating. The non distribution of the attenuation constant α along propagation axis, optimize the radiating characteristics and performances of such antennas. The method developped here is based on an integral method where the formalism of the admittance operator is combined to a BKW approximation. First, the effect of the modeling in the modal analysis of complex waves is studied in detail. Then, the BKW model is used for the dispersion analysis of the antenna of interest. According to antenna theory, a forced continuity of the leaky-wave magnitude at discontinuities of the non uniform structure is established. To test the validity of our dispersion analysis, computed radiation patterns are presented and compared in the millimeter band.

Keywords: antenna, leaky-wave, performances, sinusoidal.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15366

164 A Control Strategy Based on UTT and ISCT for 3P4W UPQC

Authors: Yash Pal, A.Swarup, Bhim Singh

Abstract: This paper presents a novel control strategy of a threephase four-wire Unified Power Quality (UPQC) for an improvement in power quality. The UPQC is realized by integration of series and shunt active power filters (APFs) sharing a common dc bus capacitor. The shunt APF is realized using a thee-phase, four leg voltage source inverter (VSI) and the series APF is realized using a three-phase, three leg VSI. A control technique based on unit vector template technique (UTT) is used to get the reference signals for series APF, while instantaneous sequence component theory (ISCT) is used for the control of Shunt APF. The performance of the implemented control algorithm is evaluated in terms of power-factor correction, load balancing, neutral source current mitigation and mitigation of voltage and current harmonics, voltage sag and swell in a three-phase four-wire distribution system for different combination of linear and non-linear loads. In this proposed control scheme of UPQC, the current/voltage control is applied over the fundamental supply currents/voltages instead of fast changing APFs currents/voltages, there by reducing the computational delay and the required sensors. MATLAB/Simulink based simulations are obtained, which support the functionality of the UPQC. MATLAB/Simulink based simulations are obtained, which support the functionality of the UPQC.

Keywords: Power Quality, UPQC, Harmonics, Load Balancing, Power Factor Correction, voltage harmonic mitigation, currentharmonic mitigation, voltage sag, swell

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/200

163 Tuning a Fractional Order PID Controller with Lead Compensator in Frequency Domain

Authors: Tahmine. V. Moghaddam, N. Bigdeli, K. Afshar

Abstract: To achieve the desired specifications of gain and phase margins for plants with time-delay that stabilized with FO-PID controller a lead compensator is designed. At first the range of controlled system stability based on stability boundary criteria is determined. Using stability boundary locus method in frequency domain the fractional order controller parameters are tuned and then with drawing bode diagram in frequency domain accessing to desired gain and phase margin are shown. Numerical examples are given to illustrate the shapes of the stabilizing region and to show the design procedure.

Keywords: Fractional controller, Lead compensator, Stabilityregions, Stability boundary locus

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11611

162 Pulse Skipping Modulated DC to DC Step Down Converter Under Discontinuous Conduction Mode

Authors: Ramamurthy S, Ranjan P V, Raghavendiran T A

Abstract: Reduced switching loss favours Pulse Skipping Modulation mode of switching dc-to-dc converters at light loads. Under certain conditions the converter operates in discontinuous conduction mode (DCM). Inductor current starts from zero in each switching cycle as the switching frequency is constant and not adequately high. A DC-to-DC buck converter is modelled and simulated in this paper under DCM. Effect of ESR of the filter capacitor in input current frequency components is studied. The converter is studied for its operation under input voltage and load variation. The operating frequency is selected to be close to and above audio range.

Keywords: Buck converter, Discontinuous conduction mode, Electromagnetic Interference, Pulse Skipping Modulation.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/13883

161 A Novel Low Power Digitally Controlled Oscillator with Improved linear Operating Range

Authors: Nasser Erfani Majd, Mojtaba Lotfizad

Abstract: In this paper, an ultra low power and low jitter 12bit CMOS digitally controlled oscillator (DCO) design is presented. Based on a ring oscillator implemented with low power Schmitt trigger based inverters. Simulation of the proposed DCO using 32nm CMOS Predictive Transistor Model (PTM) achieves controllable frequency range of 550MHz~830MHz with a wide linearity and high resolution. Monte Carlo simulation demonstrates that the time-period jitter due to random power supply fluctuation is under 31ps and the power consumption is 0.5677mW at 750MHz with 1.2V power supply and 0.53-ps resolution. The proposed DCO has a good robustness to voltage and temperature variations and better linearity comparing to the conventional design.

Keywords: digitally controlled oscillator (DCO), low power, jitter; good linearity, robust

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160 High Performance In0.42Ga0.58As/In0.26Ga0.74As Vertical Cavity Surface Emitting Quantum Well Laser on In0.31Ga0.69As Ternary Substrate

Authors: Md. M. Biswas, Md. M. Hossain, Shaikh Nuruddin

Abstract: This paper reports on the theoretical performance analysis of the 1.3 μm In0.42Ga0.58As /In0.26Ga0.74As multiple quantum well (MQW) vertical cavity surface emitting laser (VCSEL) on the ternary In0.31Ga0.69As substrate. The output power of 2.2 mW has been obtained at room temperature for 7.5 mA injection current. The material gain has been estimated to be ~3156 cm-1 at room temperature with the injection carrier concentration of 2×1017 cm-3. The modulation bandwidth of this laser is measured to be 9.34 GHz at room temperature for the biasing current of 2 mA above the threshold value. The outcomes reveal that the proposed InGaAsbased MQW laser is the promising one for optical communication system.

Keywords: Quantum well, VCSEL, output power, materialgain, modulation bandwidth.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4109

159 Power System Damping Using Hierarchical Fuzzy Multi- Input Power System Stabilizer and Static VAR Compensator

Authors: Mohammad Hasan Raouf, Ebrahim Rasooli Anarmarzi, Hamid Lesani, Javad Olamaei

Abstract:
This paper proposes the application of a hierarchical fuzzy system (HFS) based on multi-input power system stabilizer (MPSS) and also Static Var Compensator (SVC) in multi-machine environment.The number of rules grows exponentially with the number of variables in a conventional fuzzy logic system. The proposed HFS method is developed to solve this problem. To reduce the number of rules the HFS consists of a number of low-dimensional fuzzy systems in a hierarchical structure. In fact, by using HFS the total number of involved rules increases only linearly with the number of input variables. In the MPSS, to have better efficiency an auxiliary signal of reactive power deviation (ΔQ) is added with ΔP+ Δω input type Power system stabilizer (PSS). Phasor model of SVC is described and used in this paper. The performances of MPSS, Conventional power system stabilizer (CPSS), hierarchical Fuzzy Multi-input Power System Stabilizer (HFMPSS) and the proposed method in damping inter-area mode of oscillation are examined in response to disturbances. By using digital simulations the comparative study is illustrated. It can be seen that the proposed PSS is performing satisfactorily within the whole range of disturbances.

Keywords: Power system stabilizer (PSS), hierarchical fuzzysystem (HFS), Static VAR compensator (SVC)

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7203

158 Design of an Ultra Low Power Low Phase Noise CMOS LC Oscillator

Authors: Mahdi Ebrahimzadeh

Abstract: In this paper we introduce an ultra low power CMOS LC oscillator and analyze a method to design a low power low phase noise complementary CMOS LC oscillator. A 1.8GHz oscillator is designed based on this analysis. The circuit has power supply equal to 1.1 V and dissipates 0.17 mW power. The oscillator is also optimized for low phase noise behavior. The oscillator phase noise is -126.2 dBc/Hz and -144.4 dBc/Hz at 1 MHz and 8 MHz offset respectively.

Keywords: LC oscillator, Low Power, Low Phase Noise

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15289

157 Torque Ripple Minimization in Switched Reluctance Motor Using Passivity-Based Robust Adaptive Control

Authors: M.M. Namazi, S.M. Saghaiannejad, A. Rashidi

Abstract: In this paper by using the port-controlled Hamiltonian (PCH) systems theory, a full-order nonlinear controlled model is first developed. Then a nonlinear passivity-based robust adaptive control (PBRAC) of switched reluctance motor in the presence of external disturbances for the purpose of torque ripple reduction and characteristic improvement is presented. The proposed controller design is separated into the inner loop and the outer loop controller. In the inner loop, passivity-based control is employed by using energy shaping techniques to produce the proper switching function. The outer loop control is employed by robust adaptive controller to determine the appropriate Torque command. It can also overcome the inherent nonlinear characteristics of the system and make the whole system robust to uncertainties and bounded disturbances. A 4KW 8/6 SRM with experimental characteristics that takes magnetic saturation into account is modeled, simulation results show that the proposed scheme has good performance and practical application prospects.

Keywords: Switched Reluctance Motor, Port HamiltonianSystem, Passivity-Based Control, Torque Ripple Minimization

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9087

156 Investigating the Transformer Operating Conditions for Evaluating the Dielectric Response

Authors: Jalal M. Abdallah

Abstract: This paper presents an experimental investigation of transformer dielectric response and solid insulation water content. The dielectric response was carried out on the base of Hybrid Frequency Dielectric Spectroscopy and Polarization Current measurements method (FDS &PC). The calculation of the water content in paper is based on the water content in oil and the obtained equilibrium curves. A reference measurements were performed at equilibrium conditions for water content in oil and paper of transformer at different stable temperatures (25, 50, 60 and 70°C) to prepare references to evaluate the insulation behavior at the not equilibrium conditions. Some measurements performed at the different simulated normal working modes of transformer operation at the same temperature where the equilibrium conditions. The obtained results show that when transformer temperature is mach more than the its ambient temperature, the transformer temperature decreases immediately after disconnecting the transformer from the network and this temperature reduction influences the transformer insulation condition in the measuring process. In addition to the oil temperature at the near places to the sensors, the temperature uniformity in transformer which can be changed by a big change in the load of transformer before the measuring time will influence the result. The investigations have shown that the extremely influence of the time between disconnecting the transformer and beginning the measurements on the results. And the online monitoring for water content in paper measurements, on the basis of the oil water content on line monitoring and the obtained equilibrium curves. The measurements where performed continuously and for about 50 days without any disconnection in the prepared the adiabatic room.

Keywords: Conductivity, Moisture, Temperature, Oil-paperinsulation, Online monitoring, Water content in oil.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10601

155 Learning an Overcomplete Dictionary using a Cauchy Mixture Model for Sparse Decay

Authors: E. S. Gower, M. O. J. Hawksford

Abstract: An algorithm for learning an overcomplete dictionary using a Cauchy mixture model for sparse decomposition of an underdetermined mixing system is introduced. The mixture density function is derived from a ratio sample of the observed mixture signals where 1) there are at least two but not necessarily more mixture signals observed, 2) the source signals are statistically independent and 3) the sources are sparse. The basis vectors of the dictionary are learned via the optimization of the location parameters of the Cauchy mixture components, which is shown to be more accurate and robust than the conventional data mining methods usually employed for this task. Using a well known sparse decomposition algorithm, we extract three speech signals from two mixtures based on the estimated dictionary. Further tests with additive Gaussian noise are used to demonstrate the proposed algorithm-s robustness to outliers.

Keywords: expectation-maximization, Pitman estimator, sparsedecomposition

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10330

154 An Improved Transfer Logic of the Two-Path Algorithm for Acoustic Echo Cancellation

Authors: Chang Liu, Zishu He

Abstract: Adaptive echo cancellers with two-path algorithm are applied to avoid the false adaptation during the double-talk situation. In the two-path algorithm, several transfer logic solutions have been proposed to control the filter update. This paper presents an improved transfer logic solution. It improves the convergence speed of the two-path algorithm, and allows the reduction of the memory elements and computational complexity. Results of simulations show the improved performance of the proposed solution.

Keywords: Acoustic echo cancellation, Echo return lossenhancement (ERLE), Two-path algorithm, Transfer logic

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11883

153 Novel SNC-NN-MRAS Based Speed Estimator for Sensor-Less Vector Controlled IM Drives

Authors: A.Venkadesan, S.Himavathi, A.Muthuramalingam

Abstract: Rotor Flux based Model Reference Adaptive System (RF-MRAS) is the most popularly used conventional speed estimation scheme for sensor-less IM drives. In this scheme, the voltage model equations are used for the reference model. This encounters major drawbacks at low frequencies/speed which leads to the poor performance of RF-MRAS. Replacing the reference model using Neural Network (NN) based flux estimator provides an alternate solution and addresses such drawbacks. This paper identifies an NN based flux estimator using Single Neuron Cascaded (SNC) Architecture. The proposed SNC-NN model replaces the conventional voltage model in RF-MRAS to form a novel MRAS scheme named as SNC-NN-MRAS. Through simulation the proposed SNC-NN-MRAS is shown to be promising in terms of all major issues and robustness to parameter variation. The suitability of the proposed SNC-NN-MRAS based speed estimator and its advantages over RF-MRAS for sensor-less induction motor drives is comprehensively presented through extensive simulations.

Keywords: Sensor-less operation, vector-controlled IM drives, SNC-NN-MRAS, single neuron cascaded architecture, RF-MRAS, artificial neural network

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152 Video Quality assessment Measure with a Neural Network

Authors: H. El Khattabi, A. Tamtaoui, D. Aboutajdine

Abstract: In this paper, we present the video quality measure estimation via a neural network. This latter predicts MOS (mean opinion score) by providing height parameters extracted from original and coded videos. The eight parameters that are used are: the average of DFT differences, the standard deviation of DFT differences, the average of DCT differences, the standard deviation of DCT differences, the variance of energy of color, the luminance Y, the chrominance U and the chrominance V. We chose Euclidean Distance to make comparison between the calculated and estimated output.

Keywords: video, neural network MLP, subjective quality, DCT, DFT, Retropropagation

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3381

151 Combination of Different Classifiers for Cardiac Arrhythmia Recognition

Authors: M. R. Homaeinezhad, E. Tavakkoli, M. Habibi, S. A. Atyabi, A. Ghaffari

Abstract: This paper describes a new supervised fusion (hybrid) electrocardiogram (ECG) classification solution consisting of a new QRS complex geometrical feature extraction as well as a new version of the learning vector quantization (LVQ) classification algorithm aimed for overcoming the stability-plasticity dilemma. Toward this objective, after detection and delineation of the major events of ECG signal via an appropriate algorithm, each QRS region and also its corresponding discrete wavelet transform (DWT) are supposed as virtual images and each of them is divided into eight polar sectors. Then, the curve length of each excerpted segment is calculated and is used as the element of the feature space. To increase the robustness of the proposed classification algorithm versus noise, artifacts and arrhythmic outliers, a fusion structure consisting of five different classifiers namely as Support Vector Machine (SVM), Modified Learning Vector Quantization (MLVQ) and three Multi Layer Perceptron-Back Propagation (MLP–BP) neural networks with different topologies were designed and implemented. The new proposed algorithm was applied to all 48 MIT–BIH Arrhythmia Database records (within–record analysis) and the discrimination power of the classifier in isolation of different beat types of each record was assessed and as the result, the average accuracy value Acc=98.51% was obtained. Also, the proposed method was applied to 6 number of arrhythmias (Normal, LBBB, RBBB, PVC, APB, PB) belonging to 20 different records of the aforementioned database (between– record analysis) and the average value of Acc=95.6% was achieved. To evaluate performance quality of the new proposed hybrid learning machine, the obtained results were compared with similar peer– reviewed studies in this area.

Keywords: Feature Extraction, Curve Length Method, SupportVector Machine, Learning Vector Quantization, Multi Layer Perceptron, Fusion (Hybrid) Classification, Arrhythmia Classification, Supervised Learning Machine.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3619

150 A Generic Approach to Achieve Optimal Server Consolidation by Using Existing Servers in Virtualized Data Center

Authors: Siyuan Jing, Kun She

Abstract: Virtualization-based server consolidation has been proven to be an ideal technique to solve the server sprawl problem by consolidating multiple virtualized servers onto a few physical servers leading to improved resource utilization and return on investment. In this paper, we solve this problem by using existing servers, which are heterogeneous and diversely preferred by IT managers. Five practical consolidation rules are introduced, and a decision model is proposed to optimally allocate source services to physical target servers while maximizing the average resource utilization and preference value. Our model can be regarded as a multi-objective multi-dimension bin-packing (MOMDBP) problem with constraints, which is strongly NP-hard. An improved grouping generic algorithm (GGA) is introduced for the problem. Extensive simulations were performed and the results are given.

Keywords: GGA-based Heuristics, Preference, Real-worldConstraints, Resource Utilization, Server Consolidation

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12702

149 A Distributed Weighted Cluster Based Routing Protocol for Manets

Authors: Naveen Chauhan, L.K. Awasthi, Narottam chand, Vivek Katiyar, Ankit Chug

Abstract: Mobile ad-hoc networks (MANETs) are a form of wireless networks which do not require a base station for providing network connectivity. Mobile ad-hoc networks have many characteristics which distinguish them from other wireless networks which make routing in such networks a challenging task. Cluster

based routing is one of the routing schemes for MANETs in which various clusters of mobile nodes are formed with each cluster having its own clusterhead which is responsible for routing among clusters. In this paper we have proposed and implemented a distributed weighted clustering algorithm for MANETs. This approach is based on combined weight metric that takes into account several system parameters like the node degree, transmission range, energy and mobility of the nodes. We have evaluated the performance of proposed scheme through simulation in various network situations. Simulation results show that proposed scheme outperforms the original distributed weighted clustering algorithm (DWCA).

Keywords: MANETs, Clustering, Routing, WirelessCommunication, Distributed Clustering

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12195

148 Integrating Fast Karnough Map and Modular Neural Networks for Simplification and Realization of Complex Boolean Functions

Authors: Hazem M. El-Bakry

Abstract:
In this paper a new fast simplification method is presented. Such method realizes Karnough map with large number of variables. In order to accelerate the operation of the proposed method, a new approach for fast detection of group of ones is presented. Such approach implemented in the frequency domain. The search operation relies on performing cross correlation in the frequency domain rather than time one. It is proved mathematically and practically that the number of computation steps required for the presented method is less than that needed by conventional cross correlation. Simulation results using MATLAB confirm the theoretical computations. Furthermore, a powerful solution for realization of complex functions is given. The simplified functions are implemented by using a new desigen for neural networks. Neural networks are used because they are fault tolerance and as a result they can recognize signals even with noise or distortion. This is very useful for logic functions used in data and computer communications. Moreover, the implemented functions are realized with minimum amount of components. This is done by using modular neural nets (MNNs) that divide the input space into several homogenous regions. Such approach is applied to implement XOR function, 16 logic functions on one bit level, and 2-bit digital multiplier. Compared to previous non- modular designs, a clear reduction in the order of computations and hardware requirements is achieved.

Keywords: Boolean functions, simplification, Karnough map, implementation of logic functions, modular neural networks.

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147 Identification of Most Frequently Occurring Lexis in Winnings-announcing Unsolicited Bulke-mails

Authors: Jatinderkumar R. Saini, Apurva A. Desai

Abstract: e-mail has become an important means of electronic communication but the viability of its usage is marred by Unsolicited Bulk e-mail (UBE) messages. UBE consists of many types like pornographic, virus infected and 'cry-for-help' messages as well as fake and fraudulent offers for jobs, winnings and medicines. UBE poses technical and socio-economic challenges to usage of e-mails. To meet this challenge and combat this menace, we need to understand UBE. Towards this end, the current paper presents a content-based textual analysis of nearly 3000 winnings-announcing UBE. Technically, this is an application of Text Parsing and Tokenization for an un-structured textual document and we approach it using Bag Of Words (BOW) and Vector Space Document Model techniques. We have attempted to identify the most frequently occurring lexis in the winnings-announcing UBE documents. The analysis of such top 100 lexis is also presented. We exhibit the relationship between occurrence of a word from the identified lexisset in the given UBE and the probability that the given UBE will be the one announcing fake winnings. To the best of our knowledge and survey of related literature, this is the first formal attempt for identification of most frequently occurring lexis in winningsannouncing UBE by its textual analysis. Finally, this is a sincere attempt to bring about alertness against and mitigate the threat of such luring but fake UBE.

Keywords: Lexis, Unsolicited Bulk e-mail (UBE), Vector SpaceDocument Model, Winnings, Lottery

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2416

146 Array Signal Processing: DOA Estimation for Missing Sensors

Authors: Lalita Gupta, R. P. Singh

Abstract:
Array signal processing involves signal enumeration and source localization. Array signal processing is centered on the ability to fuse temporal and spatial information captured via sampling signals emitted from a number of sources at the sensors of an array in order to carry out a specific estimation task: source characteristics (mainly localization of the sources) and/or array characteristics (mainly array geometry) estimation. Array signal processing is a part of signal processing that uses sensors organized in patterns or arrays, to detect signals and to determine information about them. Beamforming is a general signal processing technique used to control the directionality of the reception or transmission of a signal. Using Beamforming we can direct the majority of signal energy we receive from a group of array. Multiple signal classification (MUSIC) is a highly popular eigenstructure-based estimation method of direction of arrival (DOA) with high resolution. This Paper enumerates the effect of missing sensors in DOA estimation. The accuracy of the MUSIC-based DOA estimation is degraded significantly both by the effects of the missing sensors among the receiving array elements and the unequal channel gain and phase errors of the receiver.

Keywords: Array Signal Processing, Beamforming, ULA, Direction of Arrival, MUSIC

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2369

145 Comparison of The Fertilizer Properties of Ash Fractions from Medium-Sized (32 MW) and Small-Sized (6 MW) Municipal District Heatin Plants

Authors: Hannu Nurmesniemi, Mikko Mäkelä, Risto Pöykiö, Olli Dahl

Abstract: Due to the low heavy metal concentrations, the bottom ash from a 32 MW municipal district heating plant was determined to be a potential forest fertilizer as such. However, additional Ca would be needed, because its Ca concentration of 1.9- % (d.w.) was lower than the statutory Finnish minimum limit value of 6.0-% (d.w.) for Ca in forest fertilizer. Due to the elevated As concentration (53.0 mg/kg; d.w.) in the fly ash from the 32 MW municipal district heating plant, and Cr concentration (620 mg/kg; d.w.) in the ash fraction (i.e. mixture of the bottom ash and fly ash) from the 6 MW municipal district heating plant, which exceed the limit values of 30 mg/kg (d.w.) and 300 mg/kg (d.w.) for As and Cr, respectively, these residues are not suitable as forest fertilizers. Although these ash fractions cannot be used as a forest fertilizer as such, they can be used for the landscaping of landfills or in industrial and other areas that are closed to the public. However, an environmental permit is then needed.

Keywords: Ash, fertilizer, peat, forest residue, waste

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11180

144 Optimization of HALO Structure Effects in 45nm p-type MOSFETs Device Using Taguchi Method

Authors: F. Salehuddin, I. Ahmad, F. A. Hamid, A. Zaharim, H. A. Elgomati, B. Y. Majlis, P. R. Apte

Abstract:
In this study, the Taguchi method was used to optimize the effect of HALO structure or halo implant variations on threshold voltage (VTH) and leakage current (ILeak) in 45nm p-type Metal Oxide Semiconductor Field Effect Transistors (MOSFETs) device. Besides halo implant dose, the other process parameters which used were Source/Drain (S/D) implant dose, oxide growth temperature and silicide anneal temperature. This work was done using TCAD simulator, consisting of a process simulator, ATHENA and device simulator, ATLAS. These two simulators were combined with Taguchi method to aid in design and optimize the process parameters. In this research, the most effective process parameters with respect to VTH and ILeak are halo implant dose (40%) and S/D implant dose (52%) respectively. Whereas the second ranking factor affecting VTH and ILeak are oxide growth temperature (32%) and halo implant dose (34%) respectively. The results show that after optimizations approaches is -0.157V at ILeak=0.195mA/μm.

Keywords: Optimization, p-type MOSFETs device, HALO Structure, Taguchi Method.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7264

143 Information Measures Based on Sampling Distributions

Authors: Om Parkash, A. K. Thukral, C. P. Gandhi

Abstract:
Information theory and Statistics play an important role in Biological Sciences when we use information measures for the study of diversity and equitability. In this communication, we develop the link among the three disciplines and prove that sampling distributions can be used to develop new information measures. Our study will be an interdisciplinary and will find its applications in Biological systems.

Keywords: Entropy, concavity, symmetry, arithmetic mean, diversity, equitability.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3333

142 Virtual Machines Cooperation for Impatient Jobs under Cloud Paradigm

Authors: Nawfal A. Mehdi, Ali Mamat, Hamidah Ibrahim, Shamala K. Syrmabn

Abstract: The increase on the demand of IT resources diverts the enterprises to use the cloud as a cheap and scalable solution. Cloud computing promises achieved by using the virtual machine as a basic unite of computation. However, the virtual machine pre-defined settings might be not enough to handle jobs QoS requirements. This paper addresses the problem of mapping jobs have critical start deadlines to virtual machines that have predefined specifications. These virtual machines hosted by physical machines and shared a fixed amount of bandwidth. This paper proposed an algorithm that uses the idle virtual machines bandwidth to increase the quote of other virtual machines nominated as executors to urgent jobs. An algorithm with empirical study have been given to evaluate the impact of the proposed model on impatient jobs. The results show the importance of dynamic bandwidth allocation in virtualized environment and its affect on throughput metric.

Keywords: Insufficient bandwidth, virtual machine, cloudprovider, impatient jobs.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11292

141 Fourier Spectral Method for Analytic Continuation

Authors: Zhenyu Zhao, Lei You

Abstract:
The numerical analytic continuation of a function f(z) = f(x + iy) on a strip is discussed in this paper. The data are only given approximately on the real axis. The periodicity of given data is assumed. A truncated Fourier spectral method has been introduced to deal with the ill-posedness of the problem. The theoretic results show that the discrepancy principle can work well for this problem. Some numerical results are also given to show the efficiency of the method.

Keywords: Analytic continuation, ill-posed problem, regularization method Fourier spectral method, the discrepancy principle.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9760

140 Investigations on Some Operations of Soft Sets

Authors: Xun Ge, Songlin Yang

Abstract:
Soft set theory was initiated by Molodtsov in 1999. In the past years, this theory had been applied to many branches of mathematics, information science and computer science. In 2003, Maji et al. introduced some operations of soft sets and gave some operational rules. Recently, some of these operational rules are pointed out to be not true. Furthermore, Ali et al., in their paper, introduced and discussed some new operations of soft sets. In this paper, we further investigate these operational rules given by Maji et al. and Ali et al.. We obtain some sufficient-necessary conditions such that corresponding operational rules hold and give correct forms for some operational rules. These results will be help for us to use rightly operational rules of soft sets in research and application of soft set theory.

Keywords: Soft sets, union, intersection, complement.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15505

139 Generalised Slant Weighted Toeplitz Operator

Authors: S. C. Arora, Ritu Kathuria

Abstract: A slant weighted Toeplitz operator Aφ is an operator on L2(β) defined as Aφ = WMφ where Mφ is the weighted multiplication operator and W is an operator on L2(β) given by We2n = βn β2n en, {en}n∈Z being the orthonormal basis. In this paper, we generalise Aφ to the k-th order slant weighted Toeplitz operator Uφ and study its properties.

Keywords: Slant weighted Toeplitz operator, weighted multiplicationoperator.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10560

138 On Completely Semiprime, Semiprime and Prime Fuzzy Ideals in Ordered Semigroups

Authors: Jian Tang

Abstract:
In this paper, we first introduce the new concept of completely semiprime fuzzy ideals of an ordered semigroup S, which is an extension of completely semiprime ideals of ordered semigroup S, and investigate some its related properties. Especially, we characterize an ordered semigroup that is a semilattice of simple ordered semigroups in terms of completely semiprime fuzzy ideals of ordered semigroups. Furthermore, we introduce the notion of semiprime fuzzy ideals of ordered semigroup S and establish the relations between completely semiprime fuzzy ideals and semiprime fuzzy ideals of S. Finally, we give a characterization of prime fuzzy ideals of an ordered semigroup S and show that a nonconstant fuzzy ideal f of an ordered semigroup S is prime if and only if f is twovalued, and max{f(a), f(b)} = inf f((aSb]), ∀a, b ∈ S.

Keywords: Ordered fuzzy point, fuzzy left (right) ideal of anordered semigroup, completely semiprime fuzzy ideal, semiprimefuzzy ideal, prime fuzzy ideal.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15343

137 Swarmed Discriminant Analysis for Multifunction Prosthesis Control

Authors: Rami N. Khushaba, Ahmed Al-Ani, Adel Al-Jumaily

Abstract: One of the approaches enabling people with amputated limbs to establish some sort of interface with the real world includes the utilization of the myoelectric signal (MES) from the remaining muscles of those limbs. The MES can be used as a control input to a multifunction prosthetic device. In this control scheme, known as the myoelectric control, a pattern recognition approach is usually utilized to discriminate between the MES signals that belong to different classes of the forearm movements. Since the MES is recorded using multiple channels, the feature vector size can become very large. In order to reduce the computational cost and enhance the generalization capability of the classifier, a dimensionality reduction method is needed to identify an informative yet moderate size feature set. This paper proposes a new fuzzy version of the well known Fisher-s Linear Discriminant Analysis (LDA) feature projection technique. Furthermore, based on the fact that certain muscles might contribute more to the discrimination process, a novel feature weighting scheme is also presented by employing Particle Swarm Optimization (PSO) for estimating the weight of each feature. The new method, called PSOFLDA, is tested on real MES datasets and compared with other techniques to prove its superiority.

Keywords: Discriminant Analysis, Pattern Recognition, SignalProcessing.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9317

136 A Finite-Time Consensus Protocol of the Multi-Agent Systems

Authors: Xin-Lei Feng, Ting-Zhu Huang

Abstract:
According to conjugate gradient algorithm, a new consensus protocol algorithm of discrete-time multi-agent systems is presented, which can achieve finite-time consensus. Finally, a numerical example is given to illustrate our theoretical result.

Keywords: Consensus protocols; Graph theory; Multi-agent systems;Conjugate gradient algorithm; Finite-time.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1348

135 Landowers' Participation Behavior on the Payment for Environmental Service (PES): Evidences from Taiwan

Authors: Wan-Yu Liu

Abstract:
To respond to the Kyoto Protocol, the policy of Payment for Environmental Service (PES), which was entitled “Plain Landscape Afforestation Program (PLAP)", was certified by Executive Yuan in Taiwan on 31 August 2001 and has been implementing for six years since 1 January 2002. Although the PLAP has received a lot of positive comments, there are still many difficulties during the process of implementation, such as insufficient technology for afforestation, private landowners- low interests in participating in PLAP, insufficient subsidies, and so on, which are potential threats that hinder the PLAP from moving forward in future. In this paper, selecting Ping-Tung County in Taiwan as a sample region and targeting those private landowners with and without intention to participate in the PLAP, respectively, we conduct an empirical analysis based on the Logit model to investigate the factors that determine whether those private landowners join the PLAP, so as to realize the incentive effects of the PLAP upon the personal decision on afforestation. The possible factors that might determine private landowner-s participation in the PLAP include landowner-s characteristics, cropland characteristics, as well as policy factors. Among them, the policy factors include afforestation subsidy amount (+), duration of afforestation subsidy (+), the rules on adjoining and adjacent areas (+), and so on, which do not reach the remarkable level in statistics though, but the directions of variable signs are consistent with the intuition behind the policy. As for the landowners- characteristics, each of age (+), education level (–), and annual household income (+) variables reaches 10% of the remarkable level in statistics; as for the cropland characteristics, each of cropland area (+), cropland price (–), and the number of cropland parcels (–) reaches 1% of the remarkable level in statistics. In light of the above, the cropland characteristics are the dominate factor that determines the probability of landowner-s participation in the PLAP. In the Logit model established by this paper, the probability of correctly estimating nonparticipants is 98%, the probability of correctly estimating the participants is 71.8%, and the probability for the overall estimation is 95%. In addition, Hosmer-Lemeshow test and omnibus test also revealed that the Logit model in this paper may provide fine goodness of fit and good predictive power in forecasting private landowners- participation in this program. The empirical result of this paper expects to help the implementation of the afforestation programs in Taiwan.

Keywords: Forestry policy, logit, afforestation subsidy, afforestation policy.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15127

134 Heterogeneous Attribute Reduction in Noisy System based on a Generalized Neighborhood Rough Sets Model

Authors: Siyuan Jing, Kun She

Abstract: Neighborhood Rough Sets (NRS) has been proven to be an efficient tool for heterogeneous attribute reduction. However, most of researches are focused on dealing with complete and noiseless data. Factually, most of the information systems are noisy, namely, filled with incomplete data and inconsistent data. In this paper, we introduce a generalized neighborhood rough sets model, called VPTNRS, to deal with the problem of heterogeneous attribute reduction in noisy system. We generalize classical NRS model with tolerance neighborhood relation and the probabilistic theory. Furthermore, we use the neighborhood dependency to evaluate the significance of a subset of heterogeneous attributes and construct a forward greedy algorithm for attribute reduction based on it. Experimental results show that the model is efficient to deal with noisy data.

Keywords: attribute reduction, incomplete data, inconsistent data, tolerance neighborhood relation, rough sets

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7597

133 Block Homotopy Perturbation Method for Solving Fuzzy Linear Systems

Authors: Shu-Xin Miao

Abstract:
In this paper, we present an efficient numerical algorithm, namely block homotopy perturbation method, for solving fuzzy linear systems based on homotopy perturbation method. Some numerical examples are given to show the efficiency of the algorithm.

Keywords: Homotopy perturbation method, fuzzy linear systems, block linear system, fuzzy solution, embedding parameter.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/428

132 Stochastic Modeling and Combined Spatial Pattern Analysis of Epidemic Spreading

Authors: S. Chadsuthi, W. Triampo, C. Modchang, P. Kanthang, D. Triampo, N. Nuttavut

Abstract: We present analysis of spatial patterns of generic disease spread simulated by a stochastic long-range correlation SIR model, where individuals can be infected at long distance in a power law distribution. We integrated various tools, namely perimeter, circularity, fractal dimension, and aggregation index to characterize and investigate spatial pattern formations. Our primary goal was to understand for a given model of interest which tool has an advantage over the other and to what extent. We found that perimeter and circularity give information only for a case of strong correlation– while the fractal dimension and

aggregation index exhibit the growth rule of pattern formation, depending on the degree of the correlation exponent (β). The aggregation index method used as an alternative method to describe the degree of pathogenic ratio (α). This study may provide a useful approach to characterize and analyze the pattern formation of epidemic spreading

Keywords: spatial pattern epidemics, aggregation index, fractaldimension, stochastic, long-rang epidemics

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4594

131 The Effects of Peristalsis on Dispersion of a Micropolar Fluid in the Presence of Magnetic Field

Authors: Habtu Alemayehu, G. Radhakrishnamacharya

Abstract: The paper presents an analytical solution for dispersion of a solute in the peristaltic motion of a micropolar fluid in the presence of magnetic field and both homogeneous and heterogeneous chemical reactions. The average effective dispersion coefficient has been found using Taylor-s limiting condition under long wavelength approximation. The effects of various relevant parameters on the average coefficient of dispersion have been studied. The average effective dispersion coefficient increases with amplitude ratio, cross viscosity coefficient and heterogeneous chemical reaction rate parameter. But it decreases with magnetic field parameter and homogeneous chemical reaction rate parameter. It can be noted that the presence of peristalsis enhances dispersion of a solute.

Keywords: Peristalsis, Dispersion, Chemical reaction, Magneticfield, Micropolar fluid

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9872

130 The Research and Application of M/M/1/N Queuing Model with Variable Input Rates, Variable Service Rates and Impatient Customers

Authors: Quanru Pan

Abstract: How to maintain the service speeds for the business to make the biggest profit is a problem worthy of study, which is discussed in this paper with the use of queuing theory. An M/M/1/N queuing model with variable input rates, variable service rates and impatient customers is established, and the following conclusions are drawn: the stationary distribution of the model, the relationship between the stationary distribution and the probability that there are n customers left in the system when a customer leaves (not including the customer who leaves himself), the busy period of the system, the average operating cycle, the loss probability for the customers not entering the system while they arriving at the system, the mean of the customers who leaves the system being for impatient, the loss probability for the customers not joining the queue due to the limited capacity of the system and many other indicators. This paper also indicates that the following conclusion is not correct: the more customers the business serve, the more profit they will get. At last, this paper points out the appropriate service speeds the business should keep to make the biggest profit.

Keywords: variable input rates, impatient customer, variable servicerates, profit maximization.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15239

129 Analysis of Periodic Solution of Delay Fuzzy BAM Neural Networks

Authors: Qianhong Zhang, Lihui Yang, Daixi Liao

Abstract: In this paper, by employing a new Lyapunov functional and an elementary inequality analysis technique, some sufficient conditions are derived to ensure the existence and uniqueness of periodic oscillatory solution for fuzzy bi-directional memory (BAM) neural networks with time-varying delays, and all other solutions of the fuzzy BAM neural networks converge the uniqueness periodic solution. These criteria are presented in terms of system parameters and have important leading significance in the design and applications of neural networks. Moreover an example is given to illustrate the effectiveness and feasible of results obtained.

Keywords: Fuzzy BAM neural networks, Periodic solution, Global exponential stability, Time-varying delays

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1889

128 Partial Stabilization of a Class of Nonlinear Systems Via Center Manifold Theory

Authors: Ping He

Abstract: This paper addresses the problem of the partial state feedback stabilization of a class of nonlinear systems. In order to stabilization this class systems, the especial place of this paper is to reverse designing the state feedback control law from the method of judging system stability with the center manifold theory. First of all, the center manifold theory is applied to discuss the stabilization sufficient condition and design the stabilizing state control laws for a class of nonlinear. Secondly, the problem of partial stabilization for a class of plane nonlinear system is discuss using the lyapunov second method and the center manifold theory. Thirdly, we investigate specially the problem of the stabilization for a class of homogenous plane nonlinear systems, a class of nonlinear with dual-zero eigenvalues and a class of nonlinear with zero-center using the method of lyapunov function with homogenous derivative, specifically. At the end of this paper, some examples and simulation results are given show that the approach of this paper to this class of nonlinear system is effective and convenient.

Keywords: Partial stabilization, Nonlinear critical systems, Centermanifold theory, Lyapunov function, System reduction.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/580

127 Delay-independent Stabilization of Linear Systems with Multiple Time-delays

Authors: Ping He, Heng-You Lan, Gong-Quan Tan

Abstract: The multidelays linear control systems described by difference differential equations are often studied in modern control theory. In this paper, the delay-independent stabilization algebraic criteria and the theorem of delay-independent stabilization for linear systems with multiple time-delays are established by using the Lyapunov functional and the Riccati algebra matrix equation in the matrix theory. An illustrative example and the simulation result, show that the approach to linear systems with multiple time-delays is effective.

Keywords: Linear system, Delay-independent stabilization, Lyapunovfunctional, Riccati algebra matrix equation.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7152

126 Performance of Dual MRC Receiver for M-ary Modulations over Correlated Nakagami-m Fading Channels with Non-identical and Arbitra Fading Parameter

Authors: Rupaban Subadar

Abstract: Performance of a dual maximal ratio combining receiver has been analyzed for M-ary coherent and non-coherent modulations over correlated Nakagami-m fading channels with nonidentical and arbitrary fading parameter. The classical probability density function (PDF) based approach is used for analysis. Expressions for outage probability and average symbol error performance for M-ary coherent and non-coherent modulations have been obtained. The obtained results are verified against the special case published results and found to be matching. The effect of the unequal fading parameters, branch correlation and unequal input average SNR on the receiver performance has been studied.

Keywords: MRC, correlated Nakagami-m fading, non-identicalfading statistics, average symbol error rate

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10593

125 Mean Codeword Lengths and Their Correspondence with Entropy Measures

Authors: R.K.Tuli

Abstract: The objective of the present communication is to develop new genuine exponentiated mean codeword lengths and to study deeply the problem of correspondence between well known measures of entropy and mean codeword lengths. With the help of some standard measures of entropy, we have illustrated such a correspondence. In literature, we usually come across many inequalities which are frequently used in information theory. Keeping this idea in mind, we have developed such inequalities via coding theory approach.

Keywords: Codeword, Code alphabet, Uniquely decipherablecode, Mean codeword length, Uncertainty, Noiseless channel

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/196

124 Effect of Variable viscosity on Convective Heat Transfer along an Inclined Plate Embedded in Porous Medium with an Applied Magnetic Field

Authors: N.S. Tomer, Phool Singh, Manoj Kumar

Abstract: The flow and heat transfer characteristics for natural convection along an inclined plate in a saturated porous medium with an applied magnetic field have been studied. The fluid viscosity has been assumed to be an inverse function of temperature. Assuming temperature vary as a power function of distance. The transformed ordinary differential equations have solved by numerical integration using Runge-Kutta method. The velocity and temperature profile components on the plate are computed and discussed in detail for various values of the variable viscosity parameter, inclination angle, magnetic field parameter, and real constant (λ). The results have also been interpreted with the aid of tables and graphs. The numerical values of Nusselt number have been calculated for the mentioned parameters.

Keywords: Heat Transfer, Magnetic Field, Porosity, Viscosity

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1198

123 Finite Volume Model to Study the Effect of Buffer on Cytosolic Ca2+ Advection Diffusion

Authors: Brajesh Kumar Jha, Neeru Adlakha, M. N. Mehta

Abstract: Calcium [Ca2+] is an important second messenger which plays an important role in signal transduction. There are several parameters that affect its concentration profile like buffer source etc. The effect of stationary immobile buffer on Ca2+ concentration has been incorporated which is a very important parameter needed to be taken into account in order to make the model more realistic. Interdependence of all the important parameters like diffusion coefficient and influx over [Ca2+] profile has been studied. Model is developed in the form of advection diffusion equation together with buffer concentration. A program has been developed using finite volume method for the entire problem and simulated on an AMD-Turion 32-bit machine to compute the numerical results.

Keywords: Ca2+ profile, buffer, Astrocytes, Advection diffusion, FVM

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122 Octonionic Reformulation of Vector Analysis

Authors: Bhupendra C. S. Chauhan, P. S. Bisht, O. P. S. Negi

Abstract: According to celebrated Hurwitz theorem, there exists four division algebras consisting of R (real numbers), C (complex numbers), H (quaternions) and O (octonions). Keeping in view the utility of octonion variable we have tried to extend the three dimensional vector analysis to seven dimensional one. Starting with the scalar and vector product in seven dimensions, we have redefined the gradient, divergence and curl in seven dimension. It is shown that the identity n(n - 1)(n - 3)(n - 7) = 0 is satisfied only for 0, 1, 3 and 7 dimensional vectors. We have tried to write all the vector inequalities and formulas in terms of seven dimensions and it is shown that same formulas loose their meaning in seven dimensions due to non-associativity of octonions. The vector formulas are retained only if we put certain restrictions on octonions and split octonions.

Keywords: Octonions, Vector Space and seven dimensions

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121 Performance of Air Gap Membrane Distillation for Desalination of Ground Water and Seawater

Authors: Bhausaheb L. Pangarkar, M.G. Sane

Abstract: Membrane distillation (MD) is a rising technology for seawater or brine desalination process. In this work, an air gap membrane distillation (AGMD) performance was investigated for aqueous NaCl solution along with natural ground water and seawater. In order to enhance the performance of the AGMD process in desalination, that is, to get more flux, it is necessary to study the effect of operating parameters on the yield of distillate water. The influence of operational parameters such as feed flow rate, feed temperature, feed salt concentration, coolant temperature and air gap thickness on the membrane distillation (MD) permeation flux have been investigated for low and high salt solution. the natural application of ground water and seawater over 90 h continuous operation, scale deposits observed on the membrane surface and reduction in flux represents 23% for ground water and 60% for seawater, in 90 h. This reduction was eliminated (less than 14 %) by acidification of feed water. Hence, promote the research attention in apply of AGMD for the ground water as well as seawater desalination over today-s conventional RO operation.

Keywords: MD, ground water, seawater, AGMD.

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120 Codes and Formulation of Appropriate Constraints via Entropy Measures

Authors: R. K. Tuli

Abstract: In present communication, we have developed the suitable constraints for the given the mean codeword length and the measures of entropy. This development has proved that Renyi-s entropy gives the minimum value of the log of the harmonic mean and the log of power mean. We have also developed an important relation between best 1:1 code and the uniquely decipherable code by using different measures of entropy.

Keywords: Codeword, Instantaneous code, Prefix code, Uniquely decipherable code, Best one-one code, Mean codewordlength

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119 Normalization and Constrained Optimization of Measures of Fuzzy Entropy

Authors: K.C. Deshmukh, P.G. Khot, Nikhil

Abstract: In the literature of information theory, there is necessity for comparing the different measures of fuzzy entropy and this consequently, gives rise to the need for normalizing measures of fuzzy entropy. In this paper, we have discussed this need and hence developed some normalized measures of fuzzy entropy. It is also desirable to maximize entropy and to minimize directed divergence or distance. Keeping in mind this idea, we have explained the method of optimizing different measures of fuzzy entropy.

Keywords: Fuzzy set, Uncertainty, Fuzzy entropy, Normalization, Membership function

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118 Discontinuous Galerkin Method for 1D Shallow Water Flow with Water Surface Slope Limiter

Authors: W. Lai, A. A. Khan

Abstract: A water surface slope limiting scheme is tested and compared with the water depth slope limiter for the solution of one dimensional shallow water equations with bottom slope source term. Numerical schemes based on the total variation diminishing Runge- Kutta discontinuous Galerkin finite element method with slope limiter schemes based on water surface slope and water depth are used to solve one-dimensional shallow water equations. For each slope limiter, three different Riemann solvers based on HLL, LF, and Roe flux functions are used. The proposed water surface based slope limiter scheme is easy to implement

and shows better conservation property compared to the slope limiter based on water depth. Of the three flux functions, the Roe approximation provides the best results while the LF function proves to be least suitable when used with either slope limiter scheme.

Keywords: Discontinuous finite element, TVD Runge-Kuttascheme, slope limiters, Riemann solvers, shallow water flow.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4262

117 Exploiting Two Intelligent Models to Predict Water Level: A Field Study of Urmia Lake, Iran

Authors: Shahab Kavehkar, Mohammad Ali Ghorbani, Valeriy Khokhlov, Afshin Ashrafzadeh, Sabereh Darbandi

Abstract:
Water level forecasting using records of past time series is of importance in water resources engineering and management. For example, water level affects groundwater tables in low-lying coastal areas, as well as hydrological regimes of some coastal rivers. Then, a reliable prediction of sea-level variations is required in coastal engineering and hydrologic studies. During the past two decades, the approaches based on the Genetic Programming (GP) and Artificial Neural Networks (ANN) were developed. In the present study, the GP is used to forecast daily water level variations for a set of time intervals using observed water levels. The measurements from a single tide gauge at Urmia Lake, Northwest Iran, were used to train and validate the GP approach for the period from January 1997 to July 2008. Statistics, the root mean square error and correlation coefficient, are used to verify model by comparing with a corresponding outputs from Artificial Neural Network model. The results show that both these artificial intelligence methodologies are satisfactory and can be considered as alternatives to the conventional harmonic analysis.

Keywords: Water-Level variation, forecasting, artificial neural networks, genetic programming, comparative analysis.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15288

116 Application of Build-up and Wash-off Models for an East-Australian Catchment

Authors: Iqbal Hossain, Monzur Alam Imteaz, Mohammed Iqbal Hossain

Abstract: Estimation of stormwater pollutants is a pre-requisite for the protection and improvement of the aquatic environment and for appropriate management options. The usual practice for the stormwater quality prediction is performed through water quality modeling. However, the accuracy of the prediction by the models depends on the proper estimation of model parameters. This paper presents the estimation of model parameters for a catchment water quality model developed for the continuous simulation of stormwater pollutants from a catchment to the catchment outlet. The model is capable of simulating the accumulation and transportation of the stormwater pollutants; suspended solids (SS), total nitrogen (TN) and total phosphorus (TP) from a particular catchment. Rainfall and water quality data were collected for the Hotham Creek Catchment (HTCC), Gold Coast, Australia. Runoff calculations from the developed model were compared with the calculated discharges from the widely used hydrological models, WBNM and DRAINS. Based on the measured water quality data, model water quality parameters were calibrated for the above-mentioned catchment. The calibrated parameters are expected to be helpful for the best management practices (BMPs) of the region. Sensitivity analyses of the estimated parameters were performed to assess the impacts of the model parameters on overall model estimations of runoff water quality.

Keywords: Calibration, Model Parameters, Suspended Solids, TotalNitrogen, Total Phosphorus.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3302

115 Finite Element Modelling of Ground Vibrations Due to Tunnelling Activities

Authors: Muhammad E. Rahman, Trevor Orr

Abstract: This paper presents the use of three-dimensional finite elements coupled with infinite elements to investigate the ground vibrations at the surface in terms of the peak particle velocity (PPV) due to construction of the first bore of the Dublin Port Tunnel. This situation is analysed using a commercially available general-purpose finite element package ABAQUS. A series of parametric studies is carried out to examine the sensitivity of the predicted vibrations to variations in the various input parameters required by finite element method, including the stiffness and the damping of ground. The results of this study show that stiffness has a more significant effect on the PPV rather than the damping of the ground.

Keywords: Finite Elements, PPV, Tunnelling, Vibration

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15809

114 Detection and Quantification of Ozone in Screen Printing Facilities

Authors: Kiurski J., Adamović S., Oros I., Krstić J., Đogo M.

Abstract:
Most often the contaminants are not taken seriously into consideration, and this behavior comes out directly from the lack of monitoring and professional reporting about pollution in the printing facilities in Serbia. The goal of planned and systematic ozone measurements in ambient air of the screen printing facilities in Novi Sad is to examine of its impact on the employees health, and to track trends in concentration. In this study, ozone concentrations were determined by using discontinuous and continuous method during the automatic and manual screen printing process. Obtained results indicates that the average concentrations of ozone measured during the automatic process were almost 3 to 28 times higher for discontinuous and 10 times higher for continuous method (1.028 ppm) compared to the values prescribed by OSHA. In the manual process, average concentrations of ozone were within prescribed values for discontinuous and almost 3 times higher for continuous method (0.299 ppm).

Keywords: indoor pollution, ozone, screen printing

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6364

113 Rational Structure of Panel with Curved Plywood Ribs

Authors: Janis Šliseris, Karlis Rocens

Abstract: Optimization of rational geometrical and mechanical parameters of panel with curved plywood ribs is considered in this paper. The panel consists of cylindrical plywood ribs manufactured from Finish plywood, upper and bottom plywood flange, stiffness diaphragms. Panel is filled with foam. Minimal ratio of structure self weight and load that could be applied to structure is considered as rationality criteria. Optimization is done, by using classical beam theory without nonlinearities. Optimization of discreet design variables is done by Genetic algorithm.

Keywords: Curved plywood ribs, genetic algorithm, rationalparameters of ribbed panel, structure optimization.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11673

112 The Impact of Cutting Tool Materials on Cutting Force

Authors: M.A. Kamely, M.Y. Noordin

Abstract: A judicious choice of insert material, tool geometry and cutting conditions can make hard turning produce better surfaces than grinding. In the present study, an attempt has been made to investigate the effect of cutting tool materials on cutting forces (feed force, thrust force and cutting force) in finish hard turning of AISI D2 cold work tool steel. In conclusion of the results obtained with a constant depth of cut and feed rate, it is important to note that cutting force is directly affected by cutting tool material.

Keywords: hard turning, cutting force, cutting tool materials, mixed ceramic, cbn

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10196

111 Dispersion of a Solute in Peristaltic Motion of a Couple Stress Fluid in the Presence of Magnetic Field

Authors: Habtu Alemayehu, G. Radhakrishnamacharya

Abstract: An analytical solution for dispersion of a solute in the peristaltic motion of a couple stress fluid in the presence of magnetic field with both homogeneous and heterogeneous chemical reactions is presented. The average effective dispersion coefficient has been found using Taylor-s limiting condition and long wavelength approximation. The effects of various relevant parameters on the average effective coefficient of dispersion have been studied. The average effective dispersion coefficient tends to decrease with magnetic field parameter, homogeneous chemical reaction rate parameter and amplitude ratio but tends to increase with heterogeneous chemical reaction rate parameter.

Keywords: Dispersion, Peristalsis, Couple stress fluid, Chemicalreaction, Magnetic field.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1926

110 Experimental Investigations on the Influence of Properties of Jatropha Biodiesel on Performance, Combustion, and Emission Characteristics of a DI-CI Engine

Authors: P. V. Rao

Abstract: The aim of the present research work is to investigate the influence of Jatropha biodiesel properties on various characteristics of a direct injection compression ignition engine. The experiments were performed at different engine operating regimes with the injection timing prescribed by the engine manufacturer for diesel fuel. The engine characteristics with Jatropha biodiesel were compared against those obtained using diesel fuel. From the results, it is observed that the biodiesel performance and emissions are lower than that of diesel fuel. However, the NOx emission of Jatropha biodiesel is more than that of diesel fuel. These high NOx emissions are due to the presence of unsaturated fatty acids and the advanced injection caused by the higher bulk modulus (or density) of Jatropha biodiesel Furthermore, the possibility for reduction of NOx emissions without expensive engine modifications (hardware) was investigated. Keeping this in mind, the Jatropha biodiesel was preheated. The experimental results show that the retarded injection timing is necessary when using Jatropha biodiesel in order to reduce NOx emission without worsening other engine characteristics. Results also indicate improved performance with the application of preheated biodiesel. The only penalty for using preheated biodiesel is the increase of smoke (soot).

Keywords: chemical properties, combustion, exhaust emissions, Jatropha biodiesel

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7939

109 Performance Boundaries for Interactive Finite Element Applications

Authors: Jaewon Jang, Gregory R. Miller

Abstract: This paper presents work characterizing finite element performance boundaries within which live, interactive finite element modeling is feasible on current and emerging systems. These results are based on wide-ranging tests performed using a prototype finite element program implemented specifically for this study, thereby enabling the unified investigation of numerous direct and iterative solver strategies and implementations in a variety of modeling contexts. The results are intended to be useful for researchers interested in interactive analysis by providing baseline performance estimates, to give guidance in matching solution strategies to problem domains, and to spur further work addressing the challenge of extending the present boundaries.

Keywords: Finite Elements, Interactive Modeling, NumericalAnalysis.

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108 MPSO based Model Order Formulation Technique for SISO Continuous Systems

Authors: S. N. Deepa, G. Sugumaran

Abstract: This paper proposes a new version of the Particle Swarm Optimization (PSO) namely, Modified PSO (MPSO) for model order formulation of Single Input Single Output (SISO) linear time invariant continuous systems. In the General PSO, the movement of a particle is governed by three behaviors namely inertia, cognitive and social. The cognitive behavior helps the particle to remember its previous visited best position. In Modified PSO technique split the cognitive behavior into two sections like previous visited best position and also previous visited worst position. This modification helps the particle to search the target very effectively. MPSO approach is proposed to formulate the higher order model. The method based on the minimization of error between the transient responses of original higher order model and the reduced order model pertaining to the unit step input. The results obtained are compared with the earlier techniques utilized, to validate its ease of computation. The proposed method is illustrated through numerical example from literature.

Keywords: Continuous System, Model Order Formulation, Modified Particle Swarm Optimization, Single Input Single Output, Transfer Function Approach

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107 The Analysis of Duct Model Through Structural and Dynamic Schemes

Authors: S. H. Yahaya, J. M. Ali, M. R. Arham

Abstract: This paper presents the analysis of duct design using static and dynamic approaches. The static approach is used to find out applicability between the design and material applied. The material used in this paper is Thermoplastic Olefins (TPO). For the dynamic approach, the focusing is only on the CFD simulations. The fatigue life in this design and material applied also covered.

Keywords: CFD, structural analysis, fluid analysis, duct design, fatigue life

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106 Wind Speed Data Analysis using Wavelet Transform

Authors: S. Avdakovic, A. Lukac, A. Nuhanovic, M. Music

Abstract: Renewable energy systems are becoming a topic of great interest and investment in the world. In recent years wind power generation has experienced a very fast development in the whole world. For planning and successful implementations of good wind power plant projects, wind potential measurements are required. In these projects, of great importance is the effective choice of the micro location for wind potential measurements, installation of the measurement station with the appropriate measuring equipment, its maintenance and analysis of the gained data on wind potential characteristics. In this paper, a wavelet transform has been applied to analyze the wind speed data in the context of insight in the characteristics of the wind and the selection of suitable locations that could be the subject of a wind farm construction. This approach shows that it can be a useful tool in investigation of wind potential.

Keywords: Wind potential, Wind speed data, Wavelettransform.

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105 Study of MHD Oblique Stagnation Point Assisting Flow on Vertical Plate with Uniform Surface Heat Flux

Authors: Phool Singh, Ashok Jangid, N.S. Tomer, Deepa Sinha

Abstract: The aim of this paper is to study the oblique stagnation point flow on vertical plate with uniform surface heat flux in presence of magnetic field. Using Stream function, partial differential equations corresponding to the momentum and energy equations are converted into non-linear ordinary differential equations. Numerical solutions of these equations are obtained using Runge-Kutta Fehlberg method with the help of shooting technique. In the present work the effects of striking angle, magnetic field parameter, Grashoff number, the Prandtl number on velocity and heat transfer characteristics have been discussed. Effect of above mentioned parameter on the position of stagnation point are also studied.

Keywords: Heat flux, Oblique stagnation point, Mixedconvection, Magneto hydrodynamics

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104 Selective Wet-Etching of Amorphous/Crystallized Sb20se80 Thin Films

Authors: O. Shiman, V. Gerbreders, E. Sledevskis, A. Bulanovs, V.Pashkevich

Abstract: The selective wet-etching of amorphous and crystalline region of Sb20Se80 thin films was carried out using organic based solution e.g. amines. We report the development of an in situ real-time method to study the wet chemical etching process of thin films. Characterization of the structure and surface of films studied by X-ray diffraction, SEM and EBSD methods has been done and potential application suggested.

Keywords: amorphous and crystalline phases, chalcogenide thinfilm, etching process

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2215

103 Numerical Investigation on Latent Heat Storage Unit of Different Configurations

Authors: Manish K Rathod, Jyotirmay Banerjee

Abstract: The storage of thermal energy as a latent heat of phase change material (PCM) has created considerable interest among researchers in recent times. Here, an attempt is made to carry out numerical investigations to analyze the performance of latent heat storage units (LHSU) employing phase change material. The mathematical model developed is based on an enthalpy formulation. Freezing time of PCM packed in three different shaped containers viz. rectangular, cylindrical and cylindrical shell is compared. The model is validated with the results available in the literature. Results show that for the same mass of PCM and surface area of heat transfer, cylindrical shell container takes the least time for freezing the PCM and this geometric effect is more pronounced with an increase in the thickness of the shell than that of length of the shell.

Keywords: Enthalpy Formulation, Latent heat storage unit(LHSU), Numerical Model, Phase change material (PCM)

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/13278

102 Dimensioning of Subsynchronous Cascade for Speed Regulation of Two-Motors 6kv Conveyer Drives

Authors: M. Kasumović, A. Hodžić, M. Tešanović

Abstract: One way for optimum loading of overdimensioning conveyers is speed (capacity) decrement, with attention for production capabilities and demands. At conveyers which drives with three phase slip-ring induction motor, technically reasonable solution for conveyer (driving motors) speed regulation is using constant torque subsynchronous cascade with static semiconductor converter and transformer for energy reversion to the power network. In the paper is described mathematical model for parameter calculation of two-motors 6 kV subsynchronous cascade. It is also demonstrated that applying of this cascade gave several good properties, foremost in electrical energy saving, also in improving of other energy indexes, and finally that results in cost reduction of complete electrical motor drive.

Keywords: Conveyer with rubber belt, electrical motor drive, sub synchronous cascade

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7621

101 Dispersion of a Solute in Peristaltic Motion of a Couple Stress Fluid through a Porous Medium with Slip Condition

Authors: Habtu Alemayehu, G. Radhakrishnamacharya

Abstract: The paper presents an analytical solution for dispersion of a solute in the peristaltic motion of a couple stress fluid through a porous medium with slip condition in the presence of both homogeneous and heterogeneous chemical reactions. The average effective dispersion coefficient has been found using Taylor-s limiting condition and long wavelength approximation. The effects of various relevant parameters on the average coefficient of dispersion have been studied. The average effective dispersion coefficient tends to increase with permeability parameter but tends to decrease with homogeneous chemical reaction rate parameter, couple stress parameter, slip parameter and heterogeneous reaction rate parameter.

Keywords: Dispersion, Peristalsis, Couple stress fluid, Porousmedium, Chemical reaction, Slip condition.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11695

100 Vacuum Membrane Distillation for Desalination of Ground Water by using Flat Sheet Membrane

Authors: Bhausaheb L. Pangarkar, M.G. Sane, Saroj B. Parjane, Mahendra Guddad

Abstract: The possibility of producing drinking water from brackish ground water using Vacuum membrane distillation (VMD) process was studied. It is a rising technology for seawater or brine desalination process. The process simply consists of a flat sheet hydrophobic micro porous PTFE membrane and diaphragm vacuum pump without a condenser for the water recovery or trap. In this work, VMD performance was investigated for aqueous NaCl solution and natural ground water. The influence of operational parameters such as feed flow rate (30 to 55 l/h), feed temperature (313 to 333 K), feed salt concentration (5000 to 7000 mg/l) and permeate pressure (1.5 to 6 kPa) on the membrane distillation (MD) permeation flux have been investigated. The maximum flux reached to 28.34 kg/m2 h at feed temperature, 333 K; vacuum pressure, 1.5 kPa; feed flow rate, 55 l/h and feed salt concentration, 7000 mg/l. The negligible effects in the reduction of permeate flux found over 150 h experimental run for salt water. But for the natural ground water application over 75 h, scale deposits observed on the membrane surface and 29% reduction in the permeate flux over 75 h. This reduction can be eliminated by acidification of feed water. Hence, promote the research attention in apply of VMD for the ground water purification over today-s conventional RO operation.

Keywords: VMD, hydrophobic PTFE flat membrane, desalination, ground water

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8076

99 Statistical Optimization of Process Variables for Direct Fermentation of 226 White Rose Tapioca Stem to Ethanol by Fusarium oxysporu

Authors: A. Magesh, B. Preetha, T. Viruthagiri

Abstract: Direct fermentation of 226 white rose tapioca stem to ethanol by Fusarium oxysporum was studied in a batch reactor. Fermentation of ethanol can be achieved by sequential pretreatment using dilute acid and dilute alkali solutions using 100 mesh tapioca stem particles. The quantitative effects of substrate concentration, pH and temperature on ethanol concentration were optimized using a full factorial central composite design experiment. The optimum process conditions were then obtained using response surface methodology. The quadratic model indicated that substrate concentration of 33g/l, pH 5.52 and a temperature of 30.13oC were found to be optimum for maximum ethanol concentration of 8.64g/l. The predicted optimum process conditions obtained using response surface methodology was verified through confirmatory experiments. Leudeking-piret model was used to study the product formation kinetics for the production of ethanol and the model parameters were evaluated using experimental data.

Keywords: Fusarium oxysporum, Lignocellulosic biomass, Product formation kinetics, Statistical experimental design

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8296

98 Investigation of Water Deficit Stress on Agronomical Traits of Soybean Cultivars in Temperate Climate

Authors: Jahanfar Daneshian, P. Jonoubi, D. Barari Tari

Abstract: In order to investigate water deficit stress on 24 of soybean (Glycine Max. L) cultivars and lines in temperate climate, an experiment was conducted in Iran Seed and Plant Improvement Institute. Stress levels were irrigation after evaporation of 50, 100, 150 mm water from pan, class A. Randomized Completely Block Design was arranged for each stress levels. Some traits such as, node number, plant height, pod number per area, grain number per pod, grain number per area, 1000 grains weight, grain yield and harvest index were measured. Results showed that water deficit stress had significant effect on node number, plant height, pod number per area, grain number per pod, grain number per area, 1000 grains weight and harvest index. Also all of agronomic traits except harvest index influenced significantly by cultivars and lines. The least and most grain yield was belonged to Ronak X Williams and M41 x Clark respectively.

Keywords: Soybean, water deficit stress, Agronomic traits, Yield

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/854

97 An Evaluation of Pesticide Stress Induced Proteins in three Cyanobacterial Species-Anabaena Fertilissima, Aulosira Fertilissima and Westiellopsis Prolifica using SDS-PAGE

Authors: Nirmal Kumar, Rita N. Kumar, Anubhuti Bora, Manmeet Kaur Amb

Abstract: The whole-cell protein-profiling technique was evaluated for studying differences in banding pattern of three different species of Cyanobacteria i.e. Anabaena fertilissima, Aulosira fertilissima and Westiellopsis prolifica under the influence of four different pesticides-2,4-D (Ethyl Ester of 2,4-Dichloro Phenoxy Acetic Acid), Pencycuron (N-[(4-chlorophenyl)methyl]-Ncyclopentyl- N'–phenylurea), Endosulfan (6,7,8,9,10,10hexachloro- 1,5,5a,6,9,9a-hexahydro-6,9-methano-2,4,3-benzodioxathiepine-3- oxide) and Tebuconazole (1-(4-Chlorophenyl)-4,4-dimethyl-3-(1,2,4- triazol-1-ylmethyl)pentan-3-ol). Whole-cell extracts were obtained by sonication treatment (Sonifier cell disruptor -Branson Digital Sonifier S-450D, USA) and were analyzed by sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). SDS-PAGE analyses of the total protein profile of Anabaena fertilissima, Aulosira fertilissima and Westiellopsis prolifica showed a linear decrease in the protein content with increasing pesticide stress when administered to different concentrations of 2, 4-D, Pencycuron, Endosulfan and Tebuconazole. The results indicate that different stressors exert specific effects on cyanobacterial protein synthesis.

Keywords: Cyanobacteria, pesticide, SDS-PAGE

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12250

96 Prevalence and Antimicrobial Susceptibility Patterns of Enteric Bacteria Isolated from Water and Fish in Lake Victoria Basin of Western Kenya

Authors: Jackson H. O. Onyuka, Rose Kakai, David M. Onyango, Peter F. Arama, John Gichuki, Ayub V.O. Ofulla

Abstract: A cross sectional study design and standard microbiological procedures were used to determine the prevalence and antimicrobial susceptibility patterns of Escherichia coli, Salmonella enterica serovar typhimurium and Vibrio cholerae O1 isolated from water and two fish species Rastrineobola argentea and Oreochromis niloticus collected from fish landing beaches and markets in the Lake Victoria Basin of western Kenya. Out of 162 samples analyzed, 133 (82.1%) were contaminated, with S. typhimurium as the most prevalent (49.6%), followed by E. coli (46.6%), and lastly V. cholerae (2.8%). All the bacteria isolates were sensitive to ciprofloxacin. E. coli isolates were resistant to ampicillin, tetracycline, cotrimoxazole, chloramphenical and gentamicin while S. typhimurium isolates exhibited resistance to ampicillin, tetracycline, and cotrimoxazole. The V. cholerae O1 isolates were resistant to tetracycline and ampicillin. The high prevalence of drug resistant enteric bacteria in water and fish from the study region needs public health intervention from the local government.

Keywords: Aquatic environments, Antimicrobial resistance, Enteric bacteria, Lake Victoria Basin

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11118

95 Preliminary Toxicological Evaluations of Polypeptide-K Isolated from Momordica Charantia in Laboratory Rats

Authors: M Nazrul-Hakim, A Yaacob, Y Adam, A Zuraini

Abstract: This study examined the toxicological effects and safety of polypeptide k isolated from the seeds of Momordica charantia in laboratory rats. 30 male Sprague Dawley rats (12 weeks old, bodyweight 180-200 g) were randomly divided into 3 groups (1000 mg/kg, 500 mg and 0 mg/kg). Rats were acclimatized to laboratory conditions for 7 days and at day 8 rats were dosed orally with polypeptide k (in 2% DMSO/normal saline) and the controls received the dosed vehicle only. Rats were then observed for 72 hours before sacrificed. Rats were anaesthetized by pentobarbital (50 mg/kg ip) and 2-3.0 mL of blood was taken by cardiac puncture and rats were scarified by anaesthetic overdose. Immediately, organs (heart, lungs, liver, kidneys) were weigh and taken for histology. Organ sections were then evaluated by a histopathologist. Serum samples were assayed for liver functions (ALT and γ-GT) and kidney functions (BUN and creatinine). All rats showed normal behavior after the dosing and no statistical changes were observed in all blood parameters and organ weight. Histological examinations revealed normal organ structures. In conclusion, dosing of rats up to 1000 mg/kg did not have any effects on the rat behavior, liver or kidney functions nor histology of the selected organs.

Keywords: Polypeptide k, safety, histology, toxicology, Momordica charantia

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/14673

94 Effects of a Nectandra Membranacea Extract on Labeling of Blood Constituents with Technetium-99m and on the Morphology of Red Blood Cells

Authors: Silvana R.F. Moreno, Jorge J. Carvalho, Ana L. Nascimento, Mario Pereira, Luiz Q. A. Caldas, Mário Bernardo-Filho

Abstract:
The aim of this in vitro study was to evaluate the possible interference of a Nectandra membranacea extract (i) on the labeling of blood cells (BC), (ii) on the labeling process of BC and plasma (P) proteins with technetium-99m (Tc-99m) and (iii) on the morphology of red blood cells (RBC). Blood samples were incubated with a Nectandra membranacea crude extract, stannous chloride, Tc- 99m (sodium pertechnetate) was added, and soluble (SF) and insoluble (IF) fractions were isolated. Morphometry studies were performed with blood samples incubated with Nectandra membranacea extract. The results show that the Nectandra membranacea extract does not promote significant alteration of the labeling of BC, IF-P and IF-BC. The Nectandra membranacea extract was able to alter the erythrocyte membrane morphology, but these morphological changes were not capable to interfere on the labeling of blood constituents with Tc-99m.

Keywords: in vitro study, Nectandra membranacea, red bloodcell, technetium-99m

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7103

93 Salinity on Survival and Early Development of Biofuel Feedstock Crops

Authors: Vincent M. Russo

Abstract: Salinity level may affect early development of biofuel feedstock crops. The biofuel feedstock crops canola (Brassica napus L.), sorghum [Sorghum bicolor (L.) Moench], and sunflower (Helianthus annuus L.); and the potential feedstock crop sweet corn (Zea mays L.) were planted in media in pots and treated with aqueous solutions of 0, 0.1, 0.5 and 1.0 M NaCl once at: 1) planting; 2) 7-10 days after planting or 3) first true leaf expansion. An additional treatment (4) comprised of one-half strength of the 0.1, 0.5 and 1.0 M (concentrations 0.05, 0.25, 0.5 M at each application) was applied at first true leaf expansion and four days later. Survival of most crops decreased below 90% above 0.5 M; survival of canola decreased above 0.1 M. Application timing had little effect on crop survival. For canola root fresh and dry weights improved when application was at plant emergence; for sorghum top and root fresh weights improved when the split application was used. When application was at planting root dry weight was improved over most other applications. Sunflower top fresh weight was among the highest when saline solutions were split and top dry weight was among the highest when application was at plant emergence. Sweet corn root fresh weight was improved when the split application was used or application was at planting. Sweet corn root dry weight was highest when application was at planting or plant emergence. Even at high salinity rates survival rates greater than what might be expected occurred. Plants that survived appear to be able to adjust to saline during the early stages of development.

Keywords: Canola, Development, Sorghum, Sunflower, Sweetcorn, Survival

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92 Screening of Process Variables for the Production of Extracellular Lipase from Palm Oil by Trichoderma Viride using Plackett-Burman Design

Authors: R. Rajendiran, S. Gayathri devi, B.T. SureshKumar, V. Arul Priya

Abstract: Plackett-Burman statistical screening of media constituents and operational conditions for extracellular lipase production from isolate Trichoderma viride has been carried out in submerged fermentation. This statistical design is used in the early stages of experimentation to screen out unimportant factors from a large number of possible factors. This design involves screening of up to 'n-1' variables in just 'n' number of experiments. Regression coefficients and t-values were calculated by subjecting the experimental data to statistical analysis using Minitab version 15. The effects of nine process variables were studied in twelve experimental trials. Maximum lipase activity of 7.83 µmol /ml /min was obtained in the 6th trail. Pareto chart illustrates the order of significance of the variables affecting the lipase production. The present study concludes that the most significant variables affecting lipase production were found to be palm oil, yeast extract, K2HPO4, MgSO4 and CaCl2.

Keywords: lipase, submerged fermentation, statistical optimization, Trichoderma viride

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1284

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91 Three Steps of One-way Nested Grid for Energy Balance Equations by Wave Model

Authors: Worachat Wannawong, Usa W. Humphries, Prungchan Wongwises, Suphat Vongvisessomjai

Abstract: The three steps of the standard one-way nested grid for a regional scale of the third generation WAve Model Cycle 4 (WAMC4) is scrutinized. The model application is enabled to solve the energy balance equation on a coarse resolution grid in order to produce boundary conditions for a smaller area by the nested grid technique. In the present study, the model takes a full advantage of the fine resolution of wind fields in space and time produced by the available U.S. Navy Global Atmospheric Prediction System (NOGAPS) model with 1 degree resolution. The nested grid application of the model is developed in order to gradually increase the resolution from the open ocean towards the South China Sea (SCS) and the Gulf of Thailand (GoT) respectively. The model results were compared with buoy observations at Ko Chang, Rayong and Huahin locations which were obtained from the Seawatch project. In addition, the results were also compared with Satun based weather station which was provided from Department of Meteorology, Thailand. The data collected from this station presented the significant wave height (Hs) reached 12.85 m. The results indicated that the tendency of the Hs from the model in the spherical coordinate propagation with deep water condition in the fine grid domain agreed well with the Hs from the observations.

Keywords: energy balance equation, Gulf of Thailand, nested gridapplication, South China Sea, wave model.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4190

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90 Neighbors of Indefinite Binary Quadratic Forms

Authors: Ahmet Tekcan

Abstract: In this paper, we derive some algebraic identities on right and left neighbors R(F) and L(F) of an indefinite binary quadratic form F = F(x, y) = ax2 + bxy + cy2 of discriminant Δ = b2 -4ac. We prove that the proper cycle of F can be given by using its consecutive left neighbors. Also we construct a connection between right and left neighbors of F.

Keywords: Quadratic form, indefinite form, cycle, proper cycle, right neighbor, left neighbor.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2855

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89 Dynamics of a Discrete Three Species Food Chain System

Authors: Kejun Zhuang, Zhaohui Wen

Abstract:
The main purpose of this paper is to investigate a discrete time three–species food chain system with ratio dependence. By employing coincidence degree theory and analysis techniques, sufficient conditions for existence of periodic solutions are established.

Keywords: Food chain, ratio–dependent, coincidence degree, periodic solutions.

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88 Mathematical Modeling for Dengue Transmission with the Effect of Season

Authors: R. Kongnuy., P. Pongsumpun

Abstract: Mathematical models can be used to describe the transmission of disease. Dengue disease is the most significant mosquito-borne viral disease of human. It now a leading cause of childhood deaths and hospitalizations in many countries. Variations in environmental conditions, especially seasonal climatic parameters, effect to the transmission of dengue viruses the dengue viruses and their principal mosquito vector, Aedes aegypti. A transmission model for dengue disease is discussed in this paper. We assume that the human and vector populations are constant. We showed that the local stability is completely determined by the threshold parameter, 0 B . If 0 B is less than one, the disease free equilibrium state is stable. If 0 B is more than one, a unique endemic equilibrium state exists and is stable. The numerical results are shown for the different values of the transmission probability from vector to human populations.

Keywords: Dengue disease, mathematical model, season, threshold parameters.

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87 Mathematical Model for the Transmission of Two Plasmodium Malaria

Authors: P. Pongsumpun

Abstract: Malaria is transmitted to the human by biting of infected Anopheles mosquitoes. This disease is a serious, acute and chronic relapsing infection to humans. Fever, nausea, vomiting, back pain, increased sweating anemia and splenomegaly (enlargement of the spleen) are the symptoms of the patients who infected with this disease. It is caused by the multiplication of protozoa parasite of the genus Plasmodium. Plasmodium falciparum, Plasmodium vivax, Plasmodium malariae and Plasmodium ovale are the four types of Plasmodium malaria. A mathematical model for the transmission of Plasmodium Malaria is

developed in which the human and vector population are divided into two classes, the susceptible and the infectious classes. In this paper, we formulate the dynamical model of Plasmodium falciparum and Plasmodium vivax malaria. The standard dynamical analysis is used for analyzing the behavior for the transmission of this disease. The Threshold condition is found and numerical results are shown to confirm the analytical results.

Keywords: Dynamical analysis, Malaria, mathematical model, threshold condition.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10505

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86 Parametric and Nonparametric Analysis of Breast Cancer Treatments

Authors: Chunling Cong, Chris.P.Tsokos

Abstract: The objective of the present research manuscript is to perform parametric, nonparametric, and decision tree analysis to evaluate two treatments that are being used for breast cancer patients. Our study is based on utilizing real data which was initially used in “Tamoxifen with or without breast irradiation in women of 50 years of age or older with early breast cancer" [1], and the data is supplied to us by N.A. Ibrahim “Decision tree for competing risks survival probability in breast cancer study" [2]. We agree upon certain aspects of our findings with the published results. However, in this manuscript, we focus on relapse time of breast cancer patients instead of survival time and parametric analysis instead of semi-parametric decision tree analysis is applied to provide more precise recommendations of effectiveness of the two treatments with respect to reoccurrence of breast cancer.

Keywords: decision tree, breast cancer treatments, parametricanalysis, non-parametric analysis

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85 A Novel Method for Blood Glucose Measurement by Noninvasive Technique Using Laser

Authors: V.Ashok, A.Nirmalkumar, N.Jeyashanthi

Abstract: A method and apparatus for noninvasive measurement of blood glucose concentration based on transilluminated laser beam via the Index Finger has been reported in this paper. This method depends on atomic gas (He-Ne) laser operating at 632.8nm wavelength. During measurement, the index finger is inserted into the glucose sensing unit, the transilluminated optical signal is converted into an electrical signal, compared with the reference electrical signal, and the obtained difference signal is processed by signal processing unit which presents the results in the form of blood glucose concentration. This method would enable the monitoring blood glucose level of the diabetic patient continuously, safely and noninvasively.

Keywords: Anisotropy factor, Blood glucose, Diabetes Mellitus, Noninvasive method, Photo detectors.

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84 Two-step Iterative Process For Common Fixed Points of Two Asymptotically Quasi-nonexpansive Mappings

Authors: Safeer Hussain Khan

Abstract: In this paper, we consider an iteration process for approximating common fixed points of two asymptotically quasinonexpansive mappings and we prove some strong and weak convergence theorems for such mappings in uniformly convex Banach spaces.

Keywords: Asypmtotically quasi-nonexpansive mappings, Commonfixed point, Strong and weak convergence, Iteration process.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10377

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83 Volume Fraction Law for Stainless Steel on Inner Surface and Nickel on Outer Surface For FGM Cylindrical Shell

Authors: M.Hosseinjani Zamenjani, A.R.Tahmasebi Birgani, M.R.Isvandzibaei

Abstract: Vibration of thin cylindrical shells made of a functionally gradient material composed of stainless steel and nickel is presented. The effects of the FGM configuration are studied by studying the frequencies of FG cylindrical shells. In this case FG cylindrical shell has Nickel on its outer surface and stainless steel on its inner surface. The study is carried out based on third order shear deformation shell theory. The objective is to study the natural frequencies, the influence of constituent volume fractions and the effects of configurations of the constituent materials on the frequencies. The properties are graded in the thickness direction according to the volume fraction power-law distribution. Results are presented on the frequency characteristics, the influence of the constituent various volume fractions on the frequencies.

Keywords: Nickel, Stainless Steel, Cylindrical shell.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7695

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82 A Promising Approach to Supporting Knowledge-Intensive Business Processes: Business Case Management

Authors: Zeljko Panian

Abstract:

Through the course of this paper we define Business Case Management and its characteristics, and highlight its link to knowledge workers. Business Case Management combines knowledge and process effectively, supporting the ad hoc and unpredictable nature of cases, and coordinate a range of other technologies to appropriately support knowledge-intensive processes. We emphasize the growing importance of knowledge workers and the current poor support for knowledge work automation. We also discuss the challenges in supporting this kind of knowledge work and propose a novel approach to overcome these challenges.

Keywords: Knowledge management, knowledge workers, business process management, business case management, automation.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2724

81 Effect of Concrete Nonlinear Parameters on the Seismic Response of Concrete Gravity Dams

Authors: Z. Heirany, M. Ghaemian

Abstract: Behavior of dams against the seismic loads has been studied by many researchers. Most of them proposed new numerical methods to investigate the dam safety. In this paper, to study the effect of nonlinear parameters of concrete in gravity dams, a twodimensional approach was used including the finite element method, staggered method and smeared crack approach. Effective parameters in the models are physical properties of concrete such as modulus of elasticity, tensile strength and specific fracture energy. Two different models were used in foundation (mass-less and massed) in order to determine the seismic response of concrete gravity dams. Results show that when the nonlinear analysis includes the dam- foundation interaction, the foundation-s mass, flexibility and radiation damping are important in gravity dam-s response.

Keywords: Numerical methods; concrete gravity dams; finiteelement method; boundary condition

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15616

80 Adaptive Square-Rooting Companding Technique for PAPR Reduction in OFDM Systems

Authors: Wisam F. Al-Azzo, Borhanuddin Mohd. Ali

Abstract: This paper addresses the problem of peak-to-average power ratio (PAPR) in orthogonal frequency division multiplexing (OFDM) systems. It also introduces a new PAPR reduction technique based on adaptive square-rooting (SQRT) companding process. The SQRT process of the proposed technique changes the statistical characteristics of the OFDM output signals from Rayleigh distribution to Gaussian-like distribution. This change in statistical distribution results changes of both the peak and average power values of OFDM signals, and consequently reduces significantly the PAPR. For the 64QAM OFDM system using 512 subcarriers, up to 6 dB reduction in PAPR was achieved by square-rooting technique with fixed degradation in bit error rate (BER) equal to 3 dB. However, the PAPR is reduced at the expense of only -15 dB out-ofband spectral shoulder re-growth below the in-band signal level. The proposed adaptive SQRT technique is superior in terms of BER performance than the original, non-adaptive, square-rooting technique when the required reduction in PAPR is no more than 5 dB. Also, it provides fixed amount of PAPR reduction in which it is not available in the original SQRT technique.

Keywords: complementary cumulative distribution function(CCDF), OFDM, peak-to-average power ratio (PAPR), adaptivesquare-rooting PAPR reduction technique.

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79 Design of Encoding Calculator Software for Huffman and Shannon-Fano Algorithms

Authors: Wilson Chanhemo, Henry. R. Mgombelo, Omar F Hamad, T. Marwala

Abstract: This paper presents a design of source encoding calculator software which applies the two famous algorithms in the field of information theory- the Shannon-Fano and the Huffman schemes. This design helps to easily realize the algorithms without going into a cumbersome, tedious and prone to error manual mechanism of encoding the signals during the transmission. The work describes the design of the software, how it works, comparison with related works, its efficiency, its usefulness in the field of information technology studies and the future prospects of the software to engineers, students, technicians and alike. The designed “Encodia" software has been developed, tested and found to meet the intended requirements. It is expected that this application will help students and teaching staff in their daily doing of information theory related tasks. The process is ongoing to modify this tool so that it can also be more intensely useful in research activities on source coding.

Keywords: Coding techniques, Coding algorithms, Codingefficiency, Encodia, Encoding software.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/13156

78 Study on Geometric Design of Nay Pyi Taw-Mandalay Expressway and Possible Improvements; Sagarinn-Myinsain Portion

Authors: War War Myint

Abstract: Geometric design is an important part of planning process design for physical highway to fill up basic function of roads, to give good traffic service. It is found that most of the road safety problems occur at the horizontal curves and complex-compound curves. In this paper, review on Sagarinn-Myinsain Portion of Nay Pyi Taw - Mandalay highway has been conducted in aspect of geometric design induced road safety condition. Horizontal alignment of geometric features and curve details are reviewed based on (AASHTO) standard and revised by Autodesk Land Desktop Software. Moreover, 85th Percentile Operation Speeds (V85) with driver confidence on horizontal curves is evaluated in order to obtain the range of highway safety factor (FS). The length of the selected highway portion is 13.65 miles and 8 lanes. The results of this study can be used to investigate the possible hazardous locations in advance and to revise how design radius and super elevation should be for better road safety performance for the selected portion. Moreover, the relationship between highway safety and highway

geometry characteristics can also be known.

Keywords: Geometric design; horizontal alignment; superelevation; 85th percentile operation speed (V85), safety factor (FS).

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12867

77 Modeling and Simulation of Robotic Arm Movement using Soft Computing

Authors: V. K. Banga, Jasjit Kaur, R. Kumar, Y. Singh

Abstract: In this research paper we have presented control architecture for robotic arm movement and trajectory planning using Fuzzy Logic (FL) and Genetic Algorithms (GAs). This architecture is used to compensate the uncertainties like; movement, friction and settling time in robotic arm movement. The genetic algorithms and fuzzy logic is used to meet the objective of optimal control movement of robotic arm. This proposed technique represents a general model for redundant structures and may extend to other structures. Results show optimal angular movement of joints as result of evolutionary process. This technique has edge over the other techniques as minimum mathematics complexity used.

Keywords: Kinematics, Genetic algorithms (GAs), Fuzzy logic(FL), Optimal control.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/521

76 Evaluation of the Antifungal and Antioxidant Activities of the Leaf Extract of Aloe vera(Aloe barbadensis Miller)

Authors: Tin A. Khaing

Abstract: Aloe vera has been used worldwide both for pharmaceutical, food, and cosmetic industries due to the plethora of biological activities of some of its metabolites. The aim of this study was to evaluate the antifungal and antioxidant activities of the leaf extract. The antifungal activity was determined by the agar-well diffusion method against plant and human fungal pathogens. The methanol and ethanol portions of the extracts studied were more bioactive than ethyl acetate portion. It was also observed that the activity was more pronounced on plant pathogen than human pathogen except Candida albicans. This is an indication that the extract has the potential to treat plant fungal infections. The Aloe extract showed the significant antioxidant activity by the DPPH radical scavenging method. Therefore, the Aloe extract provided as natural antioxidant has been used in health foods for medical and preservative purposes.

Keywords: Aloe vera, antifungal, antioxidant, DPPH

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2624

75 Prediction of Phenolic Compound Migration Process through Soil Media using Artificial Neural Network Approach

Authors: Supriya Pal, Kalyan Adhikari, Somnath Mukherjee, Sudipta Ghosh

Abstract: This study presents the application of artificial neural network for modeling the phenolic compound migration through vertical soil column. A three layered feed forward neural network with back propagation training algorithm was developed using forty eight experimental data sets obtained from laboratory fixed bed vertical column tests. The input parameters used in the model were the influent concentration of phenol(mg/L) on the top end of the soil column, depth of the soil column (cm), elapsed time after phenol injection (hr), percentage of clay (%), percentage of silt (%) in soils. The output of the ANN was the effluent phenol concentration (mg/L) from the bottom end of the soil columns. The ANN predicted results were compared with the experimental results of the laboratory tests and the accuracy of the ANN model was evaluated.

Keywords: Modeling, Neural Networks, Phenol, Soil media

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3200

74 From Separatism to Coalition: Variants in Language Politics and Leadership Pattern in Dravidian Movement

Authors: Subramaniam Chandran

Abstract: This paper describes the evolution of language politics and the part played by political leaders with reference to the Dravidian parties in Tamil Nadu. It explores the interesting evolution from separatism to coalition in sustaining the values of parliamentary democracy and federalism. It seems that the appropriation of language politics is fully ascribed to the DMK leadership under Annadurai and Karunanidhi. For them, the Tamil language is a self-determining power, a terrain of nationhood, and a perennial source of social and political powers. The DMK remains a symbol of Tamil nationalist party playing language politics in the interest of the Tamils. Though electoral alliances largely determine the success, the language politics still has significant space in the politics of Tamil Nadu. Ironically, DMK moves from the periphery to centre for getting national recognition for the Tamils as well as for its own maximization of power. The evolution can be seen in two major phases as: language politics for party building; and language politics for state building with three successive political processes, namely, language politics in the process of separatism, representative politics and coalition. The much pronounced Dravidian Movement is radical enough to democratize the party ideology to survive the spirit of parliamentary democracy. This has secured its own rewards in terms of political power. The political power provides the means to achieve the social and political goal of the political party. Language politics and leadership pattern actualized this trend though the movement is shifted from separatism to coalition.

Keywords: Language politics, cultural nationalism, leadership, social justice

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9250

73 Wavelet-Based Spectrum Sensing for Cognitive Radios using Hilbert Transform

Authors: Shiann-Shiun Jeng, Jia-Ming Chen, Hong-Zong Lin, Chen-Wan Tsung

Abstract: For cognitive radio networks, there is a major spectrum sensing problem, i.e. dynamic spectrum management. It is an important issue to sense and identify the spectrum holes in cognitive radio networks. The first-order derivative scheme is usually used to detect the edge of the spectrum. In this paper, a novel spectrum sensing technique for cognitive radio is presented. The proposed algorithm offers efficient edge detection. Then, simulation results show the performance of the first-order derivative scheme and the proposed scheme and depict that the proposed scheme obtains better performance than does the first-order derivative scheme.

Keywords: cognitive radio, Spectrum Sensing, wavelet, edgedetection

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1265

72 Building Trust of Mobile Users and their Adoption of M-Commerce

Authors: Shafiq Ur Rehman, Jane-Lisa Coughlan

Abstract: One challenging direction of mobile commerce (mcommerce) that is getting a great deal of attention globally is mobile financing. The smart-phone and PDA users all around the world are facing difficulties to become accustomed and trust in m-commerce. The main rationale can be the slow variation and lack of trust in mobile payment systems. Mobile payment systems that are in use need to be more effective and efficient. This paper proposes: the interface design is not the only factor affecting the m-commerce adoption and lack of trust; in fact it is the combined effect of interface usability and trustworthy mobile payment systems, because it-s the money that the user has to spend at the end of the day, which the user requires to get transferred securely. The purpose of this research is to identify the problems regarding the trust and adaption of m-commerce applications by mobile users and to provide the best possible solution with respect to human computer interaction (HCI) principles.

Keywords: m-commerce, usability, mobile payment method, interface design.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9368

71 The Development of a Narrative Management System: Storytelling in Knowledge Management

Authors: Savita K.S, Hazwani H., Kalid K. S.

Abstract: This paper presents a narrative management system for organizations to capture organization's tacit knowledge through stories. The intention of capturing tacit knowledge is to address the problem that comes with the mobility of workforce in organisation. Storytelling in knowledge management context is seen as a powerful management tool to communicate tacit knowledge in organization. This narrative management system is developed firstly to enable uploading of many types of knowledge sharing stories, from general to work related-specific stories and secondly, each video has comment functionality where knowledge users can post comments to other knowledge users. The narrative management system allows the stories to browse, search and view by the users. In the system, stories are stored in a video repository. Stories that were produced from this framework will improve learning, knowledge transfer facilitation and tacit knowledge quality in an organization.

Keywords: Knowledge Management, Storytelling, Stories, Tacit Knowledge

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/13860

70 Mathematical Modeling Experimental Approach of the Friction on the Tool-Chip Interface of Multicoated Carbide Turning Inserts

Authors: Samy E. Oraby, Ayman M. Alaskari

Abstract: The importance of machining process in today-s industry requires the establishment of more practical approaches to clearly represent the intimate and severe contact on the tool-chipworkpiece interfaces. Mathematical models are developed using the measured force signals to relate each of the tool-chip friction components on the rake face to the operating cutting parameters in rough turning operation using multilayers coated carbide inserts. Nonlinear modeling proved to have high capability to detect the nonlinear functional variability embedded in the experimental data. While feedrate is found to be the most influential parameter on the friction coefficient and its related force components, both cutting speed and depth of cut are found to have slight influence. Greater deformed chip thickness is found to lower the value of friction coefficient as the sliding length on the tool-chip interface is reduced.

Keywords: Mathematical modeling, Cutting forces, Frictionforces, Friction coefficient and Chip ratio.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2691

69 Developing of Fragility Curve for Two-Span Simply Supported Concrete Bridge in Near-Fault Area

Authors: S. Shirazian, M.R. Ghayamghamian, G.R. Nouri

Abstract: Bridges are one of the main components of transportation networks. They should be functional before and after earthquake for emergency services. Therefore we need to assess seismic performance of bridges under different seismic loadings. Fragility curve is one of the popular tools in seismic evaluations.

The fragility curves are conditional probability statements, which give the probability of a bridge reaching or exceeding a particular damage level for a given intensity level. In this study, the seismic performance of a two-span simply supported concrete bridge is assessed. Due to usual lack of empirical data, the analytical fragility curve was developed by results of the dynamic analysis of bridge subjected to the different time histories in near-fault area.

Keywords: Fragility curve, Seismic behavior, Time historyanalysis, Transportation Network.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7611

68 Recent Trends in Nonlinear Methods of HRV Analysis: A Review

Authors: Ramesh K. Sunkaria

Abstract: The linear methods of heart rate variability analysis such as non-parametric (e.g. fast Fourier transform analysis) and parametric methods (e.g. autoregressive modeling) has become an established non-invasive tool for marking the cardiac health, but their sensitivity and specificity were found to be lower than expected with positive predictive value

Keywords: chaos, nonlinear dynamics, sample entropy, approximate entropy, detrended fluctuation analysis.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2279

67 A Survey of Various Algorithms for VIsi Physical Design

Authors: Rajine Swetha R, B. Shekar Babu, Sumithra Devi K.A

Abstract: Electronic Systems are the core of everyday lives. They form an integral part in financial networks, mass transit, telephone systems, power plants and personal computers. Electronic systems are increasingly based on complex VLSI (Very Large Scale Integration) integrated circuits. Initial electronic design automation is concerned with the design and production of VLSI systems. The next important step in creating a VLSI circuit is Physical Design. The input to the physical design is a logical representation of the system under design. The output of this step is the layout of a physical package that optimally or near optimally realizes the logical representation. Physical design problems are combinatorial in nature and of large problem sizes. Darwin observed that, as variations are introduced into a population with each new generation, the less-fit individuals tend to extinct in the competition of basic necessities. This survival of fittest principle leads to evolution in species. The objective of the Genetic Algorithms (GA) is to find an optimal solution to a problem .Since GA-s are heuristic procedures that can function as optimizers, they are not guaranteed to find the optimum, but are able to find acceptable solutions for a wide range of problems. This survey paper aims at a study on Efficient Algorithms for VLSI Physical design and observes the common traits of the superior contributions.

Keywords: Genetic Algorithms, Physical Design, VLSI.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9265

66 Effects of Tap Changing Transformer and Shunt Capacitor on Voltage Stability Enhancement of Transmission Networks

Authors: Pyone Lai Swe, Wanna Swe, Kyaw Myo Lin

Abstract:
Voltage stability has become an important issue to many power systems around the world due to the weak systems and long line on power system networks. In this paper, MATLAB load flow program is applied to obtain the weak points in the system combined with finding the voltage stability limit. The maximum permissible loading of a system, within the voltage stability limit, is usually determined. The methods for varying tap ratio (using tap changing transformer) and applying different values of shunt capacitor injection to improve the voltage stability within the limit are also provided.

Keywords: Load flow, Voltage stability, Tap changingtransformer, Shunt capacitor injection, Voltage stability limit

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12758

65 Optimization for Reducing Handoff Latency and Utilization of Bandwidth in ATM Networks

Authors: Pooja, Megha Kulshrestha, V. K. Banga, Parvinder S. Sandhu

Abstract: To support mobility in ATM networks, a number of technical challenges need to be resolved. The impact of handoff schemes in terms of service disruption, handoff latency, cost implications and excess resources required during handoffs needs to be addressed. In this paper, a one phase handoff and route optimization solution using reserved PVCs between adjacent ATM switches to reroute connections during inter-switch handoff is studied. In the second phase, a distributed optimization process is initiated to optimally reroute handoff connections. The main objective is to find the optimal operating point at which to perform optimization subject to cost constraint with the purpose of reducing blocking probability of inter-switch handoff calls for delay tolerant traffic. We examine the relation between the required bandwidth resources and optimization rate. Also we calculate and study the handoff blocking probability due to lack of bandwidth for resources reserved to facilitate the rapid rerouting.

Keywords: Wireless ATM, Mobility, Latency, Optimization rateand Blocking Probability.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9938

64 Sequence Relationships Similarity of Swine Influenza a (H1N1) Virus

Authors: Patsaraporn Somboonsak, Mud-Armeen Munlin

Abstract: In April 2009, a new variant of Influenza A virus subtype H1N1 emerged in Mexico and spread all over the world. The influenza has three subtypes in human (H1N1, H1N2 and H3N2) Types B and C influenza tend to be associated with local or regional epidemics. Preliminary genetic characterization of the influenza viruses has identified them as swine influenza A (H1N1) viruses. Nucleotide sequence analysis of the Haemagglutinin (HA) and Neuraminidase (NA) are similar to each other and the majority of their genes of swine influenza viruses, two genes coding for the neuraminidase (NA) and matrix (M) proteins are similar to corresponding genes of swine influenza. Sequence similarity between the 2009 A (H1N1) virus and its nearest relatives indicates that its gene segments have been circulating undetected for an extended period. Nucleic acid sequence Maximum Likelihood (MCL) and DNA Empirical base frequencies, Phylogenetic relationship amongst the HA genes of H1N1 virus isolated in Genbank having high nucleotide sequence homology. In this paper we used 16 HA nucleotide sequences from NCBI for computing sequence relationships similarity of swine influenza A virus using the following method MCL the result is 28%, 36.64% for Optimal tree with the sum of branch length, 35.62% for Interior branch phylogeny Neighber – Join Tree, 1.85% for the overall transition/transversion, and 8.28% for Overall mean distance.

Keywords: Sequence DNA, Relationship of swine, Swineinfluenza, Sequence Similarity

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2099

63 Design Considerations of PV Water Pumping and Rural Electricity System (2011) in Lower Myanmar

Authors: Nang Saw Yuzana Kya ing, Wunna Swe

Abstract: Photovoltaic (PV) systems provides a viable means of power generation for applications like powering residential appliances, electrification of villages in rural areas, refrigeration and water pumping. Photovoltaic-power generation is reliable. The operation and maintenance costs are very low. Since Myanmar is a land of plentiful sunshine, especially in central and southern regions of the country, the solar energy could hopefully become the final solution to its energy supply problem in rural area.

Keywords: Myanmar, Standalone PV Inverter, PV WaterPumping, Design Analysis, Induction Motor Driving System

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8783

62 Unsteady Free Convection Flow Over a Three-Dimensional Stagnation Point With Internal Heat Generation or Absorption

Authors: Mohd Ariff Admon, Abdul Rahman Mohd Kasim, Sharidan Shafie

Abstract: This paper considers the effect of heat generation proportional l to (T - T∞)p , where T is the local temperature and T∞ is the ambient temperature, in unsteady free convection flow near the stagnation point region of a three-dimensional body. The fluid is considered in an ambient fluid under the assumption of a step change in the surface temperature of the body. The non-linear coupled partial differential equations governing the free convection flow are solved numerically using an implicit finite-difference method for different values of the governing parameters entering these equations. The results for the flow and heat characteristics when p ≤ 2 show that the transition from the initial unsteady-state flow to the final steadystate flow takes place smoothly. The behavior of the flow is seen strongly depend on the exponent p.

Keywords: Free convection, Boundary layer flow, Stagnationpoint, Heat generation

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7055

61 Quantitative Determination of Free Radical Scavenging Activity and Anti-tumor Activity of Some Myanmar Herbal Plants

Authors: M. M. Mon, S. S. Maw, Z. K. Oo

Abstract: Antioxidant activities of ethanolic extracts of Ardisia japonica Blume., Ageartum conyzoides Linn., and Cocculus hirsutus Linn Diels. leaves was determined qualitatively and quantitatively in this research. 1, 1-diphenyl-2-picrylhydrazyl (DPPH) free radical solution was used to investigate free radical scavenging activity of these leaves extracts. Ascorbic acid (Vitamin C) was used as the standard. In the present investigation, it is found that all of these extracts have remarkable antioxidant activities. The EC50 values of these ethanolic extracts were 12.72 μg/ml for A. japonica, 15.19 μg/ml for A. conyzoides, 10.68 μg/ml for C. hirsutus respectively. Among these Myanmar medicinal plants, C. hirsutus showed higher antioxidant activities as well as free radical scavenging activity than black tea (Camellia sinensis), the famous antioxidant, and A. japonica and A. conyzoides showed a rather lower antioxidant activity than tea extracts. According to results from bioassay with carrot discs infected with Agrobacterium tumefaciens, all extracts showed anti-tumor activity after 3 weeks of incubation. No gall was detected in carrot disks treated with C. hirsutus and A. japonica extracts in the dose of 100ppm and in carrot discs treated with A. conyzoides extract in the dose of 1000 ppm. Therefore, the research clearly indicates that these weedy plants of dry farm land are exceptionally advantageous for human health.

Keywords: Antioxidant, Anti-tumor activity, Carrot-discbioassay, DPPH

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7858

60 Analysis of Highway Slope Failure by an Application of the Stereographic Projection

Authors: Chin-Yu Lee, Iau-Teh Wang

Abstract: The mountain road slope failures triggered by earthquake activities and torrential rain namely to create the disaster. Province Road No. 24 is a main

route to the Wutai Township. The area of the study is located at the mileages between 46K and 47K along the road. However, the road has been suffered frequent damages as a result of landslide and slope failures during typhoon seasons. An understanding of the sliding behaviors in the area appears to be necessary. Slope failures triggered by earthquake activities and heavy rainfalls occur frequently. The study is to understand the mechanism of slope failures and to look for the way to deal with the situation. In order to achieve these objectives, this paper is based on theoretical and structural geology data interpretation program to assess the potential slope sliding behavior. The study showed an intimate relationship between the landslide behavior of the slopes and the stratum materials, based on structural geology analysis method to analysis slope stability and finds the slope safety coefficient to predict the sites of destroyed layer. According to the case study and parameter analyses results, the slope mainly slips direction compared to the site located in the southeast area. Find rainfall to result in the rise of groundwater level is main reason of the landslide mechanism. Future need to set up effective horizontal drain at corrective location, that can effective restrain mountain road slope failures and increase stability of slope.

Keywords: slope stability analysis, Stereographic Projection, wedge Failure.

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59 A Hybrid Recommender System based on Collaborative Filtering and Cloud Model

Authors: Chein-Shung Hwang, Ruei-Siang Fong

Abstract: User-based Collaborative filtering (CF), one of the most prevailing and efficient recommendation techniques, provides personalized recommendations to users based on the opinions of other users. Although the CF technique has been successfully applied in various applications, it suffers from serious sparsity problems. The cloud-model approach addresses the sparsity problems by constructing the user-s global preference represented by a cloud eigenvector. The user-based CF approach works well with dense datasets while the cloud-model CF approach has a greater performance when the dataset is sparse. In this paper, we present a hybrid approach that integrates the predictions from both the user-based CF and the cloud-model CF approaches. The experimental results show that the proposed hybrid approach can ameliorate the sparsity problem and provide an improved prediction quality.

Keywords: Cloud model, Collaborative filtering, Hybridrecommender system

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7682

58 Free Convection Boundary Layer Flow of a Viscoelastic Fluid in the Presence of Heat Generation

Authors: Abdul Rahman Mohd Kasim, Mohd Ariff Admon, Sharidan Shafie

Abstract: The present paper considers the steady free convection boundary layer flow of a viscoelastics fluid with constant temperature in the presence of heat generation. The boundary layer equations are an order higher than those for the Newtonian (viscous) fluid and the adherence boundary conditions are insufficient to determine the solution of these equations completely. The governing boundary layer equations are first transformed into non-dimensional form by using special dimensionless group. Computations are performed numerically by using Keller-box method by augmenting an extra boundary condition at infinity and the results are displayed graphically to illustrate the influence of viscoelastic K, heat generation γ , and Prandtl Number, Pr parameters on the velocity and temperature profiles. The results of the surface shear stress in terms of the local skin friction and the surface rate of heat transfer in terms of the local Nusselt number for a selection of the heat generation parameterγ (=0.0, 0.2, 0.5, 0.8, 1.0) are obtained and presented in both tabular and graphical formats. Without effect of the internal heat generation inside the fluid domain for which we take γ = 0.0, the present numerical results show an excellent agreement with previous publication.

Keywords: Free Convection, Boundary Layer, CircularCylinder, Viscoelastic Fluid, Heat Generation

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4539

57 Entrepreneurship Game: Digital 'Catur Bistari'

Authors: A.A. Amran, S. R. M. Shukri, S. M. Taib

Abstract: The role of entrepreneurs in generating the economy is very important. Thus, nurturing entrepreneurship skills among society is very crucial and should start from the early age. One of the methods is to teach through game such as board game. Game provides a fun and interactive platform for players to learn and play. Besides that as today-s world is moving towards Islamic approach in terms of finance, banking and entertainment but Islamic based game is still hard to find in the market especially games on entrepreneurship. Therefore, there is a gap in this segment that can be filled by learning entrepreneurship through game. The objective of this paper is to develop an entrepreneurship digital-based game entitled “Catur Bistari" that is based on Islamic business approach. Knowledge and skill of entrepreneurship and Islamic business approach will be learned through the tasks that are incorporated inside the game.

Keywords: Board game, educational game, entrepreneurship, Islamic finance and simulation.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3115

56 Techno-Economics Study to Select Optimum Desalination Plant for Asalouyeh Combined Cycle Power Plant in Iran

Authors: Z. Gomar, H. Heidary, M. Davoudi

Abstract:
This research deals with techno economic analysis to select the most economic desalination method for Asalouyeh combined cycle power plant . Due to lack of fresh water, desalination of sea water is necessary to provide required DM water of Power Plant. The most common desalination methods are RO, MSF, MED, and MED–TVC. In this research, methods of RO, MED, and MED– TVC have been compared. Simulation results show that recovery of heat of exhaust gas of main stack is optimum case for providing DM water required for injected steam of MED desalination. This subject is very important because of improving thermal

efficiency of power plant using extra heat recovery. Also, it has been shown that by adding 3 rows of finned tube to de-aerator evaporator, which is very simple and low cost, required steam for generating 5200 m3/day of desalinated water is obtainable.

Keywords: Desalination, MED, thermodynamic simulation, combined cycle power plant.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2533

55 The Influence of Mobile Phone's Forms in the User Perception

Authors: The Jaya Suteja, Stephany Tedjohartoko

Abstract:
Not all types of mobile phone are successful in entering the market because some types of the mobile phone have a negative perception of user. Therefore, it is important to understand the influence of mobile phone's characteristics in the local user perception. This research investigates the influence of QWERTY mobile phone's forms in the perception of Indonesian user. First, some alternatives of mobile phone-s form are developed based on a certain number of mobile phone's models. At the second stage, some word pairs as design attributes of the mobile phone are chosen to represent the user perception of mobile phone. At the final stage, a survey is conducted to investigate the influence of the developed form alternatives to the user perception. Based on the research, users perceive mobile phone's form with curved top and straight bottom shapes and mobile phone's form with slider and antenna as the most negative form. Meanwhile, mobile phone's form with curved top and bottom shapes and mobile phone-s form without slider and antenna are perceived by the user as the most positive form.

Keywords: Influence, mobile phone, form, user perception.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8597

54 Coverage Availability for the IEEE 802.16 System over the SUI Channels with Rayleigh Fading

Authors: Shiann-Shiun Jeng, Chen-Wan Tsung, Hong-You Liou, Chun-Chieh Chang, Jia-Ming Chen

Abstract: The coverage probability and range of IEEE 802.16 systems depend on different wireless scenarios. Evaluating the performance of IEEE 802.16 systems over Stanford University Interim (SUI) channels is suggested by IEEE 802.16 specifications. In order to derive an effective method for forecasting the coverage probability and range, this study uses the SUI channel model to analyze the coverage probability with Rayleigh fading for an IEEE 802.16 system. The BER of the IEEE 802.16 system is shown in the simulation results. Then, the maximum allowed path loss can be calculated and substituted into the coverage analysis. Therefore, simulation results show the coverage range with and without Rayleigh fading.

Keywords: OFDM, coverage, SUI channel, IEEE 802.16

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6816

53 Elastic-Plastic Analysis for Finite Deformation of a Rotating Disk Having Variable Thickness with Inclusion

Authors: Sanjeev Sharma, Manoj Sahni

Abstract: Transition theory has been used to derive the elasticplastic and transitional stresses. Results obtained have been discussed numerically and depicted graphically. It is observed that the rotating disk made of incompressible material with inclusion require higher angular speed to yield at the internal surface as compared to disk made of compressible material. It is seen that the radial and circumferential stresses are maximum at the internal surface with and without edge load (for flat disk). With the increase in thickness parameter (k = 2, 4), the circumferential stress is maximum at the external surface while the radial stress is maximum at the internal surface. From the figures drawn the disk with exponentially varying thickness (k = 2), high angular speed is required for initial yielding at internal surface as compared to flat disk and exponentially varying thickness for k = 4 onwards. It is concluded that the disk made of isotropic compressible material is on the safer side of the design as compared to disk made of isotropic incompressible material as it requires higher percentage increase in an angular speed to become fully plastic from its initial yielding.

Keywords: Finite deformation, Incompressibility, Transitionalstresses, Elastic-plastic.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1646

52 Study on Antioxidant and Antitumor Activities of Some Herbal Extracts

Authors: S.S. Maw, M. M. Mon, Z .K .Oo

Abstract: The potential of antioxidant activities of the plant extract Gynura procumbens, Achyranthes aspera and Polygenum tomentosum were studied by using 1, 1-diphenyl-2-picrylhydrazyl (DPPH) .Antioxidant activity was qualitatively and quantitatively determined. In this analysis , Ascorbic acid (Vitamin C) was used as the standard .The antioxidant activities were observed all three plant extracts and the EC50 values of G procumbens A.aspera and P.tomemtosum were 13.7 µg /ml,14.37 µg /ml and 14.35 µg /ml. Among these plants, G.procumbens is more potent antioxidant activity then others. Antitumor activities were found with A.aspera (s2) extracts in the dose of 100ppm in carrot disks and G.procumbens (s1) and P.tomentosum (s3) in the dose of 1000 ppm. Therefore, these herbal plants are used in traditional medicines.

Keywords: Antioxidant activity, Antitumor activity, DPPH, G.procumbens.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1716

51 Experimental Investigation on Flexural Behaviors in Framed Structure of PST Method

Authors: S. Hong, H. Kim, D. Cho, S. Park

Abstract: Existing underground pipe jacking methods use a reinforcing rod in a steel tube to obtain structural stiffness. However, some problems such as inconvenience of works and expensive materials resulted from limited working space and reinforcing works are existed. To resolve these problems, a new pipe jacking method, namely PST (Prestressed Segment Tunnel) method, was developed which used joint to connect the steel segment and form erection structure. For evaluating the flexural capacity of the PST method structure, a experimental test was conducted. The parameters considered in the test were span-to-depth ratio of segment, diameter of steel tube at the corner, prestressing force, and welding of joint. The flexural behaviours with the effect of load capacity in serviceability state according to different parameters were examined.. The frame with long segments could increase flexural stiffness and the specimen with large diameter of concave corner showed excellent resistance ability to the negative moment. In addition, welding of joints increased the flexural capacity.

Keywords: PST method, Pipe jacking method, Flexural behavior, Prestressed concrete.

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50 Simulation Data Management Approach for Developing Adaptronic Systems – The W-Model Methodology

Authors: Roland S. Nattermann, Reiner Anderl

Abstract:
Existing proceeding-models for the development of mechatronic systems provide a largely parallel action in the detailed development. This parallel approach is to take place also largely independent of one another in the various disciplines involved. An approach for a new proceeding-model provides a further development of existing models to use for the development of Adaptronic Systems. This approach is based on an intermediate integration and an abstract modeling of the adaptronic system. Based on this system-model a simulation of the global system behavior, due to external and internal factors or Forces is developed. For the intermediate integration a special data management system is used. According to the presented approach this data management system has a number of functions that are not part of the "normal" PDM functionality. Therefore a concept for a new data management system for the development of Adaptive system is presented in this paper. This concept divides the functions into six layers. In the first layer a system model is created, which divides the adaptronic system based on its components and the various technical disciplines. Moreover, the parameters and properties of the system are modeled and linked together with the requirements and the system model. The modeled parameters and properties result in a network which is analyzed in the second layer. From this analysis necessary adjustments to individual components for specific manipulation of the system behavior can be determined. The third layer contains an automatic abstract simulation of the system behavior. This simulation is a precursor for network analysis and serves as a filter. By the network analysis and simulation changes to system components are examined and necessary adjustments to other components are calculated. The other layers of the concept treat the automatic calculation of system reliability, the "normal" PDM-functionality and the integration of discipline-specific data into the system model. A prototypical implementation of an appropriate data management with the addition of an automatic system development is being implemented using the data management system ENOVIA SmarTeam V5 and the simulation system MATLAB.

Keywords: Adaptronic, Data-Management, LOEWE-CentreAdRIA

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49 Implicit Two Step Continuous Hybrid Block Methods with Four Off-Steps Points for Solving Stiff Ordinary Differential Equation

Authors: O. A. Akinfenwa, N.M. Yao, S. N. Jator

Abstract: In this paper, a self starting two step continuous block hybrid formulae (CBHF) with four Off-step points is developed using collocation and interpolation procedures. The CBHF is then used to produce multiple numerical integrators which are of uniform order and are assembled into a single block matrix equation. These equations are simultaneously applied to provide the approximate solution for the stiff ordinary differential equations. The order of accuracy and stability of the block method is discussed and its accuracy is established numerically.

Keywords: Collocation and Interpolation, Continuous HybridBlock Formulae, Off-Step Points, Stability, Stiff ODEs.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8824

48 Biomethanation of Palm Oil Mill Effluent (POME) by Membrane Anaerobic System (MAS) using POME as a Substrate

Authors: N.H. Abdurahman, Y. M. Rosli, N. H. Azhari, S. F. Tam

Abstract:
The direct discharge of palm oil mill effluent (POME) wastewater causes serious environmental pollution due to its high chemical oxygen demand (COD) and biochemical oxygen demand (BOD). Traditional ways for POME treatment have both economical and environmental disadvantages. In this study, a membrane anaerobic system (MAS) was used as an alternative, cost effective method for treating POME. Six steady states were attained as a part of a kinetic study that considered concentration ranges of 8,220 to 15,400 mg/l for mixed liquor suspended solids (MLSS) and 6,329 to 13,244 mg/l for mixed liquor volatile suspended solids (MLVSS). Kinetic equations from Monod, Contois and Chen & Hashimoto were employed to describe the kinetics of POME treatment at organic loading rates ranging from 2 to 13 kg COD/m3/d. throughout the experiment, the removal efficiency of COD was from 94.8 to 96.5% with hydraulic retention time, HRT from 400.6 to 5.7 days. The growth yield coefficient, Y was found to be 0.62gVSS/g COD the specific microorganism decay rate was 0.21 d-1 and the methane gas yield production rate was between 0.25 l/g COD/d and 0.58 l/g COD/d. Steady state influent COD concentrations increased from 18,302 mg/l in the first steady state to 43,500 mg/l in the sixth steady state. The minimum solids retention time, which was obtained from the three kinetic models ranged from 5 to 12.3 days. The k values were in the range of 0.35 – 0.519 g COD/ g VSS • d and values were between 0.26 and 0.379 d-1. The solids retention time (SRT) decreased

from 800 days to 11.6 days. The complete treatment reduced the COD content to 2279 mg/l equivalent to a reduction of 94.8% reduction from the original.

Keywords: COD reduction, POME, kinetics, membrane, anaerobic, monod, contois equation.

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47 Brain Drain of Doctors; Causes and Consequences in Pakistan

Authors: Muhammad Wajid Tahir, Rubina Kauser, Majid Ali Tahir

Abstract:
Pakistani doctors (MBBS) are emigrating towards developed countries for professional adjustments. This study aims to highlight causes and consequences of doctors- brain drain from Pakistan. Primary data was collected from Mayo Hospital, Lahore by interviewing doctors (n=100) through systematic random sampling technique. It found that various socio-economic and political conditions are working as push and pull factors for brain drain of doctors in Pakistan. Majority of doctors (83%) declared poor remunerations and professional infrastructure of health department as push factor of doctors- brain drain. 81% claimed that continuous instability in political situation and threats of terrorism are responsible for emigration of doctors. 84% respondents considered fewer opportunities of further studies responsible for their emigration. Brain drain of doctors is affecting health sector-s policies / programs, standard doctor-patient ratios and quality of health services badly.

Keywords: Brain Drain, Emigration, Remuneration, Politicalinstability, MBBS doctors

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46 Investigation and Evalution of Swelling Kinetics Related to Biocopolymers Based on CMC poly(AA-co BuMC)

Authors: Mohammad Sadeghi, Behrouz Heidari, Korush Montazeri

Abstract:
In this paper, we have focused on study of swelling kinetics and salt-sensitivity behavior of a superabsorbing hydrogel based on carboxymethylcellulose (CMC) and acrylic acid and 2- Buthyl methacrylate. The swelling kinetics of the hydrogels with various particle sizes was preliminary investigated as well. The swelling of the hydrogel showed a second order kinetics of swelling in water. In addition, swelling measurements of the synthesized hydrogels in various chloride salt solutions was measured. Results indicated that a swelling-loss with an increase in the ionic strength of the salt solutions.

Keywords: Carboxymethylcellulose, swelling kinetics, 2-hydroxypropylmetacrylate, acrylic acid.

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45 Calculation of Density for Refrigerant Mixtures in Sub Critical Regions for Use in the Buildings

Authors: Mohammad Reza Mobinipouya, Zahra Barzegar

Abstract:
Accurate and comprehensive thermodynamic properties of pure and mixture of refrigerants are in demand by both producers and users of these materials. Information about thermodynamic properties is important initially to qualify potential candidates for working fluids in refrigeration machinery. From practical point of view, Refrigerants and refrigerant mixtures are widely used as working fluids in many industrial applications, such as refrigerators, heat pumps, and power plants The present work is devoted to evaluating seven cubic equations of state (EOS) in predicting gas and liquid phase volumetric properties of nine ozone-safe refrigerants both in super and sub-critical regions. The evaluations, in sub-critical region, show that TWU and PR EOS are capable of predicting PVT properties of refrigerants R32 within 2%, R22, R134a, R152a and R143a within 1% and R123, R124, R125, TWU and PR EOS's, from literature data are 0.5% for R22, R32, R152a, R143a, and R125, 1% for R123, R134a, and R141b, and 2% for R124. Moreover, SRK EOS predicts PVT properties of R22, R125, and R123 to within aforementioned errors. The remaining EOS's predicts volumetric properties of this class of fluids with higher errors than those above mentioned which are at most 8%.In general, the results are in favor of the preference of TWU and PR EOS over other remaining EOS's in predicting densities of all mentioned refrigerants in both super and sub critical regions. Typically, this refrigerant is known to offer advantages such as ozone depleting potential equal to zero, Global warming potential equal to 140, and no toxic.

Keywords: Refrigerant, cooling systems, Sub-CriticalRegions, volumetric properties, efficiency.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6066

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44 Enhancing the e-Government Functionality using Knowledge Management

Authors: Mohammad Al Rawajbeh, Ahmad Haboush

Abstract: The primary aim of the e-government applications is the fast citizen service and the accomplishment of governmental functions. This paper discusses the knowledge management for egovernment development in the needs and role. The paper focused on analyzing the advantages of using knowledge management by using the existing IT technologies to maximize the government functions efficiency. The proposed new approach of providing government services is based on using Knowledge management as a part of e-government system.

Keywords: E-government, knowledge management, e-service, etools, governmental functions.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15473

43 Pharmaceutical Microencapsulation Technology for Development of Controlled Release Drug Delivery systems

Authors: Mahmood Ahmad, Asadullah Madni, Muhammad Usman, Abubakar Munir, Naveed Akhtar, Haji M. Shoaib Khan

Abstract: This article demonstrated development of controlled release system of an NSAID drug, Diclofenac sodium employing different ratios of Ethyl cellulose. Diclofenac sodium and ethyl cellulose in different proportions were processed by microencapsulation based on phase separation technique to formulate microcapsules. The prepared microcapsules were then compressed into tablets to obtain controlled release oral formulations. In-vitro evaluation was performed by dissolution test of each preparation was conducted in 900 ml of phosphate buffer solution of pH 7.2 maintained at 37 ± 0.5 °C and stirred at 50 rpm. At predetermined time intervals (0, 0.5, 1.0, 1.5, 2, 3, 4, 6, 8, 10, 12, 16, 20 and 24 hrs). The drug concentration in the collected samples was determined by UV spectrophotometer at 276 nm. The physical characteristics of diclofenac sodium microcapsules were according to accepted range. These were off-white, free flowing and spherical in shape. The release profile of diclofenac sodium from microcapsules was found to be directly proportional to the proportion of ethylcellulose and coat thickness. The in-vitro release pattern showed that with ratio of 1:1 and 1:2 (drug: polymer), the percentage release of drug at first hour was 16.91 and 11.52 %, respectively as compared to 1:3 which is only 6.87 % with in this time. The release mechanism followed higuchi model for its release pattern. Tablet Formulation (F2) of present study was found comparable in release profile the marketed brand Phlogin-SR, microcapsules showed an extended release beyond 24 h. Further, a good correlation was found between drug release and proportion of ethylcellulose in the microcapsules. Microencapsulation based on coacervation found as good technique to control release of diclofenac sodium for making the controlled release formulations.

Keywords: Diclofenac sodium, Microencapsulationtechnology, Ethylcellulose, In-Vitro Release Profile

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15377

42 Assessment of the Adaptive Pushover Analysis Using Displacement-based Loading in Prediction the Seismic Behaviour of the Unsymmetric-Plan Buildings

Authors: M.O. Makhmalbaf, F. Mohajeri Nav, M. Zabihi Samani

Abstract:
The recent drive for use of performance-based methodologies in design and assessment of structures in seismic areas has significantly increased the demand for the development of reliable nonlinear inelastic static pushover analysis tools. As a result, the adaptive pushover methods have been developed during the last decade, which unlike their conventional pushover counterparts, feature the ability to account for the effect that higher modes of vibration and progressive stiffness degradation might have on the distribution of seismic storey forces. Even in advanced pushover methods, little attention has been paid to the Unsymmetric structures. This study evaluates the seismic demands for three dimensional Unsymmetric-Plan buildings determined by the Displacement-based Adaptive Pushover (DAP) analysis, which has been introduced by Antoniou and Pinho [2004]. The capability of DAP procedure in capturing the torsional effects due to the irregularities of the structures, is investigated by comparing its estimates to the exact results, obtained from Incremental Dynamic Analysis (IDA). Also the capability of the procedure in prediction the seismic behaviour of the structure is discussed.

Keywords: Nonlinear static procedures, Unsymmetric-PlanBuildings, Torsional effects, IDA.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6837

41 Pushover Analysis of Short Structures

Authors: M.O. Makhmalbaf, M. GhanooniBagha, M.A. Tutunchian, M. Zabihi Samani

Abstract: In this paper first, Two buildings have been modeled and then analyzed using nonlinear static analysis method under two different conditions in Nonlinear SAP 2000 software. In the first condition the interaction of soil adjacent to the walls of basement are ignored while in the second case this interaction have been modeled using Gap elements of nonlinear SAP2000 software. Finally, comparing the results of two models, the effects of soil-structure on period, target point displacement, internal forces, shape deformations and base shears have been studied. According to the results, this interaction has always increased the base shear of buildings, decreased the period of structure and target point displacement, and often decreased the internal forces and displacements.

Keywords: Seismic Rehabilitation, Soil-Structure Interaction, Short Structure, Nonlinear Static Analysis.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4640

40 Analysing of Indoor Radio Wave Propagation on Ad-hoc Network by Using TP-LINK Router

Authors: Khine Phyu, Aung Myint Aye

Abstract: This paper presents results of measurements campaign carried out at a carrier frequency of 24GHz with the help of TPLINK router in indoor line-of-sight (LOS) scenarios. Firstly, the radio wave propagation strategies are analyzed in some rooms with router of point to point Ad hoc network. Then floor attenuation is defined for 3 floors in experimental region. The free space model and dual slope models are modified by considering the influence of corridor conditions on each floor. Using these models, indoor signal attenuation can be estimated in modeling of indoor radio wave propagation. These results and modified models can also be used in planning the networks of future personal communications services.

Keywords: radio wave signal analyzing, LOS radio wavepropagation, indoor radio wave propagation, free space model, tworay model and indoor attenuation.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10832

39 Investigation on the Effectiveness of Zinc Sulphate and Biofertilizer on Mustard Plant

Authors: Khin S. Aye

Abstract: The present work was conducted to find out the effect of biofertilizer formulated with four species of bacteria (two species of Azotobacter and two species of Lysobacter) and zinc sulphate. Field experiments with mustard plant were conducted to study the effectiveness of soil application of zinc sulphate and biofertilizer at 0, 10, 20, 30, 40, 50 days after sowing. Plant height and condition of plant was found to be increased significantly using a mixture of biofertilizer and zinc sulphate than other treatments after 40 days sowing. Three treatments were also used in this field experiment such as bacteria only, zinc sulphate only and mixture of biofertilizer and zinc sulphate. The treatment using a mixture of zinc sulphate and biofertilizer had the best yield (4688.008 kg/ha) within 50 days of sowing and performed better than other treatments. Field experiment using zinc sulphate only was second best yield (3380.75Kg/ha) and biofertilizer only treatment gave (2639.04kg/ha).

Keywords: biofertilizer, zinc sulphate, mustard plant, bacteria

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/5555

38 A Framework for Urdu Language Translation using LESSA

Authors: Imran Sarwar Bajwa

Abstract: Internet is one of the major sources of information for the person belonging to almost all the fields of life. Major language that is used to publish information on internet is language. This thing becomes a problem in a country like Pakistan, where Urdu is the national language. Only 10% of Pakistan mass can understand English. The reason is millions of people are deprived of precious information available on internet. This paper presents a system for translation from English to Urdu. A module LESSA is used that uses a rule based algorithm to read the input text in English language, understand it and translate it into Urdu language. The designed approach was further incorporated to translate the complete website from English language o Urdu language. An option appears in the browser to translate the webpage in a new window. The designed system will help the millions of users of internet to get benefit of the internet and approach the latest information and knowledge posted daily on internet.

Keywords: Natural Language Translation, Text Understanding, Knowledge extraction, Text Processing

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/15972

37 SOA Embedded in BPM: A High Level View of Object Oriented Paradigm

Authors: Imran S.Bajwa

Abstract:
The trends of design and development of information systems have undergone a variety of ongoing phases and stages. These variations have been evolved due to brisk changes in user requirements and business needs. To meet these requirements and needs, a flexible and agile business solution was required to come up with the latest business trends and styles. Another obstacle in agility of information systems was typically different treatment of same diseases of two patients: business processes and information services. After the emergence of information technology, the business processes and information systems have become counterparts. But these two business halves have been treated under totally different standards. There is need to streamline the boundaries of these both pillars that are equally sharing information system's burdens and liabilities. In last decade, the object orientation has evolved into one of the major solutions for modern business needs and now, SOA is the solution to shift business on ranks of electronic platform. BPM is another modern business solution that assists to regularize optimization of business processes. This paper discusses how object orientation can be conformed to incorporate or embed SOA in BPM for improved information systems.

Keywords: Object Oriented Business Solutions, Services forBusiness Processes; Mixing SOA and BPM.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7080

36 Gypseous Soil Improvement using Fuel Oil

Authors: Hussein Yousif Aziz, Jianlin Ma

Abstract: This research investigates the suitability of fuel oil in improving gypseous soil. A detailed laboratory tests were carried-out on two soils (soil I with 51.6% gypsum content, and soil II with 26.55%), where the two soils were obtained from Al-Therthar site (Al-Anbar Province-Iraq). This study examines the improvement of soil properties using the gypsum material which is locally available with low cost to minimize the effect of moisture on these soils by using the fuel oil. This study was conducted on two models of the soil gypsum, from the Tharthar area. The first model was sandy soil with Gypsum content of (51.6%) and the second is clayey soil and the content of Gypsum is (26.55%). The program included tests measuring the permeability and compressibility of the soil and their collapse properties. The shear strength of the soil and the amounts of weight loss of fuel oil due to drying had been found. These tests have been conducted on the treated and untreated soils to observe the effect of soil treatment on the engineering properties when mixed with varying degrees of fuel oil with the equivalent of the water content. The results showed that fuel oil is a good material to modify the basic properties of the gypseous soil of collapsibility and permeability, which are the main problems of this soil and retained the soil by an appropriate amount of the cohesion suitable for carrying the loads from the structure.

Keywords: Collapsibility, Enhancement of Gypseous Soils, Geotechnical Engineering, Gypseous soil, Shear Strength.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8407

35 Hardness Variations as Affected by Bar Diameter of AISI 4140 Steel

Authors: Hamad K. Al-Khalid, Ayman M. Alaskari, Samy E. Oraby

Abstract: Hardness of the widely used structural steel is of vital importance since it may help in the determination of many mechanical properties of a material under loading situations. In order to obtain reliable information for design, properties homogeneity should be validated. In the current study the hardness variation over the different diameters of the same AISI 4140 bar is investigated. Measurements were taken on the two faces of the stock at equally spaced eight sectors and fifteen layers. Statistical and graphical analysis are performed to asses the distribution of hardness measurements over the specified area. Hardness measurements showed some degree of dispersion with about ± 10% of its nominal value provided by manufacturer. Hardness value is found to have a slight decrease trend as the diameter is reduced. However, an opposite behavior is noticed regarding the sequence of the sector indicating a nonuniform distribution over the same area either on the same face or considering the corresponding sector on the other face (cross section) of the same material bar.

Keywords: Hardness; Hardness variation; AISI 4140 steel; Bardiameter; Statistical Analysis.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9476

34 Improving Protein-Protein Interaction Prediction by Using Encoding Strategies and Random Indices

Authors: Essam Al-Daoud

Abstract: A New features are extracted and compared to improve the prediction of protein-protein interactions. The basic idea is to select and use the best set of features from the Tensor matrices that are produced by the frequency vectors of the protein sequences. Three set of features are compared, the first set is based on the indices that are the most common in the interacting proteins, the second set is based on the indices that tend to be common in the interacting and non-interacting proteins, and the third set is constructed by using random indices. Moreover, three encoding strategies are compared; that are based on the amino asides polarity, structure, and chemical properties. The experimental results indicate that the highest accuracy can be obtained by using random indices with chemical properties encoding strategy and support vector machine.

Keywords: protein-protein interactions, random indices, encoding strategies, support vector machine.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3735

33 Solving Facility Location Problem on Cluster Computing

Authors: Ei Phyo Wai, Nay Min Tun

Abstract: Computation of facility location problem for every location in the country is not easy simultaneously. Solving the problem is described by using cluster computing. A technique is to design parallel algorithm by using local search with single swap method in order to solve that problem on clusters. Parallel implementation is done by the use of portable parallel programming, Message Passing Interface (MPI), on Microsoft Windows Compute Cluster. In this paper, it presents the algorithm that used local search with single swap method and implementation of the system of a facility to be opened by using MPI on cluster. If large datasets are considered, the process of calculating a reasonable cost for a facility becomes time consuming. The result shows parallel computation of facility location problem on cluster speedups and scales well as problem size increases.

Keywords: cluster, cost, demand, facility location

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/999

32 Design of a Tube Vent to Enhance the Role of Roof Solar Collector

Authors: Eakkasak Susakunphaisan, Pichai Namprakai, Withaya Puangsombut

Abstract: The objective of this paper was to designing a ventilation system to enhance the performance of roof solar collector (RSC) for reducing heat accumulation inside the house. The RSC has 1.8 m2 surface area made of CPAC monier roof tiles on the upper part and gypsum board on the lower part. The space between CPAC monier and gypsum board was fixed at 14 cm. Ventilation system of modified roof solar collector (modified RSC) consists of 9 tubes of 0.15m diameter and installed in the lower part of RSC. Experimental result showed that the temperature of the room, and attic temperature. The average temperature reduction of room of house used modified RSC is about 2oC. and the percentage of room temperature reduction varied between 0 to 10%. Therefore, modified RSC is an interesting option in the sense that it promotes solar energy and conserve energy.

Keywords: roof solar collector, heat accumulation

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7098

31 Application of Formyl-TIPPCu (II) for Temperature and Light Sensing

Authors: Dil Nawaz Khan, M. H. Sayyad, Muhammad Yaseen, Munawar Ali Munawar, Mukhtar Ali

Abstract: Effect of temperature and light was investigated on a thin film of organic semiconductor formyl-TIPPCu(II) deposited on a glass substrate with preliminary evaporated gold electrodes. The electrical capacitance and resistance of the fabricated device were evaluated under the effect of temperature and light. The relative capacitance of the fabricated sensor increased by 4.3 times by rising temperature from 27 to 1870C, while under illumination up to 25000 lx, the capacitance of the Au/formyl-TIPPCu(II)/Au photo capacitive sensor increased continuously by 13.2 times as compared to dark conditions.

Keywords: formyl-TIPPCu(II), Organic semiconductor, Photocapacitance, Polarizability.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9573

30 Integrated Reasoning Approach for Car Faulty Diagnosis

Authors: Diana M.L. Wong

Abstract: This paper presents an integrated case based and rule based reasoning method for car faulty diagnosis. The reasoning method is done through extracting the past cases from the Proton Service Center while comparing with the preset rules to deduce a diagnosis/solution to a car service case. New cases will be stored to the knowledge base. The test cases examples illustrate the effectiveness of the proposed integrated reasoning. It has proven accuracy of similar reasoning if carried out by a service advisor from the service center.

Keywords: component; case based reasoning (CBR), rule basedreasoning (RBR), decision support systems, diagnosis tool.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12321

29 Prototype of a Federative Factory Data Management for the Support of Factory Planning Processes

Authors: Christian Mosch, Reiner Anderl, Antonio Álvaro de Assis Moura, Klaus Schützer

Abstract: Due to short product life cycles, increasing variety of products and short cycles of leap innovations manufacturing companies have to increase the flexibility of factory structures. Flexibility of factory structures is based on defined factory planning processes in which product, process and resource data of various partial domains have to be considered. Thus factory planning processes can be characterized as iterative, interdisciplinary and participative processes [1]. To support interdisciplinary and participative character of planning processes, a federative factory data management (FFDM) as a holistic solution will be described. FFDM is already implemented in form of a prototype. The interim results of the development of FFDM will be shown in this paper. The principles are the extracting of product, process and resource data from documents of various partial domains providing as web services on a server. The described data can be requested by the factory planner by using a FFDM-browser.

Keywords: BRAGECRIM, Factory Planning Process, FactoryData Management, Web Services

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/1778

28 Comparative Study of Virtual Sickness between a Single-screen and Three-screen from Parallax Affect

Authors: Chompoonuch Jinjakam, Yuta Odagiri, Kobchai Dejhan, Hamamoto Kazuhiko

Abstract: Virtual environment induces simulator sickness effect for some users. The purpose of this research is to compare the simulation sickness relative with parallax affect in one-screen and three-screen HoloStageTM system, measured by Simulation Sickness Questionnaire (SSQ). The results show the subjects tested in three-screen has less sickness than one-screen and effect from the Oculomotor (O) more than from the Disorientation (D) and more than from the Nausea (N) or represented in O>D>N.

Keywords: Virtual environment, virtual sickness, simulationsickness questionnaire, HoloStageTM.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9820

27 Performance Evaluation of Iris Region Detection and Localization for Biometric Identification System

Authors: Chit Su Htwe, Win Htay

Abstract: The iris recognition technology is the most accurate, fast and less invasive one compared to other biometric techniques using for example fingerprints, face, retina, hand geometry, voice or signature patterns. The system developed in this study has the potential to play a key role in areas of high-risk security and can enable organizations with means allowing only to the authorized personnel a fast and secure way to gain access to such areas. The paper aim is to perform the iris region detection and iris inner and outer boundaries localization. The system was implemented on windows platform using Visual C# programming language. It is easy and efficient tool for image processing to get great performance accuracy. In particular, the system includes two main parts. The first is to preprocess the iris images by using Canny edge detection methods, segments the iris region from the rest of the image and determine the location of the iris boundaries by applying Hough transform. The proposed system tested on 756 iris images from 60 eyes of CASIA iris database images.

Keywords: Canny, C#, hough transform, image preprocessing.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/10614

26 Is the Liberalization Policy Effective on Improving the Bivariate Cointegration of Current Accounts, Foreign Exchange, Stock Prices? F ther Evidence from Asian Markets

Authors: Chen-Yin Kuo

Abstract:
This paper fist examines three set of bivariate cointegrations between any two of current accounts, stock markets, and currency exchange markets in ten Asian countries. Furthermore, we examined the effect of country characters on this bivariate cointegration. Our findings suggest that for three sets of cointegration test, each sample country at least exists one cointegration. India consistently exhibited a bi-directional causal relationship between any two of three indicators. Unlike Pan et al. (2007) and Phylaktis and Ravazzolo (2005), we found that such cointegration is influenced by three characteristics: capital control; flexibility in foreign exchange rates; and the ratio of trade to GDP. These characteristics are the result of liberalization in each Asian country. This implies that liberalization policies are effective on improving the cointegration between any two of financial markets and current account for ten Asian countries.

Keywords: Current account, stock price, foreign exchange rate, country characteristics, bivariate cointegration, bi-directional causal relationships.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8443

25 Application of CFD for Air Flow Analysis underneath Natural Ventilation with Forced Convection in Roof Attic

Authors: C. Nutphuang, S. Chirarattananon, V.D. Hien

Abstract: In research on natural ventilation, and passive cooling with forced convection, is essential to know how heat flows in a solid object and the pattern of temperature distribution on their surfaces, and eventually how air flows through and convects heat from the surfaces of steel under roof. This paper presents some results from running the computational fluid dynamic program (CFD) by comparison between natural ventilation and forced convection within roof attic that is received directly from solar radiation. The CFD program for modeling air flow inside roof attic has been modified to allow as two cases. First case, the analysis under natural ventilation, is closed area in roof attic and second case, the analysis under forced convection, is opened area in roof attic. These extend of all cases to available predictions of variations such as temperature, pressure, and mass flow rate distributions in each case within roof attic. The comparison shows that this CFD program is an effective model for predicting air flow of temperature and heat transfer coefficient distribution within roof attic. The result shows that forced convection can help to reduce heat transfer through roof attic and an around area of steel core has temperature inner zone lower than natural ventilation type. The different temperature on the steel core of roof attic of two cases was 10-15 oK.

Keywords: CFD program, natural ventilation, forcedconvection, heat transfer, air flow.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3039

24 Using the Monte Carlo Simulation to Predict the Assembly Yield

Authors: C. Chahin, M. C. Hsu, Y. H. Lin, C. Y. Huang

Abstract:
Electronics Products that achieve high levels of integrated communications, computing and entertainment, multimedia features in small, stylish and robust new form factors are winning in the market place. Due to the high costs that an industry may undergo and how a high yield is directly proportional to high profits, IC (Integrated Circuit) manufacturers struggle to maximize yield, but today-s customers demand miniaturization, low costs, high performance and excellent reliability making the yield maximization a never ending research of an enhanced assembly process. With factors such as minimum tolerances, tighter parameter variations a systematic approach is needed in order to predict the assembly process. In order to evaluate the quality of upcoming circuits, yield models are used which not only predict manufacturing costs but also provide vital information in order to ease the process of correction when the yields fall below expectations. For an IC manufacturer to obtain higher assembly yields all factors such as boards, placement, components, the material from which the components are made of and processes must be taken into consideration. Effective placement yield depends heavily on machine accuracy and the vision of the system which needs the ability to recognize the features on the board and component to place the device accurately on the pads and bumps of the PCB. There are currently two methods for accurate positioning, using the edge of the package and using solder ball locations also called footprints. The only assumption that a yield model makes is that all boards and devices are completely functional. This paper will focus on the Monte Carlo method which consists in a class of computational algorithms (information processed algorithms) which depends on repeated random samplings in order to compute the results. This method utilized in order to recreate the simulation of placement and assembly processes within a production line.

Keywords: Monte Carlo simulation, placement yield, PCBcharacterization, electronics assembly

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23 The Effect of Job Motivation, Work Environment and Leadership on Organizational Citizenship Behavior, Job Satisfaction and Public Service Quality in Magetan, East Java,Indonesia

Authors: Budiyanto, Hening Widi Oetomo

Abstract: Magetan area is going to be the object of this research which is located in East Java, Indonesia. The data were obtained from 270 civil servants working at the Magetan District government. The data were analyzed using the Structural Equation Modeling with Partial Least Square program. The research showed the following findings: (1) job motivation variable has a positive and significant effect on organizational citizenship behavior (OCB); (2) work environment has positive and significant effect on OCB; (3) leadership variable has positive and significant effect on OCB; (4) job motivation variable has no significant effect on job satisfaction; (5) work environment variable has no significant effect on job satisfaction; (6) leadership variable has no significant effect on job satisfaction; (7) OCB is positively and significantly associated with job satisfaction; (8) job satisfaction variable is positively and significantly correlated with quality of public service at the Magetan District government.

Keywords: Job Satisfaction, Leadership, OrganizationalCitizenship Behavior (OCB), Quality of Public Service

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11351

22 OPTIMAL Placement of FACTS Devices by Genetic Algorithm for the Increased Load Ability of a Power System

Authors: A. B.Bhattacharyya, B. S.K.Goswami

Abstract: This paper presents Genetic Algorithm (GA) based approach for the allocation of FACTS (Flexible AC Transmission System) devices for the improvement of Power transfer capacity in an interconnected Power System. The GA based approach is applied on IEEE 30 BUS System. The system is reactively loaded starting from base to 200% of base load. FACTS devices are installed in the different locations of the power system and system performance is noticed with and without FACTS devices. First, the locations, where the FACTS devices to be placed is determined by calculating active and reactive power flows in the lines. Genetic Algorithm is then applied to find the amount of magnitudes of the FACTS devices. This approach of GA based placement of FACTS devices is tremendous beneficial both in terms of performance and economy is clearly observed from the result obtained.

Keywords: FACTS Devices, Line Power Flow, OptimalLocation of FACTS Devices, Genetic Algorithm.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7434

21 Effect of Lime on the California Bearing Ratio Behaviour of Fly Ash - mine Overburden Mixes

Authors: B. Behera, M. K. Mishra

Abstract: Typically thermal power plants are located near to surface coal mines that produce huge amount of fly ash as a waste byproduct. Disposal of fly ash causes significant economic and environmental problems. Now-a-days, research is going on for bulk utilization of fly ash. In order to increase its percentage utilization, an investigation was carried out to evaluate its potential for haul road construction. This paper presents the laboratory California bearing ratio (CBR) tests and evaluates the effect of lime on CBR behavior of fly ash - mine overburden mixes. Tests were performed with different percentages of lime (2%, 3%, 6%, and 9%). The results show that the increase in bearing ratio of fly ash-overburden mixes was achieved by lime treatment. Scanning electron microscopy (SEM) analyses were conducted on 28 days cured specimens. The SEM study showed that the bearing ratio development is related to the microstructural development.

Keywords: California bearing ratio, Fly ash, Mine overburden, Lime.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4458

20 Decision Support for the Selection of Electric Power Plants Generated from Renewable Sources

Authors: Aumnad Phdungsilp, Teeradej Wuttipornpun

Abstract: Decision support based upon risk analysis into comparison of the electricity generation from different renewable energy technologies can provide information about their effects on the environment and society. The aim of this paper is to develop the assessment framework regarding risks to health and environment, and the society-s benefits of the electric power plant generation from different renewable sources. The multicriteria framework to multiattribute risk analysis technique and the decision analysis interview technique are applied in order to support the decisionmaking process for the implementing renewable energy projects to the Bangkok case study. Having analyses the local conditions and appropriate technologies, five renewable power plants are postulated as options. As this work demonstrates, the analysis can provide a tool to aid decision-makers for achieving targets related to promote sustainable energy system.

Keywords: Analytic Hierarchy Process, Bangkok, MultiattributeRisk Analysis, Renewable Energy Technology.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/8659

19 Nonlinear Dynamics of Cracked RC Beams under Harmonic Excitation

Authors: Atul Krishna Banik

Abstract:
Nonlinear response behaviour of a cracked RC beam under harmonic excitation is analysed to investigate various instability phenomena like, bifurcation, jump phenomena etc. The nonlinearity of the system arises due to opening and closing of the cracks in the RC beam and is modelled as a cubic polynomial. In order to trace different branches at the bifurcation point on the response curve (amplitude versus frequency of excitation plot), an arc length continuation technique along with the incremental harmonic balance (IHBC) method is employed. The stability of the solution is investigated by the Floquet theory using Hsu-s scheme. The periodic solutions obtained by the IHBC method are compared with these obtained by the numerical integration of the equation of motion. Characteristics of solutions fold bifurcation, jump phenomena and from stable to unstable zones are identified.

Keywords: Incremental harmonic balance, arc-length continuation, bifurcation, jump phenomena.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/13749

18 Steady State Simulation and Experimental Study of an Ethane Recovery Unit in an Iranian Natural Gas Refinery

Authors: Arash Esmaeili, Omid Ghabouli

Abstract: The production and consumption of natural gas is on the rise throughout the world as a result of its wide availability, ease of transportation, use and clean-burning characteristics. The chief use of ethane is in the chemical industry in the production of Ethene (ethylene) by steam cracking. In this simulation, obtained ethane recovery percent based on Gas sub-cooled process (GSP) is 99.9 by mole that is included 32.1% by using de-methanizer column and 67.8% by de-ethanizer tower. The outstanding feature of this process is the novel split-vapor concept that employs to generate reflux for de-methanizer column. Remain amount of ethane in export gas cause rise in gross heating value up to 36.66 MJ/Nm3 in order to use in industrial and household consumptions.

Keywords: Ethane recovery, Hydrocarbon dew point, Simulation, Water dew point

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12506

17 An Efficient Ant Colony Optimization Algorithm for Multiobjective Flow Shop Scheduling Problem

Authors: Ahmad Rabanimotlagh

Abstract: In this paper an ant colony optimization algorithm is developed to solve the permutation flow shop scheduling problem. In the permutation flow shop scheduling problem which has been vastly studied in the literature, there are a set of m machines and a set of n jobs. All the jobs are processed on all the machines and the sequence of jobs being processed is the same on all the machines. Here this problem is optimized considering two criteria, makespan and total flow time. Then the results are compared with the ones obtained by previously developed algorithms. Finally it is visible that our proposed approach performs best among all other algorithms in the literature.

Keywords: Scheduling, Flow shop, Ant colony optimization, Makespan, Flow time

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/11363

16 Stability of Discrete Linear Systems with Periodic Coefficients under Parametric Perturbations

Authors: Adam Czornik, Aleksander Nawrat

Abstract: This paper studies the problem of exponential stability of perturbed discrete linear systems with periodic coefficients. Assuming that the unperturbed system is exponentially stable we obtain conditions on the perturbations under which the perturbed system is exponentially stable.

Keywords: Exponential stability, time-varying linear systems, periodic systems.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/14593

15 Intention to Use Digital Library based on Modified UTAUT Model: Perspectives of Malaysian Postgraduate Students

Authors: Abd Latif Abdul Rahman, Adnan Jamaludin, Zamalia Mahmud

Abstract: Unified Theory of Acceptance and Use of Technology (UTAUT) model has demonstrated the influencing factors for generic information systems use such as tablet personal computer (TPC) and mobile communication. However, in the context of digital library system, there has been very little effort to determine factors affecting the intention to use digital library based on the UTAUT model. This paper investigates factors that are expected to influence the intention of postgraduate students to use digital library based on modified UTAUT model. The modified model comprises of constructs represented by several latent variables, namely performance expectancy (PE), effort expectancy (EE), information quality (IQ) and service quality (SQ) and moderated by age, gender and experience in using digital library. Results show that performance expectancy, effort expectancy and information quality are positively related to the intention to use digital library, while service quality is negatively related to the intention to use digital library. Age and gender have shown no evidence of any significant interactions, while experience in using digital library significantly interacts with effort expectancy and intention to use digital library. This has provided the evidence of a moderating effect of experience in the intention to use digital library. It is expected that this research will shed new lights into research of acceptance and intention to use the library in a digital environment.

Keywords: Intention to use digital library, UTAUT model, performance expectancy, effort expectancy, information quality, service quality.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2983

14 Nickel on Inner Surface and Stainless Steel on Outer Surface for Functionally Graded Cylindrical Shell

Authors: A.R.Tahmasebi Birgani, M.Hosseinjani Zamenjani, M.R.Isvandzibaei

Abstract:
Study is on the vibration of thin cylindrical shells made of a functionally gradient material (FGM) composed of stainless steel and nickel is presented. The effects of the FGM configuration are studied by studying the frequencies of FG cylindrical shells. In this case FG cylindrical shell has Nickel on its inner surface and stainless steel on its outer surface. The study is carried out based on third order shear deformation shell theory. The objective is to study the natural frequencies, the influence of constituent volume fractions and the effects of configurations of the constituent materials on the frequencies. The properties are graded in the thickness direction according to the volume fraction power-law distribution. Results are presented on the frequency characteristics, the influence of the constituent various volume fractions on the frequencies.

Keywords: Nickel, Stainless Steel, Cylindrical shell.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6006

13 Improvements in Material Handling: A Case Study of Cement Manufacturing Plant

Authors: A. Pancharya

Abstract:
The globalization of the Indian economy has thrown a great challenge to the Indian industries in respect of productivity, quality, cost, delivery etc. Achieving success• the global market has required fundamental shift in the way business is conducted and has dramatically affected virtually every aspect of process industry. The internal manufacturing process and supporting infrastructure should be such that it can compete successfully in global markets with better flexibility and delivery. The paper deals with a case study of a reputed process industry, some changes in the process has been suggested, which leads to reduction in labor cost and production cost.

Keywords: Indian cement industry, material handling, plant layout.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12945

12 Evaluation of Cigarette Filters Rods as a Biofilm Carrier in Integrated Fixed Film Activated Sludge Process

Authors: A. Sabzali, M. Nikaeen, B. Bina

Abstract:
The purpose of the experiments described in this article was the comparison of integrated fixed film activated sludge (IFAS) and activated sludge (AS) system. The IFAS applied system consists of the cigarette filter rods (wasted filter in tobacco factories) as a biofilm carrier. The comparison with activated sludge was performed by two parallel treatment lines. Organic substance, ammonia and TP removal was investigated over four month period. Synthetic wastewater was prepared with ordinary tap water and glucose as the main sources of carbon and energy, plus balanced macro and micro nutrients. COD removal percentages of 94.55%, and 81.62% were achieved for IFAS and activated sludge system, respectively. Also, ammonia concentration significantly decreased by increasing the HRT in both systems. The average ammonia removal of 97.40 % and 96.34% were achieved for IFAS and activated sludge system, respectively. The removal efficiency of total phosphorus (TP-P) was 60.64%, higher than AS process by 56.63% respectively.

Keywords: Wastewater, biofilm carrier, cigarette filters rods, Activated Sludge, IFAS, nitrification.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/7934

11 Measures and Influence of a Baw Filter on Digital Radio-Communications Signals

Authors: A. Diet, M. Villegas, G. Baudoin

Abstract: This work concerns the measurements of a Bulk Acoustic Waves (BAW) emission filter S parameters and compare with prototypes simulated types. Thanks to HP-ADS, a co-simulation of filters- characteristics in a digital radio-communication chain is performed. Four cases of modulation schemes are studied in order to illustrate the impact of the spectral occupation of the modulated signal. Results of simulations and co-simulation are given in terms of Error Vector Measurements to be useful for a general sensibility analysis of 4th/3rd Generation (G.) emitters (wideband QAM and OFDM signals)

Keywords: RF architectures, BAW filters.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/12514

10 Investigation and Comparison of Energy Intensity in Iranian Transportation Industry (Case Study Road Transportation Sector)

Authors: A. Mojtaba Aghajani, B. Leila Shavakhi

Abstract: Energy intensity(energy consumption intensity) is a global index which computes the required energy for producing a specific value of goods and services in each country. It is computed in terms of initial energy supply or final energy consumption. In this study (research) Divisia method is used to decompose energy consumption and energy intensity. This method decomposes consumption and energy intensity to production effects, structural and net intensity and could be done as time series or two-periodical. This study analytically investigates consumption changes and energy intensity on economical sectors of Iran and more specific on road transportation(rail road and road).Our results show that the contribution of structural effect (change in economical activities combination) is very low and the effect of net energy consumption has the higher contribution in consumption changes and energy intensity. In other words, the high consumption of energy is due to Intensity of energy consumption and is not to structural effect of transportation sector.

Keywords: Divisia Method, Energy Intensity, Net IntensityEffect, Road Transportation, Structural Effect.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2141

9 Strategies of Education and Training Practice of Small and Medium Sized Enterprises

Authors: A. Bencsik, - A. Sólyom

Abstract: The role of knowledge is a determinative factor in the life of economy and society. To determine knowledge is not an easy task yet the real task is to determine the right knowledge. From this view knowledge is a sum of experience, ideas and cognitions which can help companies to remain in markets and to realize a maximum profit. At the same time changes of circumstances project in advance that contents and demands of the right knowledge are changing. In this paper we will analyse a special segment on the basis of an empirical survey. We investigated the behaviour and strategies of small and medium sized enterprises (SMEs) in the area of knowledge-handling. This survey was realized by questionnaires and wide range statistical methods were used during processing. As a result we will show how these companies are prepared to operate in a knowledge-based economy and in which areas they have prominent deficiencies.

Keywords: education, knowledge, knowledgemanagement, strategy, SME

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/4071

8 Nutritional Evaluation of Sorghum Flour (Sorghumbicolor L. Moench) During Processing of Injera

Authors: Noha A. Mohammed, Isam A. Mohamed Ahmed, Elfadil E. Babiker

Abstract: The present study was carried out to evaluate the nutritional value of sorghum flour during processing of injera (unleavened thick bread). The proximate composition of sorghum flour before and after fermentation and that of injera was determined. Compared to the raw flour and fermented one, injera had low protein (11.55%), ash (1.57%) and fat (2.40%) contents but high in fiber content. Moreover, injera was found to have significantly ($P \leq 0.05$) higher energy (389.08 Kcal/100g) compared to raw and fermented sorghum flour. Injera contained lower levels of anti-nutritional factors (polyphenols, phytate and tannins) compared to raw and fermented sorghum. Also it was found to be rich in Ca (4.75mg/100g), Fe (3.95 mg/100g), and Cu (0.7 mg/100g) compared to that of raw and fermented flour. Moreover, both the extractable minerals and protein digestibility were high for injera due to low amount of anti-nutrients. Injera was found to contain an appreciable amount of amino acids except arginine and tyrosine.

Keywords: Cooking, Fermentation, Malt, Protein fractions, Sorghum.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/14577

7 Hydrolysis of Hull-Less Pumpkin Oil Cake Protein Isolate by Pepsin

Authors: Ivan Živanović, Žužana Vaštag, Senka Popović, Ljiljana Popović, Draginja Peričin

Abstract: The present work represents an investigation of the hydrolysis of hull-less pumpkin (Cucurbita Pepo L.) oil cake protein isolate (PuOC PI) by pepsin. To examine the effectiveness and suitability of pepsin towards PuOC PI the kinetic parameters for pepsin on PuOC PI were determined and then, the hydrolysis process was studied using Response Surface Methodology (RSM). The hydrolysis was carried out at temperature of 30°C and pH 3.00. Time and initial enzyme/substrate ratio (E/S) at three levels were selected as the independent parameters. The degree of hydrolysis, DH, was mesuared after 20, 30 and 40 minutes, at initial E/S of 0.7, 1 and 1.3 mA/mg proteins. Since the proposed second-order polynomial model showed good fit with the experimental data ($R2 = 0.9822$), the obtained mathematical model could be used for monitoring the hydrolysis of PuOC PI by pepsin, under studied experimental conditions, varying the time and initial E/S. To achieve the highest value of DH (39.13 %), the obtained optimum conditions for time and initial E/S were 30 min and 1.024 mA/mg proteins.

Keywords: Enzymatic hydrolysis, Pepsin, Pumpkin (CucurbitaPepo L.) oil cake protein isolate, Response surface methodology.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/2417

6 Dynamic Modeling of Intelligent Air-Cushion Tracked Vehicle for Swamp Peat

Authors: Altab Hossain, Ataur Rahman, A. K. M. Mohiuddin, Yulfian Aminanda

Abstract: Modeling of the dynamic behavior and motion are renewed interest in the improved tractive performance of an intelligent air-cushion tracked vehicle (IACTV). This paper presents a new dynamical model for the forces on the developed small scale intelligent air-cushion tracked vehicle moving over swamp peat. The air cushion system partially supports the 25 % of vehicle total weight in order to make the vehicle ground contact pressure 7 kN/m2. As the air-cushion support system can adjust automatically on the terrain, so the vehicle can move over the terrain without any risks. The springdamper system is used with the vehicle body to control the aircushion support system on any undulating terrain by making the system sinusoidal form. Experiments have been carried out to investigate the relationships among tractive efficiency, slippage, traction coefficient, load distribution ratio, tractive effort, motion resistance and power consumption in given terrain conditions. Experiment and simulation results show that air-cushion system improves the vehicle performance by keeping traction coefficient of 71% and tractive efficiency of 62% and the developed model can meet the demand of transport efficiency with the optimal power consumption.

Keywords: Air-cushion system, ground contact pressure, slippage, power consumption.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/583

5 Prediction of Coast Down Time for Mechanical Faults in Rotating Machinery Using Artificial Neural Networks

Authors: G. R. Rameshkumar, B. V. A Rao, K. P. Ramachandran

Abstract: Misalignment and unbalance are the major concerns in rotating machinery. When the power supply to any rotating system is cutoff, the system begins to lose the momentum gained during sustained operation and finally comes to rest. The exact time period from when the power is cutoff until the rotor comes to rest is called Coast Down Time. The CDTs for different shaft cutoff speeds were recorded at various misalignment and unbalance conditions. The CDT reduction percentages were calculated for each fault and there is a specific correlation between the CDT reduction percentage and the severity of the fault. In this paper, radial basis network, a new generation of artificial neural networks, has been successfully incorporated for the prediction of CDT for misalignment and unbalance conditions. Radial basis network has been found to be successful in the prediction of CDT for mechanical faults in rotating machinery.

Keywords: Coast Down Time, Misalignment, Unbalance, Artificial Neural Networks, Radial Basis Network.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/9083

4 Multipurpose Three Dimensional Finite Element Procedure for Thermal Analysis in Pulsed Current Gas Tungsten Arc Welding of AZ 31 Magnesium Alloy Sheets

Authors: N.Karunakaran, V.Balasubramanian

Abstract: This paper presents the results of a study aimed at establishing the temperature distribution during the welding of magnesium alloy sheets by Pulsed Current Gas Tungsten Arc Welding (PCGTAW) and Constant Current Gas Tungsten Arc Welding (CCGTAW) processes. Pulsing of the GTAW welding current influences the dimensions and solidification rate of the fused zone, it also reduces the weld pool volume hence a narrower bead. In this investigation, the base material considered was 2mm thin AZ 31 B magnesium alloy, which is finding use in aircraft, automobile and high-speed train components. A finite element analysis was carried out using ANSYS, and the results of the FEA were compared with the experimental results. It is evident from this study that the finite element analysis using ANSYS can be effectively used to model PCGTAW process for finding temperature distribution.

Keywords: gas tungsten arc welding, pulsed current, finiteelement analysis, thermal analysis, magnesium alloy.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/370

3 CFD Predictions of Dense Slurry Flow in Centrifugal Pump Casings

Authors: Krishnan V. Pagalthivarthi, Pankaj K. Gupta, Vipin Tyagi, M. R. Ravi

Abstract: Dense slurry flow through centrifugal pump casing has been modeled using the Eulerian-Eulerian approach with Eulerian multiphase model in FLUENT 6.1®. First order upwinding is considered for the discretization of momentum, k and ε terms. SIMPLE algorithm has been applied for dealing with pressurevelocity coupling. A mixture property based k-ε turbulence model has been used for modeling turbulence. Results are validated first against mesh independence and experiments for a particular set of operational and geometric conditions. Parametric analysis is then performed to determine the effect on important physical quantities viz. solid velocities, solid concentration and solid stresses near the wall with various operational geometric conditions of the pump.

Keywords: Centrifugal pump casing, Dense slurry, Solidsconcentration, Wall shear stress, Pump geometric parameters.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/3699

2 Application of Fuzzy Logic Approach for an Aircraft Model with and without Winglet

Authors: Altab Hossain, Ataur Rahman, Jakir Hossen, A.K.M. P. Iqbal, SK. Hasan

Abstract: The measurement of aerodynamic forces and moments acting on an aircraft model is important for the development of wind tunnel measurement technology to predict the performance of the full scale vehicle. The potentials of an aircraft model with and without winglet and aerodynamic characteristics with NACA wing No. 65-3- 218 have been studied using subsonic wind tunnel of 1 m × 1 m rectangular test section and 2.5 m long of Aerodynamics Laboratory Faculty of Engineering (University Putra Malaysia). Focusing on analyzing the aerodynamic characteristics of the aircraft model, two main issues are studied in this paper. First, a six component wind tunnel external balance is used for measuring lift, drag and pitching moment. Secondly, Tests are conducted on the aircraft model with and without winglet of two configurations at Reynolds numbers 1.7×105, 2.1×105, and 2.5×105 for different angle of attacks. Fuzzy logic approach is found as efficient for the representation, manipulation and utilization of aerodynamic characteristics. Therefore, the primary purpose of this work was to investigate the relationship between lift and drag coefficients, with free-stream velocities and angle of attacks, and to illustrate how fuzzy logic might play an important role in study of lift aerodynamic characteristics of an aircraft model with the addition of certain winglet configurations. Results of the developed fuzzy logic were compared with the experimental results. For lift coefficient analysis, the mean of actual and predicted values were 0.62 and 0.60 respectively. The coreelation between actual and predicted values (from FLS model) of lift coefficient in different angle of attack was found as 0.99. The mean relative error of actual and predicted valus was found as 5.18% for the velocity of 26.36 m/s which was found to be less than the acceptable limits (10%). The goodness of fit of prediction value was 0.95 which was close to 1.0.

Keywords: Wind tunnel; Winglet; Lift coefficient; Fuzzy logic.

Digital Article Identifier (DAI): urn:dai:10.1999/1307-6892/6592

1 Experimental Determination of Reactions of Wind-Resistant Support of Circular Stacks in Various Configurations

Authors: Debojyoti Mitra

Abstract: Higher capacities of power plants together with increased awareness on environmental considerations have led to taller height of stacks. It is seen that strong wind can result in falling of stacks. So, aerodynamic consideration of stacks is very important in order to save the falling of stacks. One stack is not enough in industries and power sectors and two or three stacks are required for proper operation of the unit. It is very important to arrange the stacks in proper way to resist their downfall. The present experimental study concentrates on the mutual effect of three nearby stacks on each other at three different arrangements, viz. linear, side-by-side and triangular. The experiments find out the directions of resultant forces acting on the stacks in different configurations so that proper arrangement of supports can be made with respect to the wind directionality obtained from local meteorological data. One can also easily ascertain which stack is more vulnerable to wind in comparison to the others for a particular configuration. Thus, this study is important in studying the effect of wind force on three stacks in different arrangements and is very helpful in placing the supports in proper places in order to avoid failing of stack-like structures due to wind.

Keywords: Stacks, relative positioning, drag and lift forces, resultant forces and supports.

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The Influence of Mobile phone's Forms in the User Perception

The Jaya Suteja and Stephany Tedjohartoko

***Abstract*—**Not all types of mobile phone are successful in entering the market because some types of the mobile phone have a negative perception of user. Therefore, it is important to understand the influence of mobile phone's characteristics in the local user perception. This research investigates the influence of QWERTY mobile phone's forms in the perception of Indonesian user. First, some alternatives of mobile phone's form are developed based on a certain number of mobile phone's models. At the second stage, some word pairs as design attributes of the mobile phone are chosen to represent the user perception of mobile phone. At the final stage, a survey is conducted to investigate the influence of the developed form alternatives to the user perception. Based on the research, users perceive mobile phone's form with curved top and straight bottom shapes and mobile phone's form with slider and antenna as the most negative form. Meanwhile, mobile phone's form with curved top and bottom shapes and mobile phone's form without slider and antenna are perceived by the user as the most positive form.

***Keywords*—**Influence, Mobile phone, Form, User Perception.

I. INTRODUCTION

NOWADAYS, various types of mobile phone have been launched to the market. Though, not all types of mobile phone are successful in entering the market because some types of the mobile phone have a negative perception of user. User perception is an important factor that influences the will of the user to buy a product. Instead of the product image as a result of promotion effort, user perception is related to some characteristics of the product, in example colors, forms, dimensions.

Semantic Differential Method (SMD) is a widely used method in investigating the relation between product's characteristics and the perception of user. This method is first introduced by Osgood, C.E. and Suci, C.J. in 1957 [1]. This method is mostly combined with likert scale to quantify the perception of the user related to the product characteristics. As described by Hsu, S. H., Chuang, M. C., Chang, C. C, many researchers have used this method in the field of product design [2]. Hsu, S. H., Chuang, M. C., Chang, C. C, themselves investigate the differences between the designer perception and the user perception related to the design of telephone [2]. Chuang, M. C., Chang, C. C., Hsu, S. H., also use this method to examined user preference perception of candy bar mobile phones and their relation to form design element [3].

However, research related to user perception that is done in a certain country may not give the same result as in other countries because user perception is influenced by local culture. Therefore, it is important to understand the influence of mobile phone's characteristics in the local user perception before entering a local market. This research investigates the influence of QWERTY mobile phone's forms in the perception of Indonesian user.

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II. RESEARCH METHODOLOGY

This research is performed in three stages. First, some alternatives of mobile phone's forms are developed based on a certain number of mobile phone's models. At the second stage, some word pairs as design attributes of the mobile phone are determined to represent the user perception of the mobile phone. At the final stage, a survey is conducted to investigate the influence of the developed mobile phone's forms in the user perception.

A. Developing Alternatives of Mobile Phone's Form

At the first stage, a data collection is conducted to get information related to various design elements of the QWERTY mobile phone that are widely available. 110 mobile phone's models that are released in 2010 and before are used in this stage. Then, design elements of the mobile phone and their types are identified and classified from the received information. At this research, the identified design elements are limited to the mobile phone's body. Finally, the design elements are analyzed and synthesized to develop various alternatives of mobile phone's form.

B. Determining Design Attributes

At this stage, design attributes of mobile phone that represent the user perception of mobile phone are chosen. Design attributes consist of some pairs of word that are antonym. The chosen design attributes adopt the image word pairs developed by Hsu, S. H., Chuang, M. C., Chang, C. C, and Chuang, M. C., Chang, C. C., Hsu, S. H., [2, 3]. The chosen design attributes also adopt the image words that are used by mobile phone vendor to build their product image.

C. Investigating the Influence of Forms Alternatives to the User Perception

At the final stage, questionnaire is spread to 30 (15 males and 15 females) users of QWERTY mobile phone as respondent. Most of the respondents are college student in

Surabaya, Indonesia.

First, some pictures that describe various alternatives of mobile phone's forms are shown to the respondents. Then, the respondents are asked to assign a score between 1 and 3 in scale of likert for each of design attributes. The assigned scores represent their perception related to design attributes of each alternative of mobile phone's forms. At this research, a score of 3 points means the alternative of mobile phone's form has a very strong positive impression of the design attributes. Meanwhile, a score of 1 point means the alternative of mobile phone's form has a very strong negative impression of the design attributes.

III. Result and Discussion

Based on 110 mobile phone's models, the design elements of mobile phone, which are related to the mobile phone's body, are top shape, bottom shape, antenna, and slider. Furthermore, types of each design elements are also identified and classified. These four design elements and their types are analyzed and synthesized using a morphological chart as shown in figure 1. As a result of analyzing and synthesizing, sixteen alternatives of mobile phone's forms are developed as shown in figure 2.

DESIGN ELEMENTS	TYPE 1	TYPE 2
Top Shape		
Bottom Shape		
Antenna	Internal Antenna	External Antenna
Slider	Without Slider	With Slider

Fig. 1 Design elements

At the next stage, design attributes of mobile phone are chosen to represent user perception of mobile phone's form. Nine image word pairs, which are chosen, are shown in table 1.

TABLE I
Image Word Pairs

General	Unique
Traditional	Modern
Inelegance	Elegance
Large	Compact
Comfortless	Comfortable
Low-class	High-class
Complicated	Simple
Weak	Strong
Boring	Fun

Based on the questionnaire which is spread to the users of QWERTY mobile phone, the perception of user to each type of mobile phone's forms is identified. Table 2 shows the user perception of mobile phone's forms. For example, type 15 of mobile phone's form is perceived by user as the most unique mobile phone's form. It means that user perceive that curve shape of top and bottom mobile phone's forms integrated with external antenna but without slider as unique mobile phone's form. Meanwhile, mobile phone's form, which has straight top and bottom shape without antenna and slider, is perceived as general form by the user.

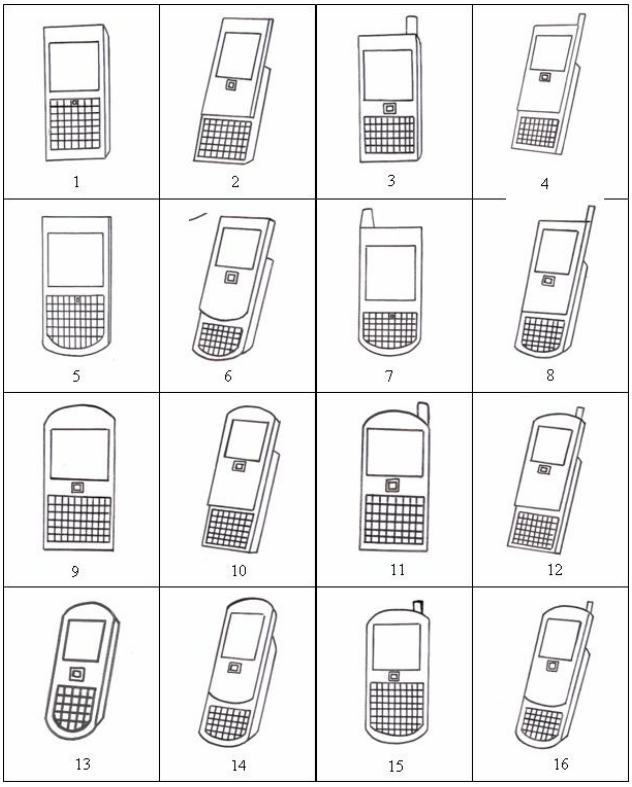

Fig. 2 Alternatives of mobile phone's forms

TABLE II
Design Attributes of Mobile Phone Forms

Negative Design Attributes	Type Mobile Phone Forms		Positive Design Attributes
General	1	15	Unique
Traditional	3	14	Modern
Inelegance	6	11	Elegance
Large	10	9	Compact
Comfortless	5	11	Comfortable
Low-class	11	2	High-class
Complicated	10	5	Simple
Weak	4	9	Strong
Boring	1	13	Fun

Furthermore as shown in table 3, type 5 is perceived as the most positive mobile phone's form. Meanwhile, type 3 is perceived as mobile phone's form with the most negative attribute.

TABLE III
USER PERCEPTION OF MOBILE PHONE FORMS

Type Mobile Phone Forms	Percentage of User Perception		
	Negative Design Attributes	Middle Design Attributes	Positive Design Attributes
1	40.4	38.1	21.5
2	23.3	57.0	19.6
3	55.6	34.4	10.0
4	39.3	54.1	6.7
5	4.1	50.0	45.9
6	25.2	48.5	26.3
7	25.6	54.8	19.6
8	44.4	43.3	12.2
9	14.1	43.3	42.6
10	49.6	36.3	14.1
11	48.9	39.3	11.9
12	48.5	41.5	10.0
13	13.8	42.8	43.5
14	25.9	46.3	27.8
15	18.5	47.8	33.7
16	34.1	49.6	16.3

As the mobile phone's forms are analyzed from their top and bottom shapes, table 4 shows the user perception of mobile phone with straight top and bottom shape. Mobile phone's form with straight top and bottom shapes is perceived as general, traditional, inelegance, large, comfortless, low-class, weak, boring but simple mobile phone.

TABLE IV
USER PERCEPTION OF MOBILE PHONE'S FORM WITH STRAIGHT TOP AND BOTTOM SHAPES

Negative Design Attributes	Percentage of User Perception			Positive Design Attributes
General	57.5	32.5	10.0	Unique
Traditional	50.8	40.8	8.3	Modern
Inelegance	48.3	39.2	12.5	Elegance
Large	40.8	48.3	10.8	Compact
Comfortless	31.7	52.5	15.8	Comfortable
Low-class	30.8	55.8	13.3	High-class
Complicated	18.3	55.0	26.7	Simple
Weak	38.3	41.7	20.0	Strong
Boring	40.0	47.5	12.5	Fun

Meanwhile, the user perception of mobile phone's form with straight top and curved bottom shapes is perceived as large but simple and fun mobile phone as shown in table 5.

Table 6 shows the user perception of mobile phone's form with curved top and straight bottom shapes. This type of mobile phone is perceived as general, traditional, inelegance, large, comfortless, low-class, weak, boring but simple mobile phone. This type of mobile phone's form is perceived by user having the most negative form compare to others.

TABLE V
USER PERCEPTION OF MOBILE PHONE'S FORM WITH STRAIGHT TOP AND CURVED BOTTOM SHAPE

Negative Design Attributes	Percentage of User Perception			Percentage of User Perception
General	33.3	36.7	30.0	Unique
Traditional	33.3	37.5	29.2	Modern
Inelegance	30.8	39.2	30.0	Elegance
Large	33.3	50.8	15.8	Compact
Comfortless	29.2	43.3	27.5	Comfortable
Low-class	13.3	72.5	14.2	High-class
Complicated	10.8	53.3	35.8	Simple
Weak	26.7	45.8	27.5	Strong
Boring	12.5	63.3	24.2	Fun

TABLE VI
USER PERCEPTION OF MOBILE PHONE'S FORM WITH CURVED TOP AND STRAIGHT BOTTOM SHAPE

Negative Design Attributes	Percentage of User Perception			Percentage of User Perception
General	55.0	15.0	30.0	Unique
Traditional	50.0	36.7	13.3	Modern
Inelegance	48.3	43.3	8.3	Elegance
Large	32.5	45.0	22.5	Compact
Comfortless	40.0	35.0	25.0	Comfortable
Low-class	38.3	49.2	12.5	High-class
Complicated	20.9	53.6	25.5	Simple
Weak	45.0	30.0	25.0	Strong
Boring	30.0	54.2	15.8	Fun

In the meantime, the user perception of mobile phone's form with curved top and bottom shapes is perceived as unique, modern, comfortable, simple, fun but inelegance, large, low-class mobile phone as shown in table 7. This type of mobile phone's form is perceived by user having the most positive form compare to others.

TABLE VII
USER PERCEPTION OF MOBILE PHONE'S FORM WITH CURVED TOP AND BOTTOM SHAPE

Negative Design Attributes	Percentage of User Perception			Percentage of User Perception
General	20.2	30.3	49.6	Unique
Traditional	22.5	39.2	38.3	Modern
Inelegance	32.5	54.2	13.3	Elegance
Large	40.8	31.7	27.5	Compact
Comfortless	11.7	61.7	26.7	Comfortable
Low-class	27.5	56.7	15.8	High-class

Complicated	14.2	47.5	38.3	Simple
Weak	27.5	45.0	27.5	Strong
Boring	10.8	53.3	35.8	Fun

Table 8 to 11 show the user perception of mobile phone's form that is influenced by its slider and antenna. Table 8 shows the user perception of mobile phone's form with no slider and antenna. This type of mobile phone is perceived as unique, modern, compact, comfortable, simple, strong, fun but inelegance mobile phone. This type of mobile phone's form is perceived by user having the most positive form compare to others.

TABLE VIII
USER PERCEPTION OF MOBILE PHONE'S FORM WITH NO SLIDER AND ANTENNA

Negative Design Attributes	Percentage of User Perception			Percentage of User Perception
General	33.6	22.7	43.7	Unique
Traditional	25.0	42.5	32.5	Modern
Inelegance	28.3	52.5	19.2	Elegance
Large	14.2	48.3	37.5	Compact
Comfortless	9.2	46.7	44.2	Comfortable
Low-class	16.7	69.2	14.2	High-class
Complicated	7.5	23.3	69.2	Simple
Weak	9.2	35.8	55.0	Strong
Boring	19.2	50.8	30.0	Fun

The user perception of mobile phone's form with slider is perceived as modern, elegance, fun but large, comfortless, complicated, weak mobile phone as shown in table 9.

TABLE IX
USER PERCEPTION OF MOBILE PHONE'S FORM WITH SLIDER

Negative Design Attributes	Percentage of User Perception			Percentage of User Perception
General	34.2	26.7	39.2	Unique
Traditional	25.8	33.3	40.8	Modern
Inelegance	19.2	51.7	29.2	Elegance
Large	57.5	35.8	6.7	Compact
Comfortless	35.0	50.8	14.2	Comfortable
Low-class	23.3	56.7	20.0	High-class
Complicated	21.7	64.2	14.2	Simple
Weak	48.3	42.5	9.2	Strong
Boring	14.2	61.7	24.2	Fun

Table 10 shows the user perception of mobile phone's form with antenna. This type of mobile phone is perceived as general, traditional, inelegance, comfortless, low-class but simple mobile phone.

And, the user perception of mobile phone's form with slider and antenna is perceived as general, traditional, inelegance, large, comfortless, low-class, complicated, weak, and boring mobile phone as shown in table 11. This type of mobile phone's form is perceived by user having the most negative form compare to others.

TABLE X
USER PERCEPTION OF MOBILE PHONE'S FORM WITH ANTENNA

Negative Design Attributes	Percentage of User Perception			Percentage of User Perception
General	52.5	27.5	20.0	Unique
Traditional	65.0	30.0	5.0	Modern
Inelegance	55.8	39.2	5.0	Elegance
Large	24.2	49.2	26.7	Compact
Comfortless	36.7	40.0	23.3	Comfortable
Low-class	38.3	54.2	7.5	High-class
Complicated	10.0	58.3	31.7	Simple
Weak	25.8	47.5	26.7	Strong
Boring	25.8	50.8	23.3	Fun

TABLE VIII
USER PERCEPTION OF MOBILE PHONE'S FORM WITH SLIDER AND ANTENNA

Negative Design Attributes	Percentage of User Perception			Percentage of User Perception
General	45.8	37.5	16.7	Unique
Traditional	40.8	48.3	10.8	Modern
Inelegance	56.7	32.5	10.8	Elegance
Large	51.7	42.5	5.8	Compact
Comfortless	31.7	55.0	13.3	Comfortable
Low-class	31.7	54.2	14.2	High-class
Complicated	25.5	64.5	10.0	Simple
Weak	54.2	36.7	9.2	Strong
Boring	34.2	55.0	10.8	Fun

IV. CONCLUSION

Based on the research, users perceive mobile phone's form with curved top and straight bottom shapes as the most negative form. Meanwhile, mobile phone's form with curved top and bottom shapes are perceived by the user as the most positive form. In addition, mobile phone's form with slider and antenna are perceived by the user as the most negative forms. However, users perceive mobile phone's form without slider and antenna as the most positive form.

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