

# **2010 Sixth Advanced International Conference on Telecommunications**

**(AICT 2010)**

**Barcelona, Spain  
9-15 May 2010**



**IEEE Catalog Number: CFP1015C-PRT  
ISBN: 978-1-4244-6748-8**

# 2010 Sixth Advanced International Conference on Telecommunications

## AICT 2010

### Table of Contents

|                           |      |
|---------------------------|------|
| Preface.....              | xiii |
| Organizing Committee..... | xvi  |
| Reviewers.....            | xxii |

---

#### AICT 1: Wireless Technologies I

|  |    |
|--|----|
| The Impact of FEC on Mobile Multicast Power Control .....  | 1  |
| <i>Antonios Alexiou, Christos Bouras, and Andreas Papazois</i>                                       |    |
| Home Wireless Security and Privacy: A Practical Protocol Mixing .....                                | 7  |
| <i>David González Tarragó</i>  |    |
| How the Atmospheric Variables Affect to the WLAN Datalink Layer Parameters .....                     | 13 |
| <i>Diana Bri, Sandra Sendra, Hugo Coll, and Jaime Lloret</i>   |    |
| Resource Allocation Method for OFDM System to Transmit SVC<br>over Frequency Selective Channel ..... | 19 |
| <i>Daeyeon Kim, Takeo Fujii, and Kyesan Lee</i>  |    |

#### AICT 2: Cognitive Radio I

|  |    |
|--|----|
| Spectrum Occupancy in an Urban Environment: A Cognitive Radio Approach .....                         | 25 |
| <i>Alexandru Marțian, Ioana Marcu, and Ion Marghescu</i>   |    |
| Distributed Control Using Cognitive Pilot Channels in a Centralized Cognitive<br>Radio Network ..... | 30 |
| <i>Nicolás Bolívar, José L. Marzo, and Enrique Rodríguez-Colina</i>                                  |    |
| Analytical Modeling and Performance Evaluation of Cognitive Radio Networks .....                     | 35 |
| <i>Derya Cavdar, H. Birkan Yilmaz, Tuna Tugcu, and Fatih Alagöz</i>                                  |    |
| Renovate Cognitive Networks under Spectrum Unavailability .....                                      | 41 |
| <i>Anwer Al-Dulaimi, Saba Al-Rubaye, and Hamed Al-Raweshidy</i>                                      |    |

## **AICT 3: Cognitive Radio II**

|  |    |
|--|----|
| Hybrid Spectrum Sensing Architecture for Cognitive Radio Equipment .....   | 46 |
| <i>Ziad Khalaf, Amor Nafkha, Jacques Palicot, and Mohamed Ghazzi</i>   |    |
| Cooperative Spectrum Sensing with Double Adaptive Energy Thresholds<br>and Relaying Users in Cognitive Radio .....   | 52 |
| <i>Hiep Vu-Van and Insoo Koo</i>   |    |
| Generic Spectrum Sharing Method Applied to IEEE 802.11e WLANs .....  | 57 |
| <i>Mohammad Muttakin Siddique, Bernd-Ludwig Wenning, Andreas Timm-Giel,<br/>Carmelita Görg, and Maciej Mühleisen</i> |    |
| A New Digital Modulation Recognition Technique Using the Phase Detector<br>Reliability .....                         | 64 |
| <i>Adel Metref, Daniel Le Guennec, and Jacques Palicot</i>   |    |

## **AICT 4: E-learning and Telecommunications I**

|  |    |
|--|----|
| Towards a New Generation of Virtual Campuses .....   | 70 |
| <i>Antonio Navarro, Jesús Cristóbal, Alfredo Fernández-Valmayor,<br/>Carmen Fernández, Héctor Hernanz, Salvador Guillomía, and Félix Buendía</i> |    |
| Adaptation for Assimilation: Shaping Context-Sensitive M-learning Services<br>within a Multi-agent Environment .....                             | 74 |
| <i>Damien Meere, Ivan Ganchev, Máirtín O'Dróna, Stanimir Stojanov,<br/>and Veselina Valkanova</i>  |    |
| Advanced Networking Technologies Study Programme: A Design Based<br>on Competences .....   | 80 |
| <i>Joze Rugelj, Sven Knockaert, Roel Van Steenberghe, Luk Schoofs,<br/>Janne Salonen, Kari Bjorn, Jose L Marzo, and Carlos Vaz de Carvalho</i>   |    |
| Embedding Critical Thinking Pedagogy through Learning Object Design .....  | 85 |
| <i>Philip L. Balcaen and Robert Campbell</i>   |    |

## **AICT 5: E-learning and Telecommunications II**

|   |     |
|---|-----|
| Collaborative Learning in OpenSim by Utilizing SLoodle .....  | 90  |
| <i>Andreas Konstantinidis, Thrasyvoulos Tsiatsos, Stavros Demetriadis,<br/>and Andreas Pomportsis</i>               |     |
| Saliency Detection Based on Human Perception of Visual Information .....  | 96  |
| <i>Cristina Oprea, Constantin Paleologu, Ionut Pirnog, and Mihnea Udrea</i>   |     |
| Exploiting Annotated Video to Support Dance Education .....   | 100 |
| <i>Thrasyvoulos Tsiatsos, Eleni Stavridou, Athina Grammatikopoulou,<br/>Stella Douka, and Georgios Sofianidis</i>   |     |
| On Demand Learning in Manufacturing Processes - Implementation<br>by Integrated Multimedia Streaming Services ..... | 106 |
| <i>Martin Zimmermann</i>  |     |

## **AICT 6: Cognitive Radio III**

|   |     |
|---|-----|
| Image Processing Techniques as a Support to Transmitter Positioning Determination in Cognitive Radio Networks ..... | 112 |
| <i>Liliana Bolea, Jordi Pérez-Romero, Ramón Agustí, and Oriol Sallent</i>   |     |
| Multuser Spectral Efficiency Maximization in Cognitive Ultra Wideband Radio Systems .....                           | 118 |
| <i>Liaoyuan Zeng, Sean McGrath, and Eduardo Cano</i>  |     |
| A Cooperative Multiagent Based Spectrum Sharing .....   | 124 |
| <i>Usama Mir, Leila Merghem-Boulaïhia, and Dominique Gaïti</i>  |     |
| Information Theoretic approach to Synchronization: The OFDM Carrier Frequency Offset Example .....                  | 131 |
| <i>Romain Couillet and Mérouane Debbah</i>  |     |

## **AICT 7: Cognitive Radio IV**

|  |     |
|--|-----|
| European Standardization and SDR Certification .....   | 136 |
| <i>Dimitrios Symeonidis and Gianmarco Baldini</i>  |     |
| A Common Operator Bank to Resolve Scheduling Issue on a Complexity Optimized SDR Terminal .....            | 142 |
| <i>Laurent Alaus, Dominique Noguét, and Jacques Palicot</i>  |     |
| Blind Bandwidth Shape Recognition for Standard Identification Using USRP Platforms and SDR4all Tools ..... | 147 |
| <i>H. Wang, W. Jouini, R. Hachemani, J. Palicot, L. S. Cardoso, and M. Debbah</i>                          |     |

## **AICT 8: Future Applications and Services**

|   |     |
|---|-----|
| Integrating Asterisk with InRule to Detect Suspicious Calls .....   | 153 |
| <i>Ahmad Hammoud and Daniel Bourget</i>   |     |
| Use of Finite State Machine Based Framework in Implementation of Communication Protocols – A Case Study ..... | 161 |
| <i>Ilija Basiccevic, Miroslav Popovic, and Ivan Velikic</i>   |     |
| Multi-tier-Based Global Awareness Modell for Collaboration and Knowledge Management .....                     | 167 |
| <i>Eldar Sultanow and Edzard Weber</i>  |     |
| Defense against Direct Spam over Internet Telephony by Caller Pre-validation .....                            | 172 |
| <i>Jürgen Müller and Michael Massoth</i>  |     |

## **AICT 9: Signal Processing, Protocols and Standardization I**

|  |     |
|--|-----|
| DSL Impulse Noise Measurement System Implemented in USRP and GNU Radio .....   | 178 |
| <i>Diogo Acatauassu, Igor Mesquita, Francisco Muller, and Aldebaro Klautau</i> |     |

|   |     |
|---|-----|
| New Recursive Convolutional GF(2N) Encoders for Parallel Turbo-TCM Schemes .....                                  | 182 |
| <i>Adrian Florin Păun, Călin Vlădeanu, Ion Marghescu, Safwan El Assad, Jean-Claude Carlach, and Raymond Quéré</i> |     |
| A Time-Recursive Adaptive Algorithm for Colored Noise Reduction in Speech Enhancement .....                       | 187 |
| <i>Radu Mihnea Udrea, Dragos Nicolae Vizireanu, Claudia Cristina Oprea, and Ionut Pirnog</i>                      |     |

## **AICT 10: Signal Processing, Protocols and Standardization II**

|   |     |
|---|-----|
| Signal Classification Using Random Forest with Kernels .....  | 191 |
| <i>Jiguo Cao and Guangzhe Fan</i>   |     |
| A Low Complexity PAR Reduction Technique Using Cyclic Shifted Data Sequences in DS-CDMA Signals ..... | 196 |
| <i>Tarek K. Helaly, Richard M. Dansereau, and Mohamed El-Tanany</i>                                   |     |
| A Novel Adaptive Channel Equalization Method Using Variable Step Size Partial Rank Algorithm .....    | 201 |
| <i>Sayed A. Hadei and Paeiz Azmi</i>  |     |
| Spectral Enhancement of Whispered Speech Based on Probability Mass Function .....                     | 207 |
| <i>Hamid Reza Sharifzadeh, Ian Vince McLoughlin, and Farzaneh Ahmadi</i>                              |     |

## **AICT 11: Teletraffic Modeling and Management I**

|   |     |
|---|-----|
| Optimization of a Predictive Dialing Algorithm .....  | 212 |
| <i>Sonia Fourati and Sami Tabbane</i>   |     |
| Conservative Cell Load Approximation for Radio Networks with Shannon Channels and its Application to LTE Network Planning ..... | 219 |
| <i>Kurt Majewski and Michael Koonert</i>  |     |
| Speech Quality Prediction in VoIP Concatenating Multiple Markov-Based Channels .....  | 226 |
| <i>Iban Lopetegui, Rolando Antonio Carrasco, and Said Boussakta</i>   |     |
| The Packet Delay in a MPLS Network Using "1+1 Protection" .....   | 231 |
| <i>Graziela Niculescu, Petrica Ciotirnce, and Lucian Ioan</i>   |     |

## **AICT 12: Wireless Technologies II**

|   |     |
|---|-----|
| A Preemptive Time-Threshold Based Multi-Guard Bandwidth Allocation Scheme for Cellular Networks ..... | 236 |
| <i>Idil Candan</i>  |     |
| QoS Performance Study of One Way Link Characteristics in an IEEE 802.16d TDD System .....             | 241 |
| <i>Maik Wodarz, James P. Taisie, and Thomas C. Schmidt</i>  |     |

|   |     |
|---|-----|
| Ergodic Capacity of M-1-1 AF Relaying Systems over Rayleigh Fading Channels .....   | 247 |
| <i>Hyunkee Min, Sungeun Lee, Kyungchul Kwak, Hyungjong Kim, and Daesik Hong</i>     |     |
| A Distributed Approach to Wireless System Simulation .....                          | 252 |
| <i>Giuseppe Iazeolla, Alessandra Pieroni, Andrea D'Ambrogio, and Daniele Gianni</i> |     |

### **AICT 13: Ad Hoc, Automatic and Sensor Networks I**

|  |     |
|--|-----|
| Differentiation between Different Traffic Categories Using Multi-level of Priority in DCF-WLAN .....     | 263 |
| <i>Mehaseb Ahmed, Gamal Abdel Fadeel, and Ibrahim Ismail Ibrahim</i>                                     |     |
| ALLEE-MAC: An Adaptive Low Latency and Energy Efficient MAC Protocol for Wireless Sensor Networks .....  | 269 |
| <i>Zhenzhou Tang and Qian Hu</i>   |     |
| Using Matrix Convolutions and Clustering for Energy Efficient Routing Algorithm in Sensor Networks ..... | 275 |
| <i>Yaser Yousef, Marc Gilg, and Pascal Lorenz</i>  |     |
| A Service Discovery Protocol for Emergency Response Operations Using Mobile Ad Hoc Networks .....        | 280 |
| <i>Mohamed Adel Serhani and Yasser Gadallah</i>  |     |

### **AICT 14: Ad Hoc, Autonomic and Sensor Networks II**

|  |     |
|--|-----|
| VD4: Vehicular Density-Dependent Data Delivery Model in Vehicular Ad Hoc Networks .....        | 286 |
| <i>Avijit Gupta, Vineet Chaudhary, Vivek Kumar, Bharat Nishad, and Shashikala Tapaswi</i>      |     |
| Methods for Flow Graph Selection in Integral Network Coding .....                              | 292 |
| <i>Mohammad Ravanbakhsh and Dag Haugland</i>   |     |
| HybridLQI: Hybrid MultihopLQI for Improving Asymmetric Links in Wireless Sensor Networks ..... | 298 |
| <i>Ashish Gupta, Mohit Sharma, Michel Marot, and Monique Becker</i>                            |     |
| Link Quality and Local Load Balancing Routing Mechanisms in Wireless Sensor Networks .....     | 306 |
| <i>Cherif Diallo, Michel Marot, and Monique Becker</i>   |     |

### **AICT 15: Ad Hoc, Autonomic and Sensor Networks III**

|  |     |
|--|-----|
| Improving Performance of on Demand Multicast Routing by Deleting Lost Join Query Packets ..... | 316 |
| <i>Kamran Abdollahi, Alireza shams Shafigh, and Andreas J. Kassler</i>                         |     |
| Optimal Cluster Partitioning for Wireless Sensor Networks with Cooperative MISO Scheme .....   | 323 |
| <i>Zheng Huang, Takaya Yamazato, and Masaaki Katayama</i>                                      |     |

|  |     |
|--|-----|
| A Queuing Mechanism to Alleviate Flooding Attacks in Probabilistic Delay Tolerant Networks .....             | 329 |
| <i>Feng Cheng Lee, Weihan Goh, and Chai Kiat Yeo</i>   |     |
| An Analytical Study of an All-Optical Packet Switch with QoS Support .....                                   | 335 |
| <i>John S. Vardakas, Ioannis D. Moscholios, and Michael D. Logothetis</i>                                    |     |
| <b>AICT 16: Teletraffic Modeling and Management II</b>   |     |
| Decision Support for the Usage of Multicast versus Unicast in Broadband TV Networks .....                    | 341 |
| <i>Alireza Abdollahpouri and Bernd. E. Wolfinger</i>   |     |
| A Simplified Method for Optimising Sequentially Processed Access Control Lists .....                         | 347 |
| <i>Vic Grout and John N. Davies</i>  |     |
| A 'Plug-and-Play' Framework to Enhance Heterogeneity and Versatility in Delay Tolerant Networks .....        | 353 |
| <i>Feng Cheng Lee, Yang Xia, Chai Kiat Yeo, and Yong Tai Tan</i>   |     |
| Modeling of Flocking Behaviour System in SystemC .....   | 358 |
| <i>Ibrahim Aref, Nuredin Ahmed, Fernando Rodríguez-Salazar, and Khaled Elgaid</i>                            |     |
| <b>AICT 17: Management Operation and Control Networks I</b>  |     |
| Issues of QoS Multipath Routing Protocol for SEN's Data Networks .....                                       | 364 |
| <i>Agustín Zaballos, Alex Vallejo, and Guillermo Ravera</i>  |     |
| Automatic Signature Generation for Network Services through Selective Extraction of Anomalous Contents ..... | 370 |
| <i>Pedro García-Teodoro, Pablo Muñoz-Feldstedt, and David Ruete-Zúñiga</i>                                   |     |
| MS-DFGA : Malleable Scheduling with Dynamic MaxFlow and Greedy Algorithms in Grid Networks .....             | 376 |
| <i>Amel Hamdi, Lynda Zitoune, and Véronique Vèque</i>  |     |
| Towards Distributed and Adaptive Detection and Localisation of Network Faults .....                          | 384 |
| <i>Rebecca Steinert and Daniel Gillblad</i>  |     |
| <b>AICT 18: Wireless Technologies III</b>  |     |
| Hybrid Wireless Mesh Network for Universal Access: Opportunities and Challenges .....                        | 390 |
| <i>Santhi Kumaran and Charles Semapondo</i>  |     |
| A Hierarchical Channel-Aware Uplink Scheduler for WiMAX Base Stations .....                                  | 398 |
| <i>Zeynep Yurdakul and Sema Oktug</i>  |     |
| Self-Optimization of Spectrum Assignment and Transmission Power in OFDMA Femtocells .....                    | 404 |
| <i>Francisco Bernardo, Ramon Agustí, Jorge Cordero, and Carlos Crespo</i>                                    |     |

|   |     |
|---|-----|
| Cooperative Agent Based Vertical Handover Scheme for Heterogeneous Networks ..... | 410 |
| <i>Atiq Ahmed, Leïla Merghem-Boulahia, and Dominique Gaïti</i>                    |     |

## **AICT 19: Wireless Technologies IV**

|  |     |
|--|-----|
| Impulsive Noise Correction in Systems Based on CGU Frames .....  | 416 |
| <i>Fatma Abdelkefi</i>   |     |
| WiMAX Handover Conditions Evaluation towards Enhancement through Cross-Layer Interaction .....                 | 422 |
| <i>Mihai Constantinescu, Eugen Borcoci, and Tinku Rasheed</i>  |     |
| An Unequal Protection Method for Multiuser OFDM to Minimize Video Distortion .....                             | 428 |
| <i>Daeyeon Kim, Takeo Fujii, and Kyesan Lee</i>  |     |
| A New Method in Coverage for Wireless Sensor Networks .....  | 434 |
| <i>Mohammad Hasannejad, Mohammad Mehrani, Jamshid Shanbehzadeh, Abdolhossein Sarrafzadeh, and Ehsan Bidokh</i> |     |

## **AICT 20: Management, Operation and Control Networks II**

|  |     |
|--|-----|
| Providing Security in 4G Systems: Unveiling the Challenges .....   | 439 |
| <i>Mahdi Aiash, Glenford Mapp, Aboubaker Lasebae, and Raphael Phan</i>   |     |
| Performance Evaluation of Cognitive Management Functionality for Emergency Healthcare Applications .....         | 445 |
| <i>George Dimitrakopoulos, Marios Logothetis, and Panagiotis Demestichas</i>                                     |     |
| A Security Framework Model with Communication Protocol Translator Interface for Enhancing NFC Transactions ..... | 452 |
| <i>Lishoy Francis, Gerhard Hancke, Keith Mayes, and Konstantinos Markantonakis</i>                               |     |
| Host Identity Protocol Proactive Mobility Management Experimentation .....                                       | 462 |
| <i>Arraez Leonardo and Hakima Chaouchi</i>   |     |

## **AICT 21: Core Technologies and Access Technologies and Networks I**

|  |     |
|--|-----|
| Collateral Damage in the Last Big Internet Storm .....   | 468 |
| <i>Pedro A. Aranda Gutierrez</i>   |     |
| Security in OPERA Specification Based PLC Systems .....  | 474 |
| <i>Guiomar Corral, Josep M. Selga, Agustín Zaballos, David González-Tarragó, Luis M. Torres, and Berthold Haberler</i> |     |
| Optimizing the Usage of COPS Protocol in ITU-T NGN Architecture .....  | 479 |
| <i>Alex Vallejo, Agustín Zaballos, Alejandro Campos, and Jordi Dalmau</i>  |     |
| Proposal and Evaluation of Photonic Switching Architectures for High-Capacity Optical Access Networks .....            | 485 |
| <i>Indayara B. Martins, Felipe R. Rudge, Edson Moschim, and Luiz H. Bonani</i>   |     |



## **AICT 22: Wireless Technologies V**

|   |     |
|---|-----|
| The Effect of Multiplexing Users in QoS Provisioning Scheduling .....   | 491 |
| <i>Seongwoo Ahn, Hano Wang, Kyungho Kim, and Daesik Hong</i>  |     |
| A Context-Aware Communication Link for Unmanned Aerial Vehicles .....   | 497 |
| <i>Edson dos Santos Moreira, Renata M. Porto Vanni, Diego L. Função,<br/>and Cesar Augusto Cavalheiro Marcondes</i> |     |
| Radio Optimization of High Speed Mobile Networks .....  | 503 |
| <i>Toni Janevski and Vladimir Nikolic</i>   |     |

## **AICT 23: Wireless Technologies VI**

|   |     |
|---|-----|
| Efficient Power Management Adaptation for Video Transmission over TFRC .....            | 509 |
| <i>Christos Bouras, Vassilis Papapanagiotou, Kostas Stamos, and Giannis Zaoudis</i>     |     |
| Joint Multiuser LDPC Coding Scheme for Error Control in DS-CDMA Systems .....           | 515 |
| <i>Hamid Saber, Ehsan Olfat, and Hamidreza Amindavar</i>                                |     |
| WiMetroNet—A Scalable Wireless Network for Metropolitan Transports .....                | 520 |
| <i>Manuel Ricardo, Gustavo Carneiro, Pedro Fortuna, Filipe Abrantes, and Jaime Dias</i> |     |
| A Review of UWB MAC Protocols .....   | 526 |
| <i>Mohd Shahril Izuan Mohd Zin and Martin Hope</i>                                      |     |

## **AICT 24: Core Technologies and Access Technologies and Networks II**

|   |     |
|---|-----|
| Performance Evolution of Optical Code Conversion Architectures in Hybrid<br>WDM/OCDM OBS Network .....                  | 535 |
| <i>Lidia Galdino, José Maranhão Neto, Joelma Costa, Fabio Renan Durand,<br/>Edson Moschim, and Luiz Henrique Bonani</i> |     |
| A New p-Cycle Selection Approach Based on Efficient Restoration Measure<br>for WDM Optical Networks .....               | 542 |
| <i>Carlos Colman Meixner, Liz Campuzano, Diego Pinto Roa, and Enrique Davalos</i>                                       |     |
| A Simple Method to Measure the Image Complexity on a Fault Tolerant<br>Cluster Computing .....                          | 549 |
| <i>Demóstenes Zegarra Rodríguez, Renata Lopes Rosa, and Eduardo Costa Alfaia</i>  |     |
| <b>Author Index</b> .....   | 555 |