

**2006 International Conference on  
Emerging Technologies**

**13 - 14 November 2006**

**Peshawar, Pakistan**

# Table of Contents

<b><i>Foreword</i></b>	xi
<b><i>Organising Committee</i></b>	xii
<b><i>Tutorial: Past, Present and Future of WiMAX, From Technical and Business Perspective</i></b>	xiii
<b><i>Tutorial: Hybrid Vehicles</i></b>	xiv
<b>Communications</b>	
Blind Carrier Phase Recovery in Cross QAM Communication Systems <i>Shafayat Abrar</i>	1
Crosstalk Analysis in Planar Waveguide Couplers <i>Abdul Rauf, Imran Rashid, Attiq Ahmed and Fazal Ahmed</i>	8
A Non-Uniform DMT Transceiver for Noise Reduction in Zero Forcing Equalization <i>Sobia Baig and Junaid Mughal</i>	15
On the Nonlinear Distortion Effects in an OFDM-RoF Link <i>AHM Razibul Islam, Rishad Ahmed Shafik, Md. Shahriar Rahman, and Ju Bin Song</i>	20
On The Error Vector Magnitude As A Performance Metric And Comparative Analysis <i>Rishad Ahmed Shafik, Md. Shahriar Rahman, AHM Razibul Islam and Nabil Shovon Ashraf</i>	27
Analytical Expression for Hybrid DS/FH Spread Spectrum Communication System Capacity <i>Mohammad AR Khan, Shao Ding Rong and Mohammad Baber Saeed</i>	32
A Novel Mechanism to Support Session Survivability in Heterogeneous MIPv6 Environment <i>Adnan K. Kiani, Shoaib Khan and Dr. Wenbing Yao</i>	38
A Novel Fair Queuing Algorithm for Hybrid Wired/Wireless Quality of Service Support with Wireless Compensation <i>Ajaz Sana, Gulistan Raja, Shahab Hussain, Rashid N. Zaidi, Mohammed A. Ali and Amir Ahmed</i>	44
Payments through Mobile Phone <i>Quratulain Aziz</i>	50
BER Performance Evaluation and PSD Analysis of Non-Coherent Hybrid MQAM-LFSK OFDM Transmission System <i>Asma Latif and Nasir D. Gohar</i>	53
Automation of Time and Attendance using RFID Systems <i>Aysha Qaiser and Shoab A Khan</i>	60
Study & Simulation of Fiber Nonlinearities Using Adaptive Step Size Method <i>Muddassir Iqbal, Z.Zheng, Inam-ur-Rehman, Mubashir Iqbal</i>	64
<b>Image, Speech and Video Processing</b>	
Real Time Notch Based Face Detection, Tracking And Facial Feature Localization <i>Usman Qayyum and Dr. Muhammad Younus Javed</i>	70

Block based Intensity-Pair Distribution for Image Contrast Enhancement <i>Md. Hasanul Kabir, M. Abdullah-Al-Wadud, Mohammad A. U. Khan, Oksam Chae, and Maamar Bettayeb</i>	76
Optimum Image Compression Techniques with Data Transform Pyramid <i>Muhammad Kamran, Shi Feng, Nasir Rahman and Suhail Aftab Qureshi</i>	84
Facial Tilt and Image Background Challenges In Frequency Domain Face Recognition <i>M. Almas Anjum and Dr.M.Younus Javaid</i>	91
Classification of Human Face Images using Principal Components <i>Zahid Riaz and Khurram Khattak</i>	97
Using Adaptive Control in Picture Stabilizer <i>Abdorreza Rahmati , Ali Khaki Sedigh and Asghar Taheri</i>	103
A Novel Texture Image Retrieval System Based On Dual Tree Complex Wavelet Transform and Support Vector Machines <i>Adeel Mumtaz, S.A.M. Gilani, Tahir Jameel</i>	108
Comparative Study of Feature Extraction Methods with K-NN for Off-Line Signature Verification <i>Javed Ahmed Mahar, Prof. Dr. Mumtaz Hussain Mahar and Muhammad Khalid Khan</i>	115
Analysis of Principal Component Analysis-Based and Fisher Discriminant Analysis-Based Face Recognition Algorithms <i>Erum Naz, Umar Farooq and Tabbasum Naz</i>	121
Introduction to Face Detection Using Eigenfaces <i>Abdul Samad Khan, Lawang Khan Alizai</i>	128
Image Compression with Different Types of Wavelets <i>Javed Akhtar and Dr Muhammad Younus Javed</i>	133
Hurdles for Designing An Application Based On Speech Interface <i>Urmila Shrawankar and Anjali Mahajan</i>	138
Face Recognition using Bank of Gabor Filters <i>Syed Maajid Mohsin, Muhammad Younus Javed and Almas Anjum</i>	144
Occluded Face Images Recognition Using Robust LDA <i>Waqar Ahmed Khan, Dr. Muhammad Younus Javed and M. Almas Anjum</i>	151
Eyelid Detection in Localized Iris Images <i>A. Basit, M. Y. Javed and M. A. Anjum</i>	157
A Novel Framework to Create Customary Soundtracks using MPEG-7 Descriptors <i>M. Masud Khokhar M. Wajahat Noshairwan and Zafar I. Malik</i>	160
Affine Normalized Invariant Feature Extraction using Multiscale Gabor Autoconvolution <i>Asad Ali, S.A.M Gilani</i>	167
Object Tracking using Correlation, Kalman Filter and Fast Means Shift Algorithms <i>Ahmad Ali and Dr. Sikander Majid Mirza</i>	174
<b>Digital Signal Processing and Embedded Systems</b>	
PAPR Reduction by Using Discrete Wavelet Transform <i>Seema Khalid and Syed Ismail Shah</i>	179
On The Lempel-Ziv-Welch Coded Speech Transmission And Markov Chain Detection <i>Rishad Ahmed Shafik, Md. Shahriar Rahman, Naseeb Ahmed Adnan and Md. Sajedul Islam</i>	183

Silicon Real Time Operating System for Embedded DSPs <i>Zeeshan Murtaza, Dr. Shoab A. Khan, Abid Rafique, Khalid Bashir Bajwa and Umer Zaman</i>	188
Real Time FFT Processor Implementation <i>Mian Sijjad Minallah, Gulistan Raja</i>	192
Fitness Function Evaluation for Image Reconstruction using Binary Genetic Algorithm for Parallel Ray Transmission Tomography <i>Shahzad Ahmad Qureshi, Sikander M. Mirza, and M. Arif</i>	196
Instantaneous Frequency Estimation from Signal Model <i>Khalid Mahmood Aamir and Mohammad Ali Maud</i>	202
Single Chip FPGA Based Realization of Arbitrary Waveform Generator Using Rademacher and Walsh Functions <i>Syed Manzoor Qasim and Shuja Ahmad Abbasi</i>	205
Watermark embedding based on statistical specification of wavelet coefficients in subbands <i>Behjat Forouzandeh, Amirali Shirazi Beheshti, Kamal Abdi, and Shohreh sharif Mansouri</i>	211
<b>Algorithms, Tools and Applications</b>	
Formal Model for Moving Block Railway Interlocking System Based on Un-Directed Topology <i>Nazir A. Zafar</i>	217
Policy Based Migration of Mobile Agents in Disaster Management Systems <i>Sarmad Sadik, Maruf Pasha, Arshad Ali, H. Farooq Ahmad and Hiroki Suguri</i>	224
An Automated Grade Of Service Measuring System <i>Mohammad Inayatullah, Farooq Kifayat Ullah and Akhtar Nawaz Khan</i>	230
Discovering Hierarchical Structure in Terrorist Networks <i>Muhammad Akram Shaikh, Wang Jiaxin</i>	238
Comparative Analysis of the Structures of eSTREAM Submitted Stream Ciphers <i>Mehreen Afzal, Firdous Kausar, Ashraf Masood</i>	245
Compiler Directed Battery-Aware Implementation of Mobile Applications <i>N. Z. Azeemi</i>	251
Improving Frequent Itemset Mining Algorithms Performance Using Efficient Implementation Techniques: A Benchmark Solution <i>Shariq Bashir, Muhammad Shuaib, Yasir Sultan, Dr. A. Rauf Baig</i>	257
A Hybrid Distributed Mutual Exclusion Algorithm <i>Samad Paydar, Mahmoud Naghibzadeh, Abolfazl Yavari</i>	263
Introducing VIP Business Modeling Framework for Innovative, Information-rich and Process-aware E-commerce Web Applications <i>Farooque Azam, Zhang Li, Rashid Ahmad</i>	271
SINS Augmentation by ANS and Secure Radio Positioning System <i>Farid Gul, Fang Jiancheng, and Sherzada Khan</i>	278
<b>Automation and Control Systems</b>	
System Engineering Approach for Successful Completion of Low-Budget Aircraft Upgrades <i>Mobeen Akhtar</i>	285

PC-Based Measurement of Signal Distorting Disturbances On Low Voltage Power Line <i>Sheroz Khan, Azliza Mohamad Arshad, and Muhammad Islam</i>	291
Leader-Follower Approach using Full-State Linearization via Dynamic Feedback <i>Ghulam Mubashar Hassan, Dr. Khawaja M Yahya, and Ihsan-ul-Haq</i>	297
Delay-Dependent Robust Stability of Uncertain Hereditary Systems Involving Time-Varying State Delays <i>Aftab Ahmad Khattak and Naeem Iqbal</i>	306
Type I ( $\alpha$ ) error performance of Shewhart Control Chart with Interpretation Rules <i>Abdul Sattar Jamali<sup>1</sup>, Li JinLin<sup>2</sup>, Noor Muhammad Memon</i>	313
Weight Selection in H- $\infty$ Loop Shaping Using Lead/Lag Compensator <i>Muhammad Ejaz, M. Naeem Arbab and S. Waqar Shah</i>	319
Lyapunov Equations Approximation Using Implicit Restart Scheme <i>Raheel Quraishi, Nisar Ahmed, Laig Khan and Farhan Azeem</i>	325
High Gain Observer Design For Eth Helicopter <i>Naeem Ullah, A. Qayyum Khan, Ghulam Mustafa and M.Yousuf</i>	330
Automatic Weight Selection in H- $\infty$ Loop Shaping Using Genetic Algorithm <i>Muhammad Ejaz and M. Naeem Arbab</i>	334
<b>Power Engineering and Electronics</b>	
Adhesive and Mechanical Properties of Nano-Particle Filled Thermoplastic Polyimide Dielectric Films for Microelectronics Packaging <i>M.B. Saeed, and M.S. Zhan</i>	342
Optoelectric Characteristics of Porous Silicon Using a Conducting Polymer <i>S F Shaikat, S A Khan and Robina Farooq</i>	348
Photocatalytic activities of ZnO nanoparticles synthesized by wet chemical techniques <i>Ruh Ullah and Dr. Joydeep Dutta</i>	353
Stabilization and Control of the Wavelength of GaN LED <i>S. Ghazanfar H.A, Liu Deming, Ahmed N. Abd Alla, Liu Hairong, and M. Akram Bhatti</i>	358
Investigation of intra channel non linear effects for high speed optical communication systems <i>Attiq Ahmad, Imran Rashid and Abdul Rauf</i>	362
Emerging Technologies in Automobiles <i>Iftikhar A. Khan</i>	368
Performance of Composite Insulators in Simulated Environmental Conditions Related to Central Region of Saudi-Arabia <i>Y. Khan, M.I. Qureshi, N.H. Malik and A.A. Al-Arainy</i>	378
Reconfiguration of Feeders Using Static Transfer Switch <i>Tahir Mahmood and Mohammad Ahmad Choudhry</i>	385
Direct Carbon Fuel Cell for Efficient Utilization of Pakistan's Coal Reserves <i>Adeel Ghayur</i>	391
Identification and Removal of Barriers for Renewable Energy Technologies in Pakistan <i>Nowsherwan Khattak, S. Riaz ul Hassnain, S.Waqar Shah and Abdul Mutlib</i>	397
Performance Improvement In Distribution Feeder By Installing Distributed Generation At Strategic Locations <i>Hasham Khan and Mohammad Ahmad Choudhry</i>	403

Characteristics of Prebreakdown Discharges in Silicone Oil Under Short Duration High Voltage Pulses <i>M. Iqbal Qureshi and Abdulaziz A. Al-Sulaiman</i>	409
Evaluation of Induction Motor Groundwall Insulation using Infrared Thermography <i>Saeed Ul Haq and Tariq Bashir</i>	416
Merits And Limits of Sensor-Less Flux Estimation of Induction Motor <i>Dr. Fida Muhammad Khan, M. Azam Khan M. Imran Khan</i>	421
Effect Of Uv Radiations On Heavily Polluted Polymeric Insulators <i>Muhammad Amin and Mohammad Akbar</i>	427
<b>Computer Security and Network Security</b>	
A Fault-Tolerant Legion Authentication System <i>Muhammad Aqeel and M.A. Ansari</i>	432
Using the PIC Micro-Controller as a Cryptographic Coprocessor for Digital Watermarking Applications <i>Dr Anjum Ali and Hafiz Muhammad Shahzad Asif</i>	438
An Optimal Message Authentication Scheme for Lossy Channels <i>Amna Abdul Wahid, Huma Mahboob Yasin, Muhammad Mahboob Yasin</i>	443
Pipelining in Embedded Cryptosystems - A Throughput Optimization Approach <i>Muhammad Kamran Khan and Anwar Amjad</i>	449
Mathematical Hard Problems in Modern Public-Key Cryptosystem <i>Qamar Saeed, Tariq Basir, Saeed Ul Haq, Nadia Zia and Mushtaq A. Paracha</i>	456
A Novel Ethernet-Based Wired/Wireless Broadband Access Network <i>Ajaz Sana, Gulistan Raja, Shahab Hussain, Hassan Erkan, Mohammed A. Ali and Samir Ahmed</i>	460
<b>Computer Networks, Mobile Networks and Simulations</b>	
Mobility Estimation for Cellular Mobile Networks in Multipath Environment <i>Syed Faraz Naseem, Asad Saeed and Zainab R. Zaidi</i>	468
Autonomous Heterogeneous Networks Discovery Technique <i>Raziq Yaqub and Tao Zhang</i>	473
Performance Comparison of Iterative Multiuser Detection Techniques In Interference Limited Cellular Networks <i>Shahid Khattak, Gerhard Fettweis</i>	480
Comparison of S-MAC & TDMA-W Protocols for Energy Efficient Wireless Sensor Networks <i>Muhammad Zohaib, Tariq M. Jadoon</i>	486
Adaptive Mesh Based Routing For Efficient Multicasting in Highly Mobile Ad Hoc Networks <i>Riaz Inayat, Usman Haider Gardezi and Ahmad Raza Shahid</i>	493
Network Discovery approach in Heterogeneous Radio Access Networks <i>Raziq Yaqub, Ihsan Ul Haq, Khawaja.M Yahya</i>	501
Using the NS-2 Network Simulator for Evaluating Network on Chips (NoC) <i>Muhammad Ali, Michael Welzl, Awais Adnan and Farrukh Nadeem</i>	506

Home Agent Load Balancing in Mobile IPv6 with Efficient Home Agent Failure Detection and Recovery <i>Shoaib Khan, Wenbing Yao, Fritsche Wolfgang, Adnan Khalid</i>	513
Design and Simulation of a Personnel Fast Neutron Dosimeter <i>Afshan Ashfaq and Matiullah</i>	520
Optimized QOS Protocols for Small-Sized Manets <i>Mohammad Inayatullah, Sheeraz Ahmad and Abdus Salam</i>	525
Performance Analysis of MPEG-4 Encoding For Low Bit-Rate Mobile Communications <i>S.M. Majad Ashraf Khan and Faqir Zarrar Yousaf</i>	532
Stigmergy of Ants for QoS Provisioning in Dynamic Ad Hoc Networks <i>Babar Nazir, Jamal Ahmed, Affan Khan and Prof. Azzam-ul-Asar</i>	538
<b>Data Mining, Neural Networks, AI and Robotics</b>	
Treatment of Pronominal Anaphoric Devices in Urdu Discourse <i>M. A. Khan, M. Naveed Ali, M. Aamir Khan</i>	543
Sonification: A Novel Approach towards Data mining <i>Zahid Halim, Dr.Rauf Baig, Shariq Bashir</i>	548
Scheduling Tool for Flexible Manufacturing Systems using Hybrid Genetic Algorithm <i>Sahar Noor, M. K. Khan, Iftikhar Hussain and Irfan Ullah</i>	554
Intelligent Decision Support System in Defense Maintenance Methodologies <i>Kamal Haider, Jeffrey Tweedale, Dr Pierre Urlings and Prof Lakhmi Jain</i>	560
On Fast Recognition of Isolated Characters by Constructing Character Signature Database <i>Sheikh Muhammad Azan, Zubair Ali Mansoor and Muddsair Sharif</i>	568
Path Finder in Unknown Environment <i>Faisal Shahzad, and Raja Qaisar Shahzad</i>	575
Online Solving Of Economic Dispatch Problem Using Neural Network Approach And Comparing It With Classical Method <i>Amir Mohammadi, Mohammad Hadi Varahram and Iraj Kheirizad</i>	581
The Compound Effect of Boosting and Stratified Sampling on Decision Tree Accuracy <i>Abdul Aziz Gill and George D. Smith</i>	587
An Intelligent Search Technique to Train Scheduling Problem Based on Genetic Algorithm <i>Muhammad Babar Khan, Dianye Zhang, Ming shi Jun and Zhu Jiang Li</i>	593
Executive Information Systems Based on Data Mining Techniques Modeled through Quadratic Programming <i>Rabia Abdur Rab, Aneela Shoukat, Madhia Sajjad, Dr. Shoab A Khan</i>	599
Multisource Geophysical Data and DEM for Lineaments Analysis of the Muglad Rift Basin Sudan <i>Kheiralla K. M, Richard G., Mahmood S. Amer</i>	605
Autonomous Semantic Grid: Design & Architecture of WSDL Parser for Service Oriented Computing <i>Shadia Manan, Hafiz Dr. Farooq Ahmad, Saad Liaquat and Hiroki Suguri</i>	612
Assembly Features: Definition, Classification, and Instantiation <i>Hamidullah, Bohez, E. and Irfan, M.A</i>	617

A Hybrid Genetic Algorithm for Machine Part Grouping <i>Adnan Tariq, Iftikhar Hussain and Abdul Ghafoor</i>	624
A ‘Personalized’ Facial Expression Recognition System using Case Based Reasoning <i>M. Zubair Shafiq and Assia Khanam</i>	630
Design and Coordination of Reactive Behaviours for Tracking Multiple Targets in an Unstructured Environment <i>Nasir Rahman, Qazi S.M. Zia-Ul-Haq and Ihsan-Ul-Haq</i>	636
An Approach to Ontological Interoperability <i>Misbah Mubarak, Sara Sultana, Zarrar Khan, Hajra Batool Asghar, H. Farooq Ahmad, Fakhra Jabeen</i>	643
Human Likeness of Humanoid Robots Exploring the Uncanny Valley <i>Zia-ul-Haque Qazi S.M., Zhiliang Wang and Ihsan-Ul-Haq</i>	650
Identical Visual Cues based Tracking system of Humanoid Robot <i>Ataf Hussain Rajpar, Mohammad Usman Keerio, Abdul Fattah Chandio, Attaullah Kawaja</i>	657
A Neuro-Fuzzy Based Software Reusability Evaluation System with Optimized Rule Selection <i>Parvinder Singh Sandhu and Hardeep Singh</i>	664
Virtual Scene for Telerobotic Operation <i>Muhammad Usman keerio, AbdulFattah Chandio, Attaullah Khawaja and Ali Raza Jafri</i>	670
Modeling and Simulation of Biped Kinematics using Bond-Graphs <i>Engr. Saheeb A. Kayani and Prof. Dr. M. Afzaal Malik</i>	677
Integrating Context-aware Pervasive Environments <i>Muhammad Taimoor Khan, Kashif Zia, Dr Nadeem Daudpota, Dr S A Hussain, Najma Taimoor</i>	683
<b>Software Engineering, Distributed Computing and Biomedical Engineering</b>	
Preventing Reverse Engineering Threat in Java Using Byte Code Obfuscation Techniques <i>Jan M. Memon, Shams-ul-Arfeen, Asghar Mughal, Faisal Memon</i>	689
Grid Performance Prediction: Requirements, Framework, and Models <i>Farrukh Nadeem, Muhammad Murtaza Yousaf, Muhammad Ali</i>	695
Fault Tolerance using “Parallel Shadow Image Servers (PSIS)” in Grid Based Computing Environment <i>Naveed Hussain, Dr. M. A. Ansari, Dr. M. M. Yasin, Abdul Rauf and Sajjad Haider</i>	703
Fault Tolerant Job Scheduling in Computational Grid <i>Babar Nazir, Taimoor Khan</i>	708
A Comparative Study of Spatial Complexity Metrics and Their Impact on Maintenance Effort <i>Zeeshan Ali Rana, Malik Jahan Khan, Shafay Shamail</i>	714
An Approach to Effective Product Development Life Cycle <i>Muhammad Sibghatullah, Syed Jafar Hussain, and Dr. Syed Jamal Hussain</i>	719
Effect of Force on Finite Element in Vivo Skin Model <i>Ahsan Rahman and Umar Hayat Khan</i>	727

Hyperspectral Colon Tissue Classification using Morphological Analysis <i>K Masood, N Rajpoot, K Rajpoot and H Qureshi</i>	735
Comparison of Configuration Management Activities Between Prince 2 & CMMI 1.1 <i>Ahmad Luqman</i>	742
Integrating Vip Business Modeling Framework To Uml-Based Web Engineering Approach <i>F. Azam, Z. Li, R. Ahmad</i>	746
Meta Architecture to Support Layered Banking Systems <i>Syed Jafar Hussain, Manoj Kumar and Dr. Syed Jamal Hussain</i>	754
A Bioinformatic Approach to Genetic Diversity <i>Dr. H.K. Grewal, Parvinder Singh Sandhu, and Manpreet Singh</i>	761
Genetically Optimized Hybrid Gait Dynamics Classifier <i>Wajid Aziz and Muhammad Arif</i>	765