

2011 Frontiers of Information Technology

(FIT 2011)

**Islamabad, Pakistan
19 – 21 December 2011**



**IEEE Catalog Number: CFP1174R-PRT
ISBN: 978-1-4673-0209-8**

2011 Frontiers of Information Technology

FIT 2011

Table of Contents

Preface.....	.xi
Organizers.....	.xiii
Reviewers.....	.xv
Sponsors.....	.xxii

Session 1: Communication and Networks

Evaluating Contact-Ignorant and History-Based Routing Protocols of Disrupted Mobile Networks	1
<i>Mah-Rukh Fida, Tabinda Salam, and Ameer Shakayb Arsalaan</i>	
Fully Distributed Cooperative Spectrum Sensing for Cognitive Radio Ad Hoc Networks	9
<i>Waleed Ejaz, Najam ul Hasan, Hyung Seok Kim, and Muhammad Awais Azam</i>	
A Delay-Scheduler Coupled Game Theoretic Resource Allocation Scheme for LTE Networks	14
<i>Salman Ali and Muhammad Zeeshan</i>	
On Robust Approaches to the Semidefinite Relaxation Detector	20
<i>J. Ali, H. M. Tariq, and M. T. N. Qaisrani</i>	

Session 3: Software Engineering

Assessment and Support for Software Capstone Projects at the Undergraduate Level: A Survey and Rubrics	25
<i>Ehsan Ahmad, Bilal Raza, and Robert Feldt</i>	
SBVR2UML: A Challenging Transformation	33
<i>Hina Afreen, Imran Sarwar Bajwa, and Behzad Bordbar</i>	
A Systematic Review on Software Measurement Programs	39
<i>Touseef Tahir and Ali Jafar</i>	
Factors Influencing Adoption of Information Technology Based Banking Services: A Case Study of Pakistan	45
<i>Malia Azim, Adil Ali, and Jahanzeb Sattar</i>	

Session 4: Communication and Networks

An Application of Markov Jump Process Model for Activity-Based Indoor Mobility Prediction in Wireless Networks	51
<i>Joanna Kolodziej, Samee Ullah Khan, Lizhe Wang, Nasro Min-Allah, Sajjad A. Madani, Nasir Ghani, and Hongxiang Li</i>	
Network Performance Optimization: A Case Study of Enterprise Network Simulated in OPNET	57
<i>Munam Ali Shah, Ghazanfar Ali Safdar, Carsten Maple, and Khurram Sardar</i>	
Evolution of Orthogonal Frequency Division Multiplexing Modulation to Discrete Wavelet Multitone	63
<i>Tabassum Nawaz Bajwa, Arsla Khan, and Sobia Baig</i>	

Session 5: Artificial Intelligence, Genetic and Evolutionary Computation

The Pervasive Nature of Variability in SOC	69
<i>Ateeq Khan, Christian Kästner, Veit Köppen, and Gunter Saake</i>	
Detect HTTP Specification Attacks Using Ontology	75
<i>Rana Faisal Munir, Nabeel Ahmed, Abdul Razzaq, Ali Hur, and Farooq Ahmad</i>	
Polymorphic Circuit Design for Speedy Handwritten Character Recognition Using Cartesian Genetic Programming	79
<i>Abdul Rehman and Gul Muhammad Khan</i>	

Session 6: Computer Graphics, Vision and Image Processing

Palm Print Recognition Using Oriented Hausdorff Distance Transform	85
<i>MianMahmood Ali, Mubeen Ghafoor, Imtiaz A. Taj, and Khizar Hayat</i>	
Efficient Image Retrieval Based on Quantized Histogram Texture Features in DCT Domain	89
<i>Fazal-e-Malik, Baharum Bin Baharudin, and Kifayat Ullah</i>	
A Survey on Sign Language Recognition	95
<i>Sumaira Kausar and M. Younus Javed</i>	

Session 10: Scalable Computing

Operating System-Aware Cache Optimization Techniques for Multi Core Processors	99
<i>Hasina Khatoon, Shahid Hafeez Mirza, and Talat Altaf</i>	
Architecture and Implementation of Modular Airthmetic Unit for SOC	106
<i>Mohammad Hammad Ahmad, Syed Wasi Alam, and Irum Baig</i>	

Digital Forensics for Eucalyptus	110
<i>Zafarullah, Faiza Anwar, and Zahid Anwar</i>	
DOFUR: DDoS Forensics Using MapReduce	117
<i>Rana Khattak, Shehar Bano, Shujaat Hussain, and Zahid Anwar</i>	

Session 11: Computer Graphics, Vision and Image Processing

Texture Analysis for Liver Segmentation and Classification: A Survey	121
<i>Saima Rathore, Muhammad Aksam Iftikhar, Mutawarra Hussain, and Abdul Jalil</i>	
Medical Image Segmentation Using H-minima Transform and Region Merging Technique	127
<i>Kamran Ali, Abdul Jalil, M. Umair Gull, and Mustansar Fiaz</i>	
Updating Farmland Satellite Imagery Using High Resolution Aerial Images	133
<i>Sajid Saleem, Abdul Bais, and Yahya M. Khawaja</i>	
Vision Based Intelligent Traffic Management System	137
<i>Muhammad Hassam Malhi, Muhammad Hassan Aslam, Faisal Saeed, Owais Javed, and Muhammad Fraz</i>	

Session 12: Intelligent Systems, Computers and Society

SWAM: Stuxnet Worm Analysis in Metasploit	142
<i>Rahat Masood, Um-e-Ghazia, and Zahid Anwar</i>	
Enhancing Stealthiness & Efficiency of Android Trojans and Defense Possibilities (EnSEAD) - Android's Malware Attack, Stealthiness and Defense: An Improvement	148
<i>Mohammad Ali, Humayun Ali, and Zahid Anwar</i>	
Optimizing Predictive Prefetching in Multi-client Single-Server Environment	154
<i>Naveed Ahmad, Azam Khan, and Faiza Bibi</i>	
A Study to Examine If Integration of Technology Acceptance Model's (TAM) Features Help in Building a Hybrid Digital Business Ecosystem Framework for Small and Medium Enterprises (SMEs)	161
<i>Muhammad Abdul Tawab Khalil, P. D. D. Dominic, Hassan Kazemian, and Usman Habib</i>	

Session 13: Controls and Automation

Implementation of a Novel Microcontroller-Based Voltage Source Sine-Wave Inverter	167
<i>Muhammad Usman Rafique, Saad Aslam, and Jahanzeb Anwer</i>	
Analysis of Fast Parallel Sorting Algorithms for GPU Architectures'	173
<i>Fiaz Gul Khan, Omar Usman Khan, Bartolomeo Montrucchio, and Paolo Giaccone</i>	

Kalman Filter Based State Estimation for Linearized Twin Rotor System	179
<i>Khawaja Shafiq Haider, Ijaz Hussain Kazmi, and M. Inam-ur Rehman</i>	
Real-Time Control of an Inverted Pendulum: A Comparative Study	183
<i>M. Hamza, Zaka-ur-Rehman, Q. Zahid, F. Tahir, and Z. Khalid</i>	

Session 14: Computer Applications

High Throughput Hardware Implementation of Secure Hash Algorithm (SHA-3) Finalist: BLAKE	189
<i>Kashif Latif, Athar Mahboob, and Arshad Aziz</i>	
Improving Generation in Machine Translation by Separating Syntactic and Morphological Processes	195
<i>Nayyara Karamat, Kamran Malik, and Sarmad Hussain</i>	
A Novel Key-Based Transposition Scheme for Text Encryption	201
<i>Sidra Malik</i>	
Dynamic Collaborations for Information Sharing within and across Virtual Teams	206
<i>Ahmad Kamran Malik and Schahram Dustdar</i>	

Session 16: Software Engineering

Understandability of Concrete versus Parametric Test Cases	212
<i>Touseef Tahir, Ali Jafar, and Mohan Maharajan</i>	
Using Component-Oriented Process Models for Multi-metamodel Applications	218
<i>Fahad R. Golra and Fabien Dagnat</i>	
Quantifying Non-functional Requirements in Service Oriented Development	224
<i>Jawaria Sadiq, Athar Mohsin, and Fahim Arif</i>	

Session 17: Communication and Networks

Particle Swarm Optimization Based Methodology for Solving Network Selection Problem in Cognitive Radio Networks	230
<i>Najam ul Hasan, Waleed Ejaz, Hyung Seok Kim, and Jae Hun Kim</i>	
Clock Frequency Offset Correction through Computationally Simple Algorithms	235
<i>Qasim M. Chaudhari</i>	
Reflection Considerations in Seeded DWDM Transmission Links	238
<i>Syed Aun Abbas, Hee-Yeal Rhy, Changhee Lee, Bongsoo Kim, and Jun-Young Kim</i>	

Session 19: Computer Applications

Computer-Based Simulation of Multiphase Flow	242
<i>Abdullah Shah</i>	

Session 22: Communication and Networks

Secure Solution to Data Transfer from Sensor Node to Sink against Aggregator Compromises	247
<i>Sarfraz Azam, Rizwana Manzoor, and Mata ur Rehman</i>	
Turbo-Coded HARQ with Switchable Relaying Mechanism in Single Hop Cooperative Wireless System	253
<i>Ibrahim Khalil, Adnan Ahmed Khan, and Zohaib-Ur-Rehman</i>	
Iterative Common Phase Error Correction in OFDM Systems	258
<i>Asma Bibi, Aizaz Ali Shah, and Shahid Khattak</i>	
MCDM Method and Semantics Integration for Unified Communication Management and Control	263
<i>Sajjad Ali Musthaq, Christophe Lohr, and Annie Gravey</i>	

Session 23: Computer Graphics, Vision and Image Processing

Efficient Gender Classification Using Interlaced Derivative Pattern and Principal Component Analysis	270
<i>Sajid Ali Khan, M. Nazir, Usman Asghar, and Naveed Riaz Ansari</i>	
Gradient Adjusted Predictor with Pseudo-Distance Technique for Lossless Compression of Color-Mapped Images	275
<i>Basar Koc and Ziya Arnavut</i>	
Lossless Data Hiding Using Optimized Interpolation Error Expansion	281
<i>Talat Naheed, Imran Usman, and Amir Dar</i>	
Browsed-Back Post Event Analyzer	287
<i>Ahmad Ali, Ilyas Butt, and Asifullah Khan</i>	

Session 24: Software Engineering, Computer Graphics, Vision and Image Processing

Investigating Integration Challenges and Solutions in Global Software Development	291
<i>Atique Zafar, Sajad Ali, and Raja Khurram Shahzad</i>	
Automated Change Request Triage Using Alpha Frequency Matrix	298
<i>Sana Nasim, Saad Razzaq, and Javed Ferzund</i>	

Fuel Nozzle Spray Pattern Classifier	303
<i>Mubeen Ghafoor, Usama Ijaz Bajwa, and Imtiaz A. Taj</i>	

Trusted Framework for Health Information Exchange	308
<i>Muhammad Afzal, Maqbool Hussain, Mahmood Ahmad, and Zahid Anwar</i>	

Session 27: Computer Applications

Online UPnP A/V Device Database for Quick and Easy Capability Checking	314
<i>Andreas Riener and Martin Gutenbrunner</i>	

Development of an Optical Sensor for the Detection of Volatile Organic Compounds	321
<i>Usman Masud and Muhammad Iram Baig</i>	

Author Index	327
---------------------------	-----