

2011 19th International Conference on Software, Telecommunications and Computer Networks

(SoftCOM 2011)

**Split, Croatia
15 – 17 September 2011**



**IEEE Catalog Number: CFP1187A-PRT
ISBN: 978-1-4577-1439-9**

CONTENTS

TECHNICAL PROGRAM: SYMPOSIA, SPECIAL SESSIONS, WORKSHOPS

SYMPOSIUM ON RFID TECHNOLOGIES & THE INTERNET OF THINGS

SYM1/I: SYMPOSIUM ON RFID TECHNOLOGIES & THE INTERNET OF THINGS (DEMONSTRATIONS SESSIONS)

RFID Tag Readability around White Wine Bottles Isabel Exposito, Iñigo Cuiñas (University of Vigo, Spain)	1
Towards RFID Traceability Systems of Farmed Fish Supply Chain Mira Trebar, Andrej Grah (University of Ljubljana, Slovenia); Alejandro Alvarez-Melcon, Alfredo Parreño (Technical University of Cartagena, Spain)	6
RFID and WSNs for Traceability of Agricultural Goods from Farm to Fork: Electromagnetic and Deployment Aspects on Wine Test-Cases Luca Catarinucci (University of Salento, Italy); Iñigo Cuiñas, Isabel Exposito (University of Vigo, Spain); Riccardo Colella (University of Salento, Italy); Jose Antonio Gay Fernandez (University of Vigo, Spain); Luciano Tarricone (University of Salento, Italy)	12
Evolution of Wireless Sensor Networks towards the Internet of Things: a Survey Luca Mainetti, Luigi Patrono (University of Salento, Italy); Antonio Vilei (STMicroelectronics, Italy)	16
Path Following for Indoor Robots with RFID Received Signal Strength Ran Liu, Philipp Vorst, Artur Koch, Andreas Zell (University of Tuebingen, Germany)	22

SYM1/II: SYMPOSIUM ON RFID TECHNOLOGIES & THE INTERNET OF THINGS

Towards a framework for evaluating the benefits of RFID adoption in supply chains Luca Cremona, Matteo Della Bordella (Università Carlo Cattaneo - LIUC, Italy); Luca Mainetti (University of Salento, Italy); Luca Mari (Università Cattaneo - LIUC, Italy); Luigi Patrono (University of Salento, Italy); Aurelio Ravarini (Università Carlo Cattaneo - LIUC, Italy)	29
Lightweight Matrix-based Authentication Protocol for RFID Vinod Ramachandra, Md. Musfiq Rahman, Srinivas Sampalli (Dalhousie University, Canada)	35
On the Weakness of Contactless System under Relay Attacks Pierre-Henri Thevenon, Olivier Savry (CEA, LETI, Minatec France); Smail Tedjini (LCIS Lab, Grenoble INP, France)	41
Minimization of energy consumption in passive HF contactless and RFID systems Pierre-Henri Thevenon, Olivier Savry (CEA, France); Smail Tedjini (Grenoble-inp, France)	46
Design and Development of a Social Shopping Experience in the IoT domain: the ShopLovers solution Ugo Biader Ceipidor, Carlo Maria Medaglia, Valentina Volpi, Alice Moroni, Serena Sposato, Manuele Tamburrano, (Sapienza University of Rome, Italy)	51

SYM1/III: SYMPOSIUM ON RFID TECHNOLOGIES & THE INTERNET OF THINGS (DEMONSTRATIONS SESSIONS)

Experimental Validation of Wireless Localization Techniques in IEEE802.15.4 Networks	56
Besem Abid, Matteo Petracca, Paolo Pagano, Stefano Bocchino, Daniele Alessandrelli (Scuola Superiore Sant'Anna, Italy)	
Event-based Location Detection	61
Johannes Westhuis, Jürgen Dunkel, Ralf Bruns (Hanover University of Applied Sciences and Arts, Germany)	
Signal Modeling and Processing for Physiological Sensing through UWB Radars	66
Marco Baldi, Franco Chiaraluce, Matteo Moretti, Francesco Venieri, Blerina Zanaj (Università Politecnica delle Marche, Italy)	
0.469 PDFSA protocol for RFID Arbitration	71
Luca Barletta, Flaminio Borgonovo, Matteo Cesana (Politecnico di Milano, Italy)	
SystemC Modeling of RFID Systems for Robustness Analysis	76
Gilles Fritz (Grenoble INP - LCIS, France); Vincent Berouille (Lcis-Esisar-Inpg, France); Oum-El-Kheir Aktouf (Grenoble INP - LCIS, France); David Hély (Grenoble INP - LCIS, France)	

SYM1/IV: SYMPOSIUM ON RFID TECHNOLOGIES & THE INTERNET OF THINGS (DEMONSTRATIONS SESSIONS)

Use of NFC and QR code Identification in an Electronic Ticket System for Public Transport	81
Luka Finžgar, Mira Trebar (University of Ljubljana, Slovenia)	
Distributed Monitoring System for Material Handling	87
Heinz Lugo, Julien Viret, Axel Bindel, Paul Conway, Andrew West (Loughborough University, United Kingdom)	
Design and FDTD Analysis of Single-Band and Dual-Band Antennas for RFID and WiMAX Applications	93
Nazish Irfan, Mustapha C.E. Yagoub (University of Ottawa, Canada); Khelifa Hettak (Communications Research Centre (CRC), Canada)	

SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY (EEMC)

SYM2/I: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY (EEMC) I

An Improved Algorithm for Indirect Time domain Analysis of Thin Wire Structures	98
Sinisa Antonijevic, Vicko Doric, Dragan Poljak (University of Split, Croatia)	
Assessment of SAR Distribution in the Human Eye and Pregnant Woman Models at GSM Frequencies Using FEKO Software Package	103
Zlatko Zivkovic, Duje Despalatovic, Dragan Poljak, Antonio Sarolic (University of Split, Croatia); Khalil El Khamlichi Drissi (Université Blaise Pascal, France)	
Analysis of Arrays of Printed Strip Dipole Antennas	108
Ruzhdi Sefa (University of Prishtina, Kosova); Faton Tefiku (Nokia, Inc, USA); Arianit Maraj (University of Prizren, Kosova)	
Design and Testing of a Diode-Based Electric Field Probe Prototype	113
Zlatko Zivkovic, Damir Senic, Antonio Sarolic, Ante Vucic (University of Split, Croatia)	
Influence of Human Head and Hand on PIFA Antenna Matching Properties and SAR	118
Antonio Sarolic, Damir Senic, Zlatko Zivkovic, Ante Zorica (University of Split, Croatia)	

SYM2/II: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY (EEMC) II

Full Wave Model versus Transmission Line Representation of Tesla's Wave Propagation: 155th Anniversary of Birth of Nikola Tesla Dragan Poljak, Zoran Blažević, Silvestar Sesnic, Mario Cvetković (University of Split, Croatia)	123
HF Comparison of Image and TL Models of a Horizontal Thin-Wire Conductor in Finitely Conductive Earth Vesna Arnautovski-Toseva (University Blaise Pascal, France); Khalil El Khamlichi Drissi (Université Blaise Pascal & LASMEA Laboratory, France); Kamal Kerroum (University of Clermont Ferrand, France)	128
Analysis of Grounding Electrode Input Impedance Calculation Damir Cavka, Dragan Poljak (University of Split, Croatia)	133
Lightning electromagnetic field of a double-peaked channel-base current Vesna Javor (University of Nis, Serbia)	138

SYM2/III: SYMPOSIUM ON ENVIRONMENTAL ELECTROMAGNETIC COMPATIBILITY (EEMC) III

An Algorithm to Simulate Impulsive Noise Pablo Torío, Manuel García Sánchez , Iñigo Cuiñas (University of Vigo, Spain)	143
Impulsive Noise Rejection by Polarization Orthogonality in OFDM Pablo Torío, Manuel García Sánchez (Universidade de Vigo, Spain)	147
Researching the Different Polarizations of Impulsive Noise Pablo Torío, Manuel García Sánchez (Universidad de Vigo, Spain)	151
Using Wavelets to Define and Detect Harmonic Fingerprints in Non-Sinusoidal Waveforms Ileana Nicolae, Marian-Stefan Nicolae (University of Craiova, Romania)	156

SS1: SPECIAL SESSION ON AD-HOC AND SENSOR NETWORKS

Hierarchical Duty Cycle Management (HDCM) protocol Danilo Blasi (STMicroelectronics, Italy)	161
A Collaborative Target Tracking Algorithm Considering Energy Constraint in WSNs Vinh Tran-Quang (Shibaura Institute of Technology & Hanoi University of Technology, Japan); Phat Nguyen Huu, Takumi Miyoshi (Shibaura Institute of Technology, Japan)	167
The P2P-RPL Routing Protocol for IPv6 Sensor Networks: Testbed Experiments Emmanuel Baccelli, Matthias Philipp (INRIA, France); Mukul Goyal (University of Wisconsin - Milwaukee, USA)	172
Efficient Motion Estimation Algorithm Using Edge Feature and Arithmetic Coding for Video Compression on WWSNs Phat Nguyen Huu (Shibaura Institute of Technology, Japan); Vinh Tran-Quang (Shibaura Institute of Technology & Hanoi University of Technology, Japan); Takumi Miyoshi (Shibaura Institute of Technology, Japan)	178
Hybrid Detection Method for Cognitive Radio Tanuja Dhopo, Dina Simunic (University of Zagreb, Croatia); Ramjee Prasad (Aalborg University, Denmark)	183

SS2: SPECIAL SESSION ON GREEN NETWORKING

Energy-efficient cryptography: application of KATAN Sergey P Panasenko, Sergey Smagin (Ancud Ltd., Russia)	188
Energy-aware flow allocation algorithm for Energy Efficient Ethernet networks Isaac Seoane, José Alberto Hernández (Universidad Carlos III de Madrid, Spain); Pedro Reviriego (Universidad Antonio de Nebrija, Spain); D. Larrabeiti (Universidad Carlos III de Madrid, Spain)	193
Energy-Aware Retransmission Scheme for Multimedia Delivery over Wireless Networks Deema Abdallah, Sanaa Sharafeddine (Lebanese American University, Lebanon)	198

SS3: SPECIAL SESSION ON QoS IN WIRED AND WIRELESS NETWORKS

Using Temporal Neural Networks to Forecasting of Broadband network faults Zeljko Deljac (HT-Hrvatski telekom, Croatia); Marijan Kunstic (University of Zagreb, Croatia); Boris Spahija (HT-Hrvatski telekom, Croatia)	203
Capacity Maximizing Cell-Selection in Heterogeneous Cellular Networks Jeong Soo Park, Gil-Su Heo, Yong-Hwan Lee (Seoul National University, Korea)	208
Infrastructure-Dependent Wireless Multicast over 802.11n WLAN Jean Vella, Saviour Zammit (University of Malta, Malta)	213

WECR: WORKSHOP ON THE ELECTRONIC COMMUNICATIONS REGULATORY CHALLENGES - EXPERIENCES FROM THE LOOKING TO THE FUTURE PROJECT

Broadband Ecosystem for Rural Areas in the Republic of Croatia Antun Caric (Croatian Agency for Post and Electronic Communications, Croatia); Danijel Mileta (Ministry of the Sea, Transport and Infrastructure, Croatia); Josip Sajnovic (Croatian Post and Electronic Communications Agency, Croatia)	218
Next Generation Network and Regulatory Challenges Ignac Lovrek (University of Zagreb, Croatia); Drazen Lucic, Gasper Gacina (Croatian Post and Electronic Communications Agency, Croatia)	227
Workshop: The Electronic Communications Regulatory Challenges - Experiences Ivancica Sakal, Zeljko Tabakovic (Croatian Post and Electronic Communications Agency, Croatia); Sonja Grgic, Dijana Tralic (University of Zagreb, Croatia)	236
Overview of Looking to the Future Project Mario Weber (Croatian Post and Electronic Communications Agency, Croatia); Gordan Jezic (University of Zagreb, Croatia); Miljenko Krvisek (Croatian Post and Electronic Communications Agency, Croatia)	245
Findings of the Public Consultation on Network Neutrality in Croatia: Report and Analysis Zdravko Jukic, Mario Weber (Croatian Post and Electronic Communications Agency, Croatia); Maja Matijasevic (University of Zagreb, Croatia)	253
Next Generation Access and Investment issues Ivana Drazic Lutiski (University of Zagreb, Croatia); Domagoj Jurjevic (HAKOM, Croatia); Marina Ivic (University of Zagreb, Croatia)	262
Towards Assessment of IPv6 Readiness, Deployment and Transition Plans in Croatia	269

Velimir Svedek (Croatian Post and Electronic Communications Agency, Croatia); Ognjen Dobrijevic, Maja Matijasevic (University of Zagreb, Croatia); Ivana Golub, Tomislav Stivojevic (CARNet, Croatia)

TECHNICAL PROGRAM: GENERAL CONFERENCE

S1: COMMUNICATION THEORY

System Performance Enhancement for T-Code Family S. Saleh Hosseini Bidaki, Mostafa Shahabinejad (Shahid Bahonar University of Kerman, Iran)	276
The Enhancement of System Performance in Quasi-Orthogonal Space-Time-Frequency Codes Mostafa Shahabinejad, Alireza Morsali (Shahid Bahonar University of Kerman, Iran)	281
Turbo Codes Construction for Robust Hybrid Multitransmission Schemes Fulvio Babich, Francesca Vatta (University of Trieste, Italy)	286
Distortion Estimation Algorithms for Real-Time Video Streaming: an Application Scenario Fulvio Babich, Marco D'Orlando, Francesca Vatta (University of Trieste, Italy)	291

S2: INTERFACES AND COMMUNICATION PROTOCOLS

A Channel-Aware Reservation Protocol for Cooperative Content Distribution over OFDMA Networks Elias Yaacoub (QUWIC, Qatar); Lina Al-Kanj, Zaher Dawy (American University of Beirut, Lebanon); Sanaa Sharafeddine (Lebanese American University, Lebanon); Adnan Abu-Dayya (QUWIC, Qatar)	296
QoS-enabled IPv6 Emulation Environment Based on the Open IMS Core Tomislav Grgic, Niko Boskovic, Maja Matijasevic, (University of Zagreb, Croatia)	302
Throughput Analysis of a Cognitive Multi-hop IEEE 802.11-based WLAN Overlaid on a Cellular Network Hosein Soleimani, Farid Ashtiani (Sharif University of Technology, Iran)	307
Context-Based Natural Image Parsing: A Critical Survey Toma Roncevic, Maja Braovic, Darko Stipanićev (University of Split, Croatia)	312
Accelerometer-Based Gesture Classification Using Principal Component Analysis Tea Marasovic, Vladan Papic (University of Split, Croatia)	317

S3: INFORMATION INFRASTRUCTURE AND SECURITY

Massey Omura Multiple Users Key Distribution Danilo Merlanti, Gianluca Mazzini (University of Ferrara, Italy)	322
XCS based hidden firmware modification on embedded devices Boldizsár Bencsáth, Levente Buttyan, Tamás Paulik (Budapest University of Technology and Economics, Hungary)	327
An architecture for threats detection in mobile operators networks Mario Di Mauro, Roberto Garufi (Co.Ri.Tel., Italy); Fabio Postiglione, Paolo Addesso, Rocco Restaino, Maurizio Longo (University of Salerno, Italy); Andrea Senatore, Anton Luca Robustelli (Ericsson, Italy)	332
Proof of Proximity with 802.11 Wireless LAN Till Wollenberg, Thomas Mundt (University of Rostock, Germany)	337

S4: CONSUMER COMMUNICATIONS TECHNOLOGIES

A Linear Regression based Cost Function for WSN Localization	344
Frank Vanheel (Ghent University & University College Ghent, Belgium); Jo Verhaevert (University College Ghent, Belgium); Eric Laermans (UGent, Belgium); Ingrid Moerman (Ghent University - IBBT, Belgium); Piet Demeester (Ghent University, Belgium)	
RecoMMobile: A spatiotemporal recommender system for mobile users	349
Igor Sambolec, Ivan Rukavina, Vedran Podobnik (University of Zagreb, Croatia)	
MHP Application for a Self Evaluation Service	356
Elisa Benetti, Gianluca Mazzini (University of Ferrara, Italy)	
Validation of PM MAPPER aerosol optical thickness retrievals at 1X1 km² of spatial resolution	361
Piero Campalani (University of Ferrara & MEEO Srl, Italy); Thi Nhat Thanh Nguyen (University of Ferrara, Italy); Simone Mantovani (Meeo Srl, Italy); Maurizio Bottone (SISTEMA GmbH, Austria); Gianluca Mazzini (University of Ferrara, Italy)	

S5: MOBILE AND WIRELESS COMMUNICATIONS I

Joint Modeling of Network Related Events with Multi- Dimensional Markov Modulated Deterministic Processes	366
Paulo Salvador, António Nogueira (University of Aveiro/Instituto de Telecomunicações, Portugal); Rui Valadas (Instituto Superior Técnico/Instituto de Telecomunicações, Portugal); António Pacheco (Instituto Superior Técnico/CEMAT, Portugal)	
Optimized Resource Allocation for Video Transmission over Multihop Networks with End-to-End Statistical Delay Bound	373
Amin Abdel Khalek (The University of Texas at Austin, USA); Zaher Dawy (American University of Beirut, Lebanon)	
The Application of GIS in Designing of Wireless Communication Systems with SC Combining in the Presence of Ricean Fading	379
Dragana Krstic, Goran Stamenović (University of Nis, Serbia); Stefan Panic (Faculty of Natural Sciences and Mathematics, Serbia); Zoran J. Popovic, Dejan Rancic, Mihajlo Stefanovic (University of Nis, Serbia)	

S6: NETWORK OPERATIONS AND MANAGEMENT

Implicit SIP Proxy Overload Detection Mechanism based on Response Behavior	384
Marco Happenhofer, Christoph Egger (Vienna University of Technology, Austria)	
SIP Proxy High-Load Detection by continuous Analysis of Response Delay Values	389
Christoph Egger, Marco Happenhofer (Vienna University of Technology, Austria); Peter Reichl (Telecommunications Research Center Vienna (FTW) & Université Européenne de Bretagne, Rennes, Austria)	
Multistage SPIT Detection in Transit VoIP	394
Muhammad Ajmal Azad, Ricardo Morla (University of Porto, Portugal)	
Availability Modeling of Grid Computing Environments Using SANs	403
Reza Entezari-Maleki, Ali Movaghar (Sharif University of Technology, Iran)	

S7: MOBILE AND WIRELESS COMMUNICATIONS II

Code Assignment and Reassignment to reduce new code blocking in WCDMA networks	414
Vipin Balyan, Davinder Singh Saini (Jaypee University of Information Technology, India)	
Multi Code Assignment with Minimum Number of Rakes for OVSF CDMA	419
Vipin Balyan, Davinder Singh Saini (Jaypee University of Information Technology, India)	
Mutual Interference Evaluation in Cognitive Radio Networks with Log-normal Shadowing	424
Alice Masini, Gianluca Mazzini (University of Ferrara, Italy); Guido Riva (Fondazione Ugo Bordoni, Italy)	
Reducing the Number of Iterations in Iterative Demodulation with Turbo Decoding	429
Salim Haddad, Amer Baghdadi, Michel Jezequel (Telecom Bretagne, France)	
Wireless Security Threats: Eavesdropping and Detecting of Active RFIDs and Remote Controls in the Wild	435

Timo Kasper, David Oswald, Christof Paar (Ruhr-University Bochum, Germany)

S8: INTERNET AND IP BASED ENVIRONMENTS

Deploying New Hash Algorithms in Secure Neighbor Discovery Valter Vasić, Ana Kukec, Miljenko Mikuc (University of Zagreb, Croatia)	441
Peer-to-Peer for Unreliable Multicast Danilo Merlanti, Gianluca Mazzini (University of Ferrara, Italy)	446
A Multi-Variate Classification Approach for the Detection of Illicit Traffic Eduardo Rocha, Paulo Salvador, António Nogueira (University of Aveiro/Instituto de Telecomunicações, Portugal)	451
Observer network Web based statistical evaluation Ljiljana Seric, Tihana Bodrožić, Darko Stipanicev, Toni Jakovcevic (University of Split, Croatia)	457
Design and Implementation of Web Service Honeypot Abdallah Ghourabi, Tarek Abbes, Adel Bouhoula (University of Carthage, Tunisia)	462

S9: MOBILE AND WIRELESS COMMUNICATIONS III

Power Efficient Femtocell Distribution Strategies Yoram Haddad (Ben Gurion University of the Negev & Jerusalem College of Technology, Israel); Yisroel A Mirsky (Jerusalem College of Technology, Israel)	467
MPeersim: Simulation Environment for Mobile P2P Networks Muhammad Adeel, Laurissa N. Tokarchuk (Queen Mary University of London, United Kingdom)	472
Performance Analysis of a new Mobility/QoS-aware Architecture Nuno Vasco Lopes, Maria João M. R. da C. Nicolau (University of Minho, Portugal); Alexandre Santos (University of Minho & R&D Centre Algoritmi, Portugal)	478
A Desktop Ultra-Wideband Radio Channel Analysis Zoran Blažević, Duje Čoko, Ivan Plavčić, Toni Jurišić Sokić (University of Split, Croatia)	486

S10: COMMUNICATIONS SOFTWARE

Evaluation of A New Multipath Congestion Control Scheme using the NetPerfMeter Tool-Chain Thomas Dreibholz, Martin Becke, Hakim Adhari, Erwin P. Rathgeb (Universität Duisburg-Essen, Germany)	489
NEPI: An Integration Framework for Network Experimentation Alina Quereilhac, Mathieu Lacage, Claudio Freire, Thierry Turletti, Walid Dabbous (INRIA, France)	495
Multicore SIP Parsing with Imperative and Declarative Implementations Ivan Skuliber (Ericsson Nikola Tesla corp. & University of Zagreb, Croatia); Vedrana Jankovic, Ruzica Zec (University of Zagreb, Croatia)	500
Case Study on Performance of a Group Communication System in the realm of Voice over IP Stefan Kohlhauser, Thomas Turek, Josef Mitterbauer, Heimo Zeilinger (Vienna University of Technology, Austria); Michael Kreilmeier (Frequentis AG, Austria)	507

'AcXY]b[: T]Yrf]b['DfY]WUhg'7 ca dcg]J]cb k]h :]b]hY GHUhg'5 i lca UH'.....) %&
ÁT æ[ÁS^[* læ[á^ÆS^ a aOä[á a:æ[|çä ÁJä[