

# **2009 International Conference on Advances in Computational Tools for Engineering Applications**

## **(ACTEA 2009)**

**Beirut, Lebanon  
15-17 July 2009**



**IEEE Catalog Number: CFP0945G-PRT  
ISBN: 978-1-4244-3833-4**

## TABLE OF CONTENTS

### Chair's Welcome Conference Committees

### SESSION 1: COMMUNICATIONS I

<b>Coding for Two-User MIMO Cooperative Systems using Matrix-Alamouti Techniques (Invited).....</b>	1
<i>Ghassan Kraidy, Joseph Jean Boutros</i>	
<b>The Adaptive RBFNN Equalizer For Nonlinear Time-Varying UMTS Channel .....</b>	6
<i>Rima Assaf, Safwan Elassad, Youssef Harkouss, Mohamad Zoaeter</i>	
<b>Centralized and Distributed LTE Uplink Scheduling in a Distributed Base Station Scenario .....</b>	11
<i>Elias Yaacoub, Zaher Dawy</i>	
<b>Parameter Exploration in Parallel for Dynamic Vehicular Network Efficiency .....</b>	16
<i>Thomas Hewer, Maziar Nekovee, Peter Coveney</i>	

### SESSION 2: CONTROL SYSTEMS I

<b>Simulation Of a Steer-By-Wire System Using FlexRay-based ECU Network.....</b>	21
<i>Khaled Chaaban</i>	
<b>Neuro-Control of an Inverted Pendulum using Genetic Algorithm .....</b>	27
<i>Najib Metni</i>	
<b>Behavior and Robustness Study of Fractional Controllers Based on RLC Cells .....</b>	34
<i>Roy Abi Zeid Daou, Clovis Francis, Xavier Moreau</i>	
<b>Design and Development of a Hybrid Feedback Control System for an RF Remote-Controlled Robot.....</b>	41
<i>Michel Owayjan, Ahmad Abou Ammo</i>	

### SESSION 3: CIVIL ENGINEERING

<b>Non Linear Global Dynamic Analysis of Reinforced Slopes Stability Under Seismic Loading .....</b>	46
<i>Fadi Hage Chehade, Marwan Sadek, I. Shahrour</i>	
<b>Application of Reliability Analysis on Seismic Slope Stability.....</b>	52
<i>Dalia Youssef Abdel Massih, Jacques Harb</i>	
<b>Concrete Compressive Strength Obtained on Uncontrolled Construction Sites in Lebanon.....</b>	58
<i>Fadi Hage Chehade</i>	
<b>Analysis of an Isotropic Plate Containing Three Identical Circular Holes Arranged in a Triangular Configuration.....</b>	62
<i>Elie Chakar, Ghazi Asmar</i>	

### SESSION 4: ANTENNA DESIGN I

<b>A Low-Cost Microstrip Antenna for 3G/WLAN/WiMAX and UWB Applications.....</b>	68
<i>Mohammed Al-Husseini, Youssef Tawk, Ali El-Hajj, Karim Kabalan</i>	
<b>A Modified Circular Disk Monopole Ultra Wide Band Antenna .....</b>	71
<i>Soubhi Abou Chahine, Maria Addam, Hadi Abdel Rahim, Areej Itani, Hiba Jomaa</i>	
<b>New Designs if End-Fire Tapered Slot Antenna: Analysis &amp; Synthesis.....</b>	76
<i>Elias Rachid, Sarah Medlej, Sabine Abou Jaoude</i>	
<b>Compact and Super Broadband Volumetric Folded Dipole Antenna for Mobile Application. ....</b>	80
<i>Ali Harmouch, Elias Nassar, Houssain Kais, Nadeen Rishani</i>	

## **SESSION 5: CONTROL SYSTEMS II**

<b>Coupling Manipulation and Locomotion Tasks for a Humanoid Robot.....</b>	84
<i>Layale Saab, Philippe Soueres, Jean-Yves Fourquet</i>	
<b>Robust Proposal Distribution for Adaptive Visual Tracking in a Particle Filtering Frame Work.....</b>	90
<i>Majid Komeili, Narges Armanfard, Morteza Valizadeh, Ehsanollah Kabir</i>	
<b>An Automated Camera Calibration Framework for Desktop Vision Systems.....</b>	96
<i>Hamed Rezazadegan Tavakoli, Hamid Reza Pourreza</i>	
<b>A New Method for State Estimation of Dynamic System Based on Dempster Shafer Theory .....</b>	101
<i>Ghalia Nassreddine, Fahed Abdallah, Thierry Denoeux</i>	
<b>Optimal Trajectory of a Mobile Robot by a Genetic Design Fuzzy Logic Controller.....</b>	107
<i>Chokri Rekik, Mohamed Jallouli, Nabil Derbel</i>	

## **SESSION 6: POWER ELECTRONICS**

<b>Study Analysis on the Excitation of a Switched Reluctance Generator for Wind Energy Conversion .....</b>	112
<i>M. Nassreddine, J. Rizk, M. Nagrial, A. Hellany</i>	
<b>Study and Design of High Efficiency Switch Mode GaN Power Amplifiers at L-band Frequency. ....</b>	117
<i>Alaaeddine Ramadan, Audrey Martin, David Sardin, Tibault Reveyrand, Philippe Bouysse, Jean Michel Nebus, Luc Lapierre, Jean-Francois Villemazet, Stephane Forestier</i>	
<b>Modeling and Control of Three-Phase Four-Leg Split-Capacitor Shunt Active Power Filter.....</b>	121
<i>Nassar Mendalek</i>	
<b>A New DTC of Six Phase Induction Machines using Matrix Converter .....</b>	127
<i>Reza Kianinezhad, Seyyed Ghodratollah Seyfossadat, Vali Talaeizadeh, Abdelmajid Hasani</i>	

## **SESSION 7: MICROELECTRONICS I**

<b>Time-Domain Characterization Using LSNA of a Broad Band Cross-Modulation in CDMA Communication Systems.....</b>	133
<i>Mouhamad Abouchahine, Alaa Saleh, Danielle Rousset, Guillaume Neveux, Denis Barataud, Jean Michel Nebus</i>	
<b>FPGA Implementation and Simulink Integration of CFO Module in WiMAX Receiver Model.....</b>	137
<i>Onsy Abdel Alim, Nemat Elboghdady, Mahmoud A. Ashour, Azza M. Elskary</i>	
<b>Study for the Electrical Quality Degradation of N-Channel VDMOSFET Transistor Induced by Electrical Stress.....</b>	142
<i>N. Abboud , C. Salame , A. Khoury , A. Foucaran, A. Hoffmann, P. Mialhe</i>	
<b>A Semi Numerical Approach for Semiconductor Devices Physical Modeling.....</b>	146
<i>M. Dehmas, A. Azrar, A. Recioui, M. Challal</i>	

## **SESSION 8: ELECTROMAGNETICS I**

<b>Reverberation Chamber Modelling using the FDTD Method .....</b>	151
<i>Moustafa El Haffar, Alain Reineix, Christophe Guiffaut, Aziz Adardour</i>	
<b>Electromagnetic Time-Reversal for Reverberation Chamber Applications using FDTD .....</b>	157
<i>Ibrahim El Baba, Sebastien Lallechere, Pierre Bonnet</i>	
<b>Study of a Signal Propagation over a Transmission Line Having a Non-Uniform Topology.....</b>	163
<i>Tarek Ibrahim, Ghazi Bousaleh, Fahd Hassoun</i>	
<b>Dependence of the Precursors on the Medium Parameters in Passive Lorentzian Medium.....</b>	169
<i>Reza Safian, Ghasem Ebrahimi</i>	

## **SESSION 9: SIGNAL PROCESSING I**

<b>Wavelet Transform Based Multistage Speaker Feature Tracking Identification System Using Linear Prediction Coefficient.....</b>	173
<i>Khaled Daqrouq, Abdel Rahman Qawasmi, Wael Al-Sawalmeh, Tareq Abu Hilal</i>	

<b>SMOS Image Reconstruction Algorithm: Extension of the Band Limited Approach to the Fully Polarimetric Mode of MIRAS.....</b>	180
<i>Ali Khazaal, Eric Anterrieu</i>	
<b>A Frequency Domain Adaptive Watermarking Algorithm for Still Colour Images.....</b>	186
<i>A. Al-Gindy, H. Al-Ahmad, R. Qahwaji, A.Tawfik</i>	
<b>The Use of Fuzzy Neural Networks for Estimating the Parameters of The K -Distribution.....</b>	192
<i>Chehla Alioua, Faouzi Soltani</i>	

## **SESSION 10: ANTENNA DESIGN II**

<b>Wideband Antenna for WLAN Applications .....</b>	197
<i>Zahra Katbay, Sawsan Sadek</i>	
<b>A Reconfigurable PCB Antenna for WiMAX, C-band and X-band Operation .....</b>	200
<i>Ali Ramadan, Mohammed Al-Husseini, Karim Kabalan, Ali El-Hajj</i>	
<b>Investigation of the Focusing Properties of Some Fractal Arrays .....</b>	203
<i>Khalil Sayidmarie, Enass Al-Shabkoon</i>	
<b>A Rapid Adaptive PN Code Acquisition with Antenna Diversity for DS-CDMA Communication .....</b>	208
<i>Amel Aissaoui, Zoheir Hammoudi</i>	

## **SESSION 11: COMPUTER ENGINEERING I**

<b>Risk Management and Security in Service-based Architectures .....</b>	214
<i>Pascal Bou Nassar, Youakim Badr, Kablan Barbar, Frederique Biennier</i>	
<b>Testing a New Proposed IPv6 QoS Management Model in Inter and Intra Domains .....</b>	219
<i>El-Bahilul Fgee, William J. Phillips, A. Elhoune</i>	
<b>Real Time Video Streaming over Bluetooth using Software Technique .....</b>	225
<i>Abdallah Kassem, Mustapha Hamad, Jean Haddad</i>	
<b>A Novel Feature Fusion Technique in Saliency-Based Visual Attention.....</b>	230
<i>Zeynab Armanfard, Ali Nasrabadi, Hamed Bahmani</i>	

## **SESSION 12: THERMAL & FLUID SCIENCES**

<b>Simple Model and Control Strategy of Earth-to-Air Heat Exchangers .....</b>	234
<i>Florent Boithias, Jian Zhang, Mohamed El Mankibi, Fariborz Haghighat, Pierre Michel</i>	
<b>Investigation of Evacuated-Tube Solar Collectors Performance Using Computational Fluid Dynamics .....</b>	240
<i>Michel Hayek</i>	
<b>Comparison of Pressure-Velocity Coupling Schemes for 2D Flow Problems.....</b>	245
<i>Edouard Audi</i>	
<b>Numerical Modeling of Impact of Radiation Exchanges Between Wood and Building Thermal Comfort .....</b>	249
<i>Zaratiana Harijaona, Richard Cantin, Gérard Guerracino</i>	

## **SESSION 13: COMMUNICATIONS II**

<b>Performance Analysis of Differential Chaos Shift Keying over an AWGN Channel.....</b>	255
<i>Georges Kaddoum, Pascal Chargé, Daniel Roviras, Danièle Fournier-Prunaret</i>	
<b>Hybrid Acquisition of PN Codes using Automatic Multipath Censoring in DS-CDMA Communications .....</b>	259
<i>Latifa Hacini, Atef Farrouki, Zoheir Hammoudi</i>	
<b>Ultra High Frequency-Radio Frequency IDentification Tags Modeling.....</b>	265
<i>Sara Abou Chakra, Usamah Farrukh, Elizabeth Colin, Alain Moretto</i>	
<b>Design and Analysis of UMTS-WLAN Interoperability and Service Continuity using the SIP Protocol .....</b>	269
<i>Mohamad Auode, Ahmad Yamout</i>	

## **SESSION 14: ELECTROMAGNETICS II**

<b>Shape and Topology Optimization of Microwave Components.....</b>	275
<i>Hassan Khalil, Michel Aubourg, Stéphane Bila, Dominique Baillargeat, Serge Verdeyme, Francois Jouve</i>	
<b>Investigation of Chireix PA Performances by Testing One Branch Variable Load Amplifier .....</b>	279
<i>Mohamad El-Asmar, Ahmed Birafane, A. B. Kouki, F. M. Ghannouchi</i>	
<b>Application of Wavelet Transform in the Field of Electromagnetic Compatibility and Power Quality of Industrial Systems .....</b>	284
<i>Tarek Ibrahim, Ghazi Bousaleh, Fahd Hassoun</i>	
<b>Optimum Design of Broadband Coupled-line Phase Shifters Incorporating Impedance Matching of Source and Load Impedances .....</b>	290
<i>Homayoon Oraizi, Alireza Shamsafar</i>	

## **SESSION 15: ENERGY & ENVIRONMENT I**

<b>Integrated Fire Detection Systems for the Mediterranean Region.....</b>	295
<i>Athanasiou Pantelous, Vasilis Tsoukas, Ilias Andrikopoulos</i>	
<b>Extension Evaluation Method and Its Application in Waste Organic Gas Treatment .....</b>	300
<i>Chen Yunhua, Yu Yongquan, Zeng Bi</i>	
<b>Use of the Potential of Satellite Images in the Detection of Farmland Mutation by Urbanization .....</b>	305
<i>A. Diaf, K. Benhanifia, D. Yousfi, H. Benyelles</i>	
<b>Prospects for Solar Thermal Energy Use in Residential Buildings in Lebanon .....</b>	309
<i>Talal Salem</i>	
<b>Heat Pump Designing and Optimization Tool.....</b>	315
<i>Farouk Fardoun, Mohammad Hajjar, Habib Fardoun</i>	

## **SESSION 16: MICROELECTRONICS II**

<b>Image Compression on FPGA using DCT .....</b>	320
<i>Abdallah Kassem, Mustapha Hamad, Elie Haidamous</i>	
<b>A Novel Method for Calculating Initial Condition in Harmonic Balance Analysis Exploiting Volterra Series .....</b>	324
<i>Ahmad Reza Farsaei, Reza Safian</i>	
<b>A Numerical Technique for Parameters Extraction of a P-N Junction Diode in the Presence of Parasitic Resistance .....</b>	329
<i>Semaan Georges, R. Tobji, C. Merheb, G. Mitri</i>	
<b>Novel Low-Voltage High-CMRR Input Stage for Current Feedback Operational Amplifiers (CFOA).....</b>	334
<i>Mohammad Hekmat Kashtiban, Seyed Javad Azhari</i>	

## **SESSION 17: CONTROL SYSTEMS III / CAM**

<b>Environmentally Conscious Quality Function Deployment-A New Approach for Green Manufacturing .....</b>	340
<i>Francis Francis</i>	
<b>Cutting Tool Monitoring System for Down Milling Process using AI Methods.....</b>	344
<i>Ramzi Fayad</i>	
<b>Total Quality Management-A Tool for Design for Environment .....</b>	351
<i>Francis Francis</i>	
<b>Towards Multiprocessor Scheduling in Distributed Real-Time Systems Under Energy Constraints .....</b>	355
<i>Hussein El Ghor, Maryline Chetto, Rafic Hage Chehade, Gilles Nachouki</i>	

## **SESSION 18: SIGNAL PROCESSING II**

<b>An Information-Theoretic Approach for Removing Feedback Channels in Distributed Video Coding .....</b>	362
<i>Charles Yaacoub, Joumana Farah</i>	

<b>A Nonparametric Pixel-Based Background Modeling for Dynamic Scenes .....</b>	369
<i>Narges Armanfard, Morteza Valizadeh, Majid Komeili, Ehsanollah Kabir, Saed Jalili</i>	
<b>Modified AIC and FPE Criteria for Autoregressive (AR) Model Order Selection by Using LSFB Estimation Method .....</b>	374
<i>Shapoor Khorshidi, Mahmood Karimi</i>	
<b>SIFT-based Ear Recognition by Fusion of Detected Keypoints from Color Similarity Slice Regions .....</b>	380
<i>Dakshina Ranjan Kisku, Hunny Mehrotra, Phalguni Gupta, Jamuna Sing</i>	
<b>Texture Representation using Autoregressive Models .....</b>	386
<i>Mangala Joshi, Prashant Bartakke, M. Sutaone</i>	

## **SESSION 19: MICROELECTRONICS III**

<b>A High Speed 12-bit Pipelined ADC using Switched Capacitor and Fat Tree Encoder .....</b>	391
<i>Ramalatha Marimuthu, A. P. Karthick, S. Karthick, K. Muralikrishnan</i>	
<b>Fault Tolerant Reversible Logic Synthesis: Carry Look-Ahead and Carry-Skip Adders.....</b>	396
<i>Md. Saiful Islam, Muhammad Mahbubur Rahman, Zerina Begum, Mohd. Zulfiquar Hafiz</i>	
<b>The Methodology Design of Low-Power Hybrid-Cascade Compensation Operational Amplifiers Based on Settling Behavior .....</b>	402
<i>Mehdi Taghizadeh, Abdolreza Nabavi, Davood Mahmoodi, Ali Soleimani</i>	
<b>Modeling Kink Effect in the Poly-Si TFTs under Charge Sheet Approach.....</b>	407
<i>N.H.Toudjen, F.Mansour</i>	

## **SESSION 20: ELECTROMAGNETICS III**

<b>Closed Formula of PLC Radiated Field in Fresnel and Far Zones .....</b>	411
<i>Mohamed Chaaban, Ghazi Bousaleh, Rafic Hage Chehade, Ali Ismail, Khalil El Khamlichi Drissi, Christophe Pasquier</i>	
<b>How to Design an Effective Earthing System to Ensure the Safety of the People .....</b>	416
<i>Mohamad Nassereddine, Ali Hellany, Jamal Rizk</i>	
<b>Reduction of Power Field Radiation for PLC Applications .....</b>	422
<i>Mohamed Chaaban, Ghazi Bousaleh, Rafic Hage Chehade, Ali Ismail, Khalil El Khamlichi Drissi, Christophe Pasquier</i>	
<b>Surface Modelling of Organic Solar Cells .....</b>	427
<i>M. Chakaroun, B. Ratier, A. Moliton, W. Hojeij, M. Aubourg</i>	

## **SESSION 21: SOFTWARE DEVELOPMENT I**

<b>A Software Platform for Nanoscale Device Simulation and Visualization.....</b>	432
<i>Marek Gayer, Giuseppe Iannaccone</i>	
<b>Wavelet and Hilbert Transform-based Brain Computer Interface.....</b>	438
<i>A. Asadi Ghanbari, M. R. Nazari Kousarrizi, M. Teshnehlab, M. Aliyari</i>	
<b>Application of BP Neural Network in the Prediction of Consolidation Coefficient .....</b>	443
<i>Hong-Hu Zhu, Jian-Ping Fu, Fei Dai</i>	
<b>TCS: An Automation Tool for Software Reliability Test Data Generation .....</b>	447
<i>Jian-Ping Fu, Min-Yan Lu, Jun Ai</i>	
<b>Development of a Digital Model for Oman Electrical Transmission Main Grid.....</b>	451
<i>Omar H. Abdalla, Hilal Al-Hadi, Hisham Al-Riyami</i>	

## **SESSION 22: MICROWAVE SYSTEMS**

<b>Compact Antenna Design For Wireless and Mobile Communication Systems (Invited) .....</b>	457
<i>Mohamed Essaaidi</i>	
<b>Propagation Channel Modeling for Emerging Wireless Communication Systems (Invited) .....</b>	458
<i>Ghais El Zein</i>	
<b>Advances in Microwave Systems for Medical Applications .....</b>	464
<i>Dany Obeid, Sawsan Sadek, Gheorghe Zaharia, Ghais El Zein</i>	
<b>Optimum Design of Schiffman Phase Shifters Incorporating Load and Source Impedance Matching .....</b>	470
<i>Homayoon Oraizi, Alireza Shamsafar</i>	

## **SESSION 23: CONTROL SYSTEMS IV**

<b>A Generalized Likelihood Ratio Test for a Fault-Tolerant Control System.....</b>	475
<i>Hicham Jamouli, Dominique Sauter</i>	
<b>Fault Tolerant Control System against Actuator Failures based on Re-configuring Reference Input .....</b>	481
<i>Didier Theilliol, Y. M. Zhang, Jean-Christophe Ponsart</i>	
<b>Vehicle Trajectories Classification using Support Vectors Machines for Failure Trajectory Prediction .....</b>	487
<i>Abderrahmane Boubezoul, Abdourahmane Koita, Dimitri Daucher</i>	
<b>Optimal Sensor Network for Fault Diagnosis Using Structural Analysis.....</b>	493
<i>Abbas Chamseddine, Hassan Noura, Didier Theilliol</i>	

## **SESSION 24: ENERGY & ENVIRONMENT II**

<b>Using Neural Networks for Short-Term Prediction of Air Pollution Levels.....</b>	499
<i>Gabriel Ibarra-Berastegui, Jon Saenz, Agustin Ezcurra, Ana Elias, Astrid Barona</i>	
<b>Building Simulation Tools and Their Role in Improving Existing Building Designs.....</b>	504
<i>Sylvie Melki, Michel Hayek</i>	
<b>MATLAB – Based Modeling Tool for Designing, Predicting and Analyzing Grid Tied Photovoltaic Systems .....</b>	509
<i>Ali Assi, Mohammed Jama, Khaled Al Kathairi</i>	
<b>Impact of Climatic Data Uncertainties on the Simulation of the Thermal Behavior of Ancient Houses.....</b>	515
<i>Bassam Moujalled, R. Cantin, G. Guaracino</i>	

## **SESSION 25: COMMUNICATIONS III**

<b>Video Distribution over Wireless Networks with Mobile-to-Mobile Cooperation .....</b>	520
<i>Samer Al-Chikhani, Lina Al-Kanj, Zaher Dawy</i>	
<b>Liquid-Crystal Birefringent Filter-based Wavelength Blocker/Channel Equalizer for Reconfigurable Optical Networks .....</b>	524
<i>Rachid Hamdi, Robert Farha, Badr-Eddine Benkelfat</i>	
<b>Effective Cooperative Spectrum Sensing in IEEE 802.22 Standard with Time Diversity .....</b>	529
<i>Ali Eksim, Selman Kulac, Murat Sazli</i>	
<b>Using RFID Technology in Finding Position and Tracking Based on RSSI .....</b>	533
<i>Farhad I. Mahmoud, Ahmed M. A. Salama</i>	

## **SESSION 26: SIGNAL PROCESSING III**

<b>Eigenphases for Corrupted Face Images .....</b>	538
<i>Naser Zaeri</i>	
<b>MLE-Based Order Statistic Automatic CFCAR Detection in Weibull Background .....</b>	542
<i>Souad Chabbi, Toufik Laroussi, Mourad Barkat</i>	
<b>Phoneme-Viseme Mapping for Modern, Classical Arabic Language.....</b>	548
<i>Pascal Damien, Nagi Wakim, Marcel Egéa</i>	
<b>K-Distribution Parameters Estimation Based on the Nelder-Mead Algorithm in Presence of Thermal Noise.....</b>	554
<i>Amar Mezache, Mohamed Sahed, Toufik Laroussi</i>	
<b>Speaker Identification System Using Wavelet Transform and Neural Network.....</b>	560
<i>Khaled Daqrouq, Tareq Abu Hilal, Shadi EL-Hajjar EL-Hajjar, Mohamed Sherif, Abdel Al-Qawasmi</i>	

## **SESSION 27: SOFTWARE DEVELOPMENT II**

<b>Visualizing the Underlying Trends of Component Latencies Affecting Service Operation Performance.....</b>	566
<i>Sid Kargupta, Sue Black</i>	
<b>Towards An Electronic Voting System For The State of Qatar.....</b>	570
<i>Jihad M. AlJa'am, Mubarak Alkhelaifi, Ali Al-Khinji, Moustafa Al-Sayrafi</i>	

<b>Towards Integrating Security Services in e-Learning Platforms .....</b>	574
<i>Pascal Bou Nassar, Youakim Badr, Kablan Barbar, Frédérique Biennier</i>	
<b>Managing and Monitoring House Visits with Home Visitor Logger .....</b>	579
<i>Paul-Marc Bougharios, Charbel Habib, Semaan Georges, Mustapha Hamad</i>	

## **SESSION 28: COMPUTER ENGINEERING II**

<b>Harmony Search Algorithm Optimization for Preventive-Maintenance-Planning for Transmission Systems .....</b>	585
<i>Fouzi Harrou, Abdelkader Zeblah</i>	
<b>Accessibility for the Blind: an Automated Audio/Tactile Description of Pictures in Digital Documents .....</b>	592
<i>Youssef Bou Issa, Nadine Vigouroux, Mustapha Mojahid, Bernard Oriola</i>	
<b>Degraded Document Image Binarization Based on Combination of Two Complementary Algorithms .....</b>	596
<i>Morteza Valizadeh, Majid Komeili, Narges Armanfar, Ehsanollah Kabir</i>	
<b>High Speed Energy Efficient ALU Design using Vedic Multiplication Techniques .....</b>	601
<i>M. Ramalatha, K. Deena Dayalan, P. Dharani, S. Deborah Priya</i>	
<b>E-Learning in Engineering Education .....</b>	605
<i>Lee Lei</i>	
<b>Performance Analysis of Different DSP Algorithms on Advanced Microcontroller and FPGA.....</b>	610
<i>Sharbari Banerjee, Amitabha Sinha</i>	

## **SESSION 29: CONTROL SYSTEMS V**

<b>Decomposition and Hierarchical Control for Discrete Large Scale System using Neural Networks.....</b>	615
<i>Najla Krichen Masmoudi, Chokri Rekik, Mohamed Djemel, Nabil Derbel</i>	
<b>Sensor Fault Detection by Sliding Mode Observer Applied to an Autonomous Vehicle .....</b>	622
<i>Kamel Bouibed, Abdellouahab Aitouche, Mireille Bayart</i>	
<b>Robust Observer for Prevention of Vehicle Rollover .....</b>	628
<i>Abdelhamid Rabhi, Mohammed Chadli, A. El Hajjaji, J. Bosche</i>	
<b>Fractional Operators' Synthesis and Realization using Electrical and Bond Graph Approaches.....</b>	634
<i>Roy Abi Zeid Daou, Clovis Francis, Xavier Moreau</i>	
<b>A Fault Monitoring Circuit for Five Phase AC Motor .....</b>	641
<i>Abbas Fardoun, Moza S. Al Naimi, Reema Al Zarooni, Hassan Noura</i>	

## **SESSION 30: BIOMEDICAL SYSTEMS**

<b>An Advanced Modulation Technique for Telemetry System used for Smart Capsules.....</b>	645
<i>Nidal Fawaz, Marc Durrenberger, Daniel Bau, Dirk Jansen</i>	
<b>Functional and Anatomical Medical Image Matching .....</b>	649
<i>Racha EL Berbari</i>	
<b>Cellular Model of Electroporated Tissue for Ultrasound RF Data Analysis .....</b>	653
<i>Ali Dashti, Edmond Zahedi</i>	
<b>Patient Alert and Decision Support System.....</b>	657
<i>Shashi Gunawardane, Ranga Rodrigo, Senaka Rajapakse, Ravindra Koggalage</i>	
<b>Synchronized an Artificial Muscle Movements with Music Rhythm According to Human Perception.....</b>	662
<i>Mahdieh Poostchi, M. R. Jahed-Motlagh</i>	

## **Author Index**