

Proceedings

Third International Conference on Broadband Communications, Informatics and Biomedical Applications **BroadCom 2008**

23-26 November 2008
Pretoria, Gauteng, South Africa

Sponsors



African Advanced Institute for Information & Communication Technology



Los Alamitos, California
Washington • Tokyo



**Third International
Conference on Broadband
Communications, Information
Technology & Biomedical
Applications**

BroadCom 2008

Table of Contents

Committees

Technical Papers

Development of Digital Environment IdentiT _Y (DEITY) System for Online Access	1
<i>Johnson I. Agbinya, Rumana Islam, and Chandra Kwok</i>	
Versatile, Stationary/Mobile Low-Cost Telecommunication System	9
<i>Dan Busuioc and Safieddin Safavi-Naeini</i>	
Diagnosis: A Prototype of a Decision Support System for Anesthetists	12
<i>John Kizito</i>	
Low Cost Active Antenna Arrays – Dependence on Array Configuration	20
<i>Dan Busuioc and Safieddin Safavi-Naeini</i>	
Adapting Model for Convergence of Optimal MINMAX Bit Allocation in INTRA-Frame Video Coding	24
<i>Keith L. Ferguson</i>	
Optimization of Antenna Placement in 3G Networks Using Genetic Algorithms	30
<i>Job Munyaneza, Anish Kurien, and Ben Van Wyk</i>	
Design and Implementation of a Optical Dynamic Core Network - Engineering Considerations	38
<i>Kim Papakos and Mark Boduch</i>	
Non-threshold Deterministic Parwise Key Establishment Scheme for Clustered Distributed Sensor Networks	44
<i>Tran Thanh Dai and Johnson I. Agbinya</i>	
Improving Video Streaming over IEEE 802.11 Mesh Networks through a Cross-Layer Design Technique	50
<i>N. H. Moleme, M. O. Odhiambo, and A. M. Kurien</i>	

Single Channel Wireless EEG: Proposed Application in Train Drivers	58
<i>Surya Darma Ridwan, Robert Thompson, Budi Thomas Jap, Sara Lal, and Peter Fischer</i>	
Monitoring Bridge Deterioration Using Sensors	64
<i>Bijan Samali, Jianchun Li, and Khalid Aboura</i>	
Q-Learning Based Therapy Planning Decision Support System	70
<i>Witold Jacak and Karin Pröll</i>	
UnoHop: Efficient Distributed Hash Table with O(1) Lookup Performance	76
<i>Herry Imanta Sitepu, Carmadi Machbub, Armein Z. R. Langi, and Suhono Harso Supangkat</i>	
Enabling Broadband Rural Networking	82
<i>Phumzile Malindi and Toriq Kahn</i>	
A Topology Control Algorithm for Effective Power Efficiency and Throughput for Wireless Mesh Networks	89
<i>Felix O. Aron, Anish Kurien, and Yskandar Hamam</i>	
A Cross-Layer Adaptation for VoIP over Infrastructure Mesh Network	97
<i>J. M. Okech, Y. Hamam, and A. Kurien</i>	
Pricing for Wireless Mesh Networks under Two Access Point Competition	103
<i>Hailing Zhu, Wimpie Clarke, and Andre Nel</i>	
An Engineering Toolbox to Build Situation Aware Ambient Assisted Living Systems	110
<i>Werner Kurschl, Stefan Mitsch, and Johannes Schoenboeck</i>	
Work in Progress - An Optimal UMTS/WCDMA Receiver Structure for Possibly Sparse Data Streams	117
<i>Johan Schoeman and Louis P. Linde</i>	
Multi-layer Resource Optimization and QoS Guarantee for Inter-working Wireless Networks	120
<i>Oladayo Salami, H. Anthony Chan, and A. Bagula</i>	
On the Combination of Logistic Regression and Local Probability Estimates	124
<i>Melanie Osl, Christian Baumgartner, Bernhard Tilg, and Stephan Dreiseitl</i>	
A Game Theoretic Power Control Algorithm with Pricing for Spectral Efficient Communication in MIMO MC-DS/ CDMA System	129
<i>V. Nagarajan and P. Dananjayan</i>	
Performance of a Turbo-Coded CDMA-Based Modulation for Mobile Satellite Systems	137
<i>Adeyemi A. Ajibesin, H. Anthony Chan, and Mqhele E. Dlodlo</i>	
Fast Automated Signature Generation for Polymorphic Worms Using Double-Honeynet	142
<i>Mohssen M. Z. E. Mohammed and H. Anthony Chan</i>	
Business Process Re-engineering in Saudi Arabia: A Survey of Understanding and Attitudes	148
<i>Essam Rahali, Zenon Chaczko, Johnson Agbinya, and Christopher Chiu</i>	
Analogue Fingerprinting for Passive RFID Tags	156
<i>Gregory Stuart Smith and Marijke Coetzee</i>	

Mobile Blogging System	164
<i>Judith A. Owigar and Christopher K. Chepken</i>	
WiFi/WiMAX Heterogeneous Seamless Handover	169
<i>Rashid A. Saeed, Hafizal Mohamad, Borhanuddin Mohd. Ali, and Mazlan Abbas</i>	
LVT-SCFQ: A Modified Self Clocked Fair Queueing Algorithm for Broadband Networks	175
<i>Hassan Halabian, Hossein Saidi, and Reyhaneh Changiz</i>	
The Study of Handover in Mobile IP Networks	181
<i>Reza Malekian</i>	
Design of a Neural Network Classifier for Separation of Images with One Chromosome from Images with Several Chromosomes	186
<i>Yaser Rahimi, Rassoul Amirfattahi, and Reza Ghaderi</i>	
Human-Centric Mechanism Design in Peer-to-Peer Networks	191
<i>Simon G. M. Koo</i>	
Identification of Various Problems in an Environment of Multi Vendor Equipments for PSTN Services in NGN	194
<i>Masoumeh Khoshbaktian, Nasrin HezareMoghadam, and Mojtaba Mazoochi</i>	
File Compression Using Typogenetic Computation	202
<i>Andrew Chan, Zenon Chaczko, Chris Chiu, and Ryszard Zielinski</i>	
A Bio-inspired Telecollaboration Service Taxonomy: Usability Related Concerns	209
<i>Zenon Chaczko, Venkatesh Mahadevan, and Jan Nikodem</i>	
Applications of Cooperative WSN in Homecare Systems	215
<i>Zenon Chaczko, Ryszard Klempous, Jan Nikodem, and Jan Szymanski</i>	
Novel Design of an Octagonal Photonic Crystal Fiber with Ultra-Flattened Dispersion and Ultra-Low Loss	221
<i>Sh. Mohammad Nejad, M. Aliramezani, and M. Pourmahyabadi</i>	
Development and Testing of a Low Cost, Minimally Invasive Radiofrequency Thermal Probe for Hyperthermia Therapy	227
<i>T. A. Okhai and C. J. Smith</i>	
Comparison of Using Different Types of Wavelet or FFT for De-noising of Body Surface Potential Signals	233
<i>Amir HajiRassouliha, Mehdi Amoon, Mohammad Hossein Doostmohammadi, Ali Sadr, Ahmad Ayatollahi, and Gholam Ali Rezairad</i>	
Security Protective Measures for the Ubiquitous City Integrated Operation Center	239
<i>DongHoon Shin, Yunmook Nah, Ik-Seob Lee, Wan S. Yi, and Yu-Jae Won</i>	
Decentralised Cross-Layer Dynamic Power Control for Wireless Mesh Networks	245
<i>T. O. Olwal, B. J. van Wyk, Y. Hamam, and N. Ntlatlapa</i>	
Algorithm of Remote Monitoring ECG Using Mobile Phone: Conception and Implementation	254
<i>Rachid Merzougui and Mohammed Feham</i>	
Video Streaming over HSDPA for Delivery of Essential Services in Under Serviced Areas in Africa	262
<i>P. O. Amimo-Rayolla, Marcel Odhiambo, and A. Kurien</i>	

Telecommunication Methods for Implementation of Telemedicine Systems in Crisis	268
<i>D. Ziadlou, A. Eslami, and H. R. Hassani</i>	
Mobile Client for the Next Generation Networks	274
<i>M. T. Masonta, O. J. Oyedapo, and A. M. Kurien</i>	
Early Discovery and Pre-authentication in Proxy MIPv6 for Reducing Handover Delay	280
<i>Lino A. Magagula and H. Anthony Chan</i>	
Quality of Service Guarantee in Multicast Transmission Using Congestion Controlled Anonymous Gossip (CCAG)	286
<i>Olufade F. W. Onifade, Olumide B. Longe, and Stella C. Chiemeké</i>	
OFDM Based UWB Synthetic Aperture Through-wall Imaging Radar	293
<i>Z. Slimane, A. Abdelmalek, and M. Feham</i>	
Topology Adaptation to Services in Wireless Networks in Motion (NEMO)	301
<i>Johnson I. Agbinya and Gina Paola Navarrete</i>	
Malicious Process Conscious Operating Systems (MPCOS)	311
<i>Dagmawi Lemma and Mulugeta Libsie</i>	
Tree Based Flooding Protocol for Multi-hop Wireless Networks	318
<i>Raphael Frank, Thomas Scherer, and Thomas Engel</i>	
A Routing Metric and Algorithm for IEEE802.16 Mesh Networks	324
<i>Ntsibane Ntlatlapa</i>	
A Cross-Layer Approach Towards Efficiency Optimization of Wireless Sensor and Actor Networks	329
<i>Eckhard B. Kohlmeyer, Gerhard P. Hancke, and Derrick G. Kourie</i>	
Game-Theoretic Modeling and Optimization of Contention-Prone Medium Access Phase in IEEE 802.16/WiMAX Networks	335
<i>Sayantana Chowdhury, Suman Dutta, Kanad Mitra, Debarshi Kumar Sanyal, Matangini Chattopadhyay, and Samiran Chattopadhyay</i>	
Implementation of a Socially Engineered Worm to Increase Information Security Awareness	343
<i>Erlo Meister and Elmarie Biermann</i>	
Design Improvement of Dynamic Channel Selection Scheme for Multi-radio Wireless Mesh Networks	351
<i>Tope R. Kareem, H. Anthony Chan, and Ntsibane Ntlatlapa</i>	
A Vertical Handoff Decision Algorithm for Next Generation Wireless Networks	358
<i>Yaw Nkansah-Gyekye and Johnson I. Agbinya</i>	
Layered Architecture for Mobility Models – LEMMA	365
<i>Alexander P. Pelov and Thomas Noël</i>	
Advancing Health Care Management with the Semantic Web	373
<i>J. C. van Niekerk and K. Griffiths</i>	
Analyzing Performance of Web-Based Metrics for Evaluating Reliability and Maintainability of Hypermedia Applications	376
<i>Sanjeev Dhawan and Rakesh Kumar</i>	
Building Wireless Community Networks with 802.16 Standard	384
<i>K. Sibanda, H. N. Muyingi, and N. Mabanza</i>	

A Model for Electronic Money Transfer for Low Resourced Environments: M-Cash	389
<i>Drake Patrick Mirembe, John Kizito, Doreen Tuheirwe, and H. N. Muyingi</i>	
WordNet-Based and N-Grams-Based Document Clustering: A Comparative Study	394
<i>Abdelmalek Amine, Zakaria Elberrichi, Michel Simonet, and Mimoun Malki</i>	
A Framework for Investigating Human/Computer Interaction from a Security Perspective	402
<i>Sihawu S. and Sibanda K.</i>	
Replication of Biomolecular Techniques for Implementing Intelligent Systems	405
<i>Sanjeev Dhawan and Rakesh Kumar</i>	
Performance Evaluation of Qos Reliability between Angular Scheme and Coordinate Scheme in MANETs	413
<i>Olufade F. W. Onifade, O. Osofisan Adenike, and B. Longe Olumide</i>	
Cost-Reduced Inter-MAP Binding Update Scheme in Robust Hierarchical Mobile IPv6	422
<i>Jongpil Jeong, Min Young Chung, and Hyunseung Choo</i>	
A Roadmap to Proliferate Open Source Software Usage within SA Government Servers	430
<i>Jabu Mtsweni and Elmarie Biermann</i>	
Stochastic Deterioration Processes for Bridge Lifetime Assessment	437
<i>Khalid Aboura, Bijan Samali, Keith Crews, and Jianchun Li</i>	
Performance Investigation of Wireless Sensor Network for Long Distance Overhead Power Lines; Mica2 Motes, a Case Study	443
<i>Sibukele Gumbo and Hippolyte N. Muyingi</i>	
An Investigation of Bluetooth Mergence with Ultra Wideband	451
<i>Etienne van der Linde and Gerhard P. Hancke</i>	
Non Destructive Sensing of Food Material Using Radio Frequencies	458
<i>Gugulethu Mabuza, Johnson I. Agbinya, and Elmarie Biermann</i>	
Mining Time Series Data in Mobile Cellular Networks	463
<i>Anish Kurien, Barend Jacobus Van Wyk, and Yskander Hamam</i>	
A Fixed Differential Group Delay but Varying Second-Order Polarization Mode Dispersion Emulator	468
<i>Vitalis Musara, Lorinda Wu, and Andrew W. R. Leitch</i>	
A Distributed Active Information Model Enabling Distributed Autonomics in Complex Electronic Environments	473
<i>Robin Braun and Frank Chiang</i>	
Active Throughput Estimation Using RTT of Differing ICMP Packet Sizes	480
<i>N. V. Mnisi, O. J. Oyedapo, and A. Kurien</i>	
Universal Use of Information Delivery and Display System Using Ad Hoc Network for Deaf People in Times of Disaster	486
<i>Atsushi Ito, Hitomi Murakami, Yu Watanabe, Masahiro Fujii, Takao Yabe, Yoshikura Haraguchi, Yozo Tomoyasu, Yoshiaki Kakuda, Tomoyuki Ohta, and Yuko Hiramatsu</i>	

Survivability: Wavelength Recovery for Node and Link Failure in All Optical Networks	492
<i>Bakhe Nleya and Emmanuel Nyakwende</i>	
Providing QoS for IP-Based Rural Telemedicine Systems	499
<i>Phumzile Malindi and Mohamed Toriq Kahn</i>	

Author Index