

2012 18th International Conference on Automation and Computing

(ICAC 2012)

**Loughborough, United Kingdom
7 – 8 September 2012**



**IEEE Catalog Number: CFP1260R-PRT
ISBN: 978-1-4673-1722-1**

TABLE OF CONTENT

Key note

<i>Optimal Control and Energy Efficiency - Integration of Design and Engineering</i>	1
--	---

Section I Control & Automation

Estimation of Maximum Allowable Time-Delay Bound for System Stability of Network Controlled Parallel DC/DC Buck Converters <i>Ashraf Khalil, Jihong Wang</i>	2
Global Emergency Management System Framework <i>Alfred Ignatius Ajayi, Lili Yang and Malcolm King</i>	8
Area and Power optimisation for AES encryption module implementation on FPGA <i>Tuan Anh Pham, Mohammad S. Hasan and Hongnian Yu</i>	14
Input-Constrained Adaptive GPC for Simple Industrial Plant <i>Michael Short</i>	20
On-chip PVT Compensation Technology for Adaptive Voltage Scaling Control in Computer Power Management Application <i>Minghao Jin, Xiao Fu and Graham McDonald</i>	26
A Novel Multi-fold Security Framework for Cognitive Radio Wireless Ad-hoc Networks <i>Munam Ali Shah, Sijing Zhang, Carsten Maple</i>	31
A Novel Model-Free Prediction of Power Quality Problems Via DSTATCOM <i>Bala Boyi Bukata and Yun Li</i>	37
Fuzzy Supervisory Control Strategies to Minimise Energy Use of Airport Terminal Buildings <i>Abdulhameed Danjuma Mambo, Mahroo Efthekhari & Steffen Thomas</i>	43
Analysis and Control of a Single Phase AC Chopper in Series Connection with an Auto-transformer <i>Hao Liu, Jihong Wang</i>	49
Dynamic performance of a dual-pressure waste heat recovery system under partial load operation <i>Zhixin Sun, Yiping Dai, Hao Liu, Yue Wang, Jihong Wang</i>	55
Gain-Constrained Filtering with Probabilistic Sensor Delays and Correlated Noises <i>Jun Hu, Zidong Wang, Bo Shen and Huijun Gao</i>	61
The role of IT in Email Preservation and Archiving <i>Lisa Carpenter, Thomas W. Jackson, Graham Matthews, David Thomas, Amanda Spencer</i>	67
An Analysis on Decentralized Adaptive MAC Protocols for Cognitive Radio Networks <i>Munam Ali Shah, Sijing Zhang, Carsten Maple</i>	73
Neural Predictive Controller of Nonlinear Systems Based on Quasi-ARX Neural Network <i>Imam Sutrisno, Mohammad Abu Jami'in and Jinglu Hu</i>	78
Power Fundamental Frequency Detection Based On Orthometric Average Chirp-Z Transform <i>Guangfu Liu, Zidi Dong, Shuanghua Yang, Xinju Zhao</i>	84

A novel health probability for structural health monitoring <i>Xueyan Zhao and Ziqiang Lang</i>	90
--	----

Section II Modeling & Simulation

Modulation Signal Bispectrum Analysis of Motor Current Signals for Stator Fault Diagnosis <i>A. Alwodai, X. Yuan, Y. Shao, F. Gu, A. D. Ball</i>	96
Multivariable Simulation on a Homogeneous Charged Microwave Ignition System <i>Lutz-Christoph Schoning and Yun Li</i>	102
Research in the development of computational FE software for creep damage mechanics <i>Dezheng Liu, Qiang Xu, Zhongyu Lu, Donglai Xu</i>	10
Identification of Critical Bands in DCT Domain Representation for Fingerprint Recognition <i>Yasir Ali Shah, Nasir Ahmad, Muhammad Naeem</i>	114
Gait Analysis and Identification <i>Jie Hong, Jinsheng Kang, Michael E. Price</i>	118
Synchronization of a linear singularly perturbed complex network with potential application in electric power systems <i>Chenxiao Cai, Zidong Wang and Jun Hu</i>	124
Application of computer vision and Support Vector Machines to estimate the content of impurities in olive oil samples <i>P. Cano Marchal, D. Martínez Gila, J. Gámez García and J. Gómez Ortega</i>	130
Alignment Method with Application to Gas Chromatography / Mass Spectrometry Screening <i>Jon Hitchcock, Dayou Li, Carsten Maple, Malcolm Keech</i>	136
Application of a Reliability Model Generator to a Pressure Tank System <i>K.S.Stockwell and S.J.Dunnett</i>	141
Multi-base Buoys Passive Localization Research Based on Simulated Annealing Algorithm <i>Yanni GOU, Yingmin Wang, Qi Wang</i>	147
Fault Diagnosis of Rolling Bearings using Multifractal Detrended Fluctuation Analysis and Mahalanobis Distance Criterion <i>J. Lin, Q. Chen, X. Tian, F. Gu</i>	152
Overtraced Strokes to Single Line Drawing: Preparation of Sketch for 3D Interpretation <i>Shuxia Wang, Shengfeng Qin, Mantun Gao</i>	158
A review of methods for hydrodynamic analysis of helical swimming flagella <i>YUAN Fei, Hongnian Yu, Brian BURROWS</i>	164
Fuzzy logic based localisation in Wireless Sensor Networks for disaster environments <i>Shuang Gu, Yong Yue, Carsten Maple, Chengdong Wu</i>	172
An Introduction to Bayesian Networks in Dynamic Systems and Control <i>Dr Michael Ashcroft</i>	177
Online Sketch Recognition Using Geometric-based Classifiers <i>Shuxia Wang, Guanfeng Wang, Shengfeng Qin</i>	183

Section III Manufacturing

The research of surface waviness control technology for 5-axis flank milling <i>Lei Jiang, Guofu Ding, YiSheng Zou, Rong Li, Jian Zhang, Minghua Hu</i>	187
OVERVIEW OF VIRTUAL ENTERPRISES IN SUPPLY CHAIN MANAGEMENT <i>Ariunbayar Samdantsoodol, Shuang Cang, Hongnian Yu</i>	193
Development of Ultrasound Elliptical Cutting Device and Study on Its Cutting Performance <i>F. Jiao, X. Zhang, L. Zhao, F.B. Li and B. Zhao</i>	202
Preliminary analysing of experimental data for the development of high Cr Alloy Creep damage Constitutive Equations <i>Lili An, Qiang Xu, Donglai Xu, Zhongyu Lu</i>	207
A New Texture Algorithm for Complex Surface Construction by Fast Smooth Seamless Splicing <i>Yuan Xing, Shengfeng Qin</i>	212
Development of A Novel Hybrid Maximum Power Point Tracking Methodology for Photovoltaic Systems <i>Fan Zhang, Kary Thanapalan, Jon Maddy, Alan Guwy</i>	218
Comparison of Robust Filtration Techniques in Geometrical Metrology <i>Shan Lou, Wenhan Zeng, Xiangqian Jiang, Paul J. Scott</i>	224
Effect of Reverse Gate Bias on Hot-Carrier Reliability in OCB Trench MOSFET for Solar Cell Applications <i>Minghao Jin, Xiao Fu</i>	230
Micro-tensile device and test for micro-wire in MEMS <i>Qingshun Bai, Bin He, Yingchun Liang, Kai Cheng</i>	234
The Effect of the Variation of Velocity on the Molecular Dynamics Simulation of Nanomachining <i>A.O. Oluwajobi and X. Chen</i>	238
The preliminary development of computational software system for creep damage analysis in weldment <i>Feng Tan, Qiang Xu, Zhongyu Lu, Donglai Xu</i>	244
Comparative Study of Different Approaches to Solve Batch Process Scheduling and Optimisation Problems <i>Yaqing TAN, Wei HUANG, Yanming SUN, Yong YUE</i>	248
Numerical simulation of the component microstructure change through roll forming <i>Z.Q. Hu, K. Cheng, Z.M. Feng</i>	254
Custom mandible implant design based on rapid prototyping <i>TAO Qing, SUN Wenlei, SU Na, Jinsheng Kang</i>	259
Finite Element Analysis of the Amplitude Transformer in Ultrasonic Vibration System <i>B.Zhao,P.Y. Bian, F. Jiao and Y.G. Zheng</i>	263
Simulation Research on FIB Processing: A Comparison between Silicon and Diamond <i>Z. Tong, X.C. Luo, Y.C. Liang, Q.S. Bai, J.N. Sun</i>	269
The Diagnosis of a Gearbox Transmission System using Electrical Control Parameters <i>A. Benghozzi, Y. Shao, Z. Shi, F. Gu, A. D. Ball</i>	274

Section IV Design & Computing

The Lightweight Design of a Dump Truck Frame based on Dynamic Responses <i>Z. Chen, T. Wang, Z. Zhao, J. Shen, D. Zhen, F. Gu</i>	280
Development of an Expert Control Strategy for Controlling Obstacle Crossing of a High-voltage Transmission line Inspection Robot <i>Ji-dai Wang, Ai-qin Sun, Wei Su, Jihong Wang, Hao Liu</i>	285
A sensor fusion-based classification system for thermoplastic recycling <i>S. Satorres Martínez, J.M. López Paniza, M. Cobo Ramírez, J. Gómez Ortega, J. Gómez García</i>	290
A Framework for Massive Data Transmission in a Remote Real-Time Health Monitoring System <i>Surong Chen, Xiaohui Zhu, Sijing Zhang, Jiehua Wang</i>	296
Crowdsourcing Based Product Innovation Design Service Model for Small- and Medium-Sized Enterprises <i>Chunyan Xu, Shengfeng Qin, Zuoping Xiao</i>	301
Optimal Sensor Selection for Wind Turbine Condition Monitoring Using Multivariate Principal Component Analysis Approach <i>Yifei Wang, Xiandong Ma, Joyce Malcolm</i>	306
A New Apparel Design and Online Shopping Framework for Mass Customization and Best Fit <i>Congying Guan, Shuxia Wang, Shengfeng Qin</i>	313
TESPAR Feature Based Isolated Word Speaker Recognition System <i>Munaza Sher, Nasir Ahmad, Madiha Sher</i>	318
Study on High-speed Train CAD-CAE Integration Modeling Technology Based on the Multi-level Assembly Models <i>Rong Li, Yi-sheng Zou, Jian Zhang, Pengfei Zhu, Guofu Ding</i>	322
Model development of a solar system combined with heat pump <i>Muhammad Waseem Ahmad, Dr. Mahroo Eftekhari, Dr. Thomas Steffen</i>	327
The Development of Isolated Words Pashto Automatic Speech Recognition System <i>Irfan Ahmed, Nasir Ahmad, Hazrat Ali, Gulzar Ahmad</i>	333
A new sketch partitioning and analysis techniques <i>H W. Tian, S F Qin</i>	337
Hyperspectral imaging for determination of some quality parameters for olive oil <i>D. Martínez Gila, P. Cano Marchal, J. G´omez Garc´ıa, J. G´omez Ortega</i>	342
Pashto Spoken Digits Database for the Automatic Speech Recognition Research <i>Arbab Waseem Abbas, Nasir Ahmad, Hazrat Ali</i>	348
Emotion Recognition – Theory or Practicality <i>Michael Hurst, Thomas W Jackson & Mashhuda Glencross</i>	352
Building an electric model vehicle with obstacle avoidance system <i>Andrei Fenesan, Owen Mcaree, Wen-Hua Chen, Teodor Pana, Tom Bamber</i>	358