

# **2011 5th International Conference on Signal Processing and Communication Systems**

## **(ICSPCS 2011)**

**Honolulu, Hawaii, USA  
12-14 December 2011**



**IEEE Catalog Number: CFP1190G-PRT  
ISBN: 978-1-4577-1179-4**

# Contents

---

**Welcome Message from Chair of the TPC**

**Professor Marek Bialkowski - Obituary**

**Committees**

**List of Reviewers**

**Program**

**Abstract of Keynote Presentation**

## **Session 1: Wireless Communications 1**

***Error Propagation in a Multi-way Relay Channel '223***

Shama Islam (The Australian National University, Australia); Parastoo Sadeghi (The Australian National University, Australia)

***Global Optimization Algorithm and Sub-Optimal Algorithms for Power Allocation in Two-Way Relay Assisted Cognitive Radio Networks '22;***

Udit Pareek (Simon Fraser University, Canada); Daniel Lee (Simon Fraser University, Canada)

***A Lattice-Reduction-Aided MIMO Receiver with Virtual Channel Detection '23;***

Shogo Yoshikawa (Kyoto University, Japan); Satoshi Denno (Kyoto University, Japan); Masahiro Morikura (Kyoto University, Japan)

***Achieving Cooperative Diversity with Multiple Frequency Offset Estimation '246***

Ali A Nasir (Australian National University, Australia); Salman Durrani (The Australian National University, Australia); Rodney Andrew Kennedy (The Australian National University, Australia)

***Phase-Sequence Blind Estimation for Phase-Rotation based PAPR Reduction in MIMO Coded-OFDM Systems '24;***

Osamu Muta (Kyushu University, Japan)

## **Session 2: Signal Processing for Multimedia 1**

***Keyword Spotting based on the Analysis of Template Matching Distances '257***

Mohamed Barakat (University of Wollongong, Australia); Christian H Ritz (University of Wollongong, Australia); David Stirling (University of Wollongong, Australia)

***Spatio-Temporal Motion Field Descriptors for The Hierarchical Action Recognition System '263***

Tadashi Shibata (The University of Tokyo, Japan); Ruihan Bao (University of Tokyo & University of Tokyo, Japan)

***Fusion of Digital Map Traffic Signs and Camera-detected Signs '269***

Homayoun Jamshidi (Ford Research & Advanced Engineering, Germany); Thomas Lukaszewicz (Ford Research & Advanced Engineering, Germany); Amin Kashi (Ford Research & Advanced Engineering,

Germany); Ansel Berghuvud (Blekinge Institute of Technology, Sweden); Hans-Juergen Zepernick (Blekinge Institute of Technology, Sweden); Siamak Khatibi (Blekinge Institute of Technology, Sweden)

### ***Call Quality Monitoring for VoIP '276***

Todd Bayley (Western Australian Telecommunications Research Institute, Australia); Bijan Rohani (Western Australian Telecommunications Research Institute, Australia); Anders M Johansson (Swedish Defense Research Agency, Sweden); Manora Caldera (Curtin University of Technology, Australia); Hans-Juergen Zepernick (Blekinge Institute of Technology, Sweden)

### ***Limb-based Feature Description of Human Motion '27:***

Kevin Adistambha (University of Wollongong, Australia); Stephen Davis (University of Wollongong, Australia); Christian H Ritz (University of Wollongong, Australia); David Stirling (University of Wollongong, Australia)

## **Session 3: Communication Theory 1**

### ***A Virtual Layered Signal Processing Receiver for 16-QAM with Transmit Signal Rotation '286***

Satoshi Denno (Kyoto University, Japan); Masahiro Morikura (Kyoto University, Japan)

### ***Hybrid FEC and MDC Models for Low-Delay Packet-Loss Recovery '292***

Xiguang Zheng (University of Wollongong, Australia); Christian H Ritz (University of Wollongong, Australia)

### ***Performance of Turbo Equalization using Doped Accumulator with Channel Estimation '298***

Yasuhiro Takano (Japan Advanced Institute of Science and Technology, Japan); Khoirul Anwar (Japan Advanced Institute of Science and Technology (JAIST), Japan); Tad Matsumoto (Japan Advanced Institute of Science and Technology, Japan)

### ***On Models, Bounds, and Estimation Algorithms for Time-Varying Phase Noise '2: 4***

Mohammad Reza Khanzadi (Chalmers University of Technology, Sweden); Hani Mehrpouyan (Chalmers University of Technology, Sweden); Erik Alpman (Semcon AB, Sweden); Tommy Svensson (Chalmers University of Technology, Sweden); Dan Kuylenstierna (Chalmers University of Technology, Sweden); Thomas Eriksson (Chalmers University of Technology, Sweden)

### ***Enhancing the Performance of MIMO Space Time Coding Systems Using a Rake Receiver Based on Continuoues Wavelet Transform '2; 2***

Said E. El-Khamy (Alexandria University, Egypt); Ehab F. Badran (Arab Academy for Science and Technology and Maritime Transport (AAST), Egypt); Amira Zaki (Arab Academy for Science and Technology, Egypt)

## **Session 4: Wireless Networking 1**

### ***Sentiment Based Service Selection in Mobile Ad Hoc Networks '2; 9***

Nusrat Ahmed Surobhi (University of Sydney, Australia); Abbas Jamalipour (University of Sydney, Australia)

### ***Channel Estimation for Amplify-and-Forward Relaying with Spatially Correlated Antennas '325***

Nam Tran Nguyen (University of Saskatchewan & Univerisy of Nebraska-Lincoln, Canada); Ha Nguyen (University of Saskatchewan, Canada); Hoang D. Tuan (University of Technology, Sydney, Australia); David Dodds (University of Saskatchewan, Canada)

### ***A Testbed for QoE-based Multimedia Streaming Optimization in Heterogeneous Wireless Networks '32:***

Blazej Lewcio (Deutsche Telekom Laboratories, Berlin University of Technology, Germany); Sebastian Möller (TU Berlin, Deutsche Telekom Laboratories, Germany)

### ***Physical-Layer Network Coding with Limited Feedback Based on Decoding at Relay '339***

Selami Sahin (TUBITAK-BILGEM-UEKAE, Turkey); Umit Aygolu (Istanbul Technical University, Turkey)

### ***Non-Deterministic Preamble Sampling Periods for Low-Power Listening '347***

Thaddeus Owens Walker (Naval Postgraduate School, USA); Murali Tummala (Naval Postgraduate School, USA); John C. McEachen (Naval Postgraduate School, USA)

## **Session 5: Communication Theory 2**

### ***Semi-decentralized Beamforming Coordination for Multiuser Two-Tier Networks '352***

Youngmin Jeong (Kyung Hee University, Korea); Tony Q. S. Quek (Institute for Infocomm Research, Singapore); Hyundong Shin (Kyung Hee University, Korea)

### ***Natural Compression and Expansion Characteristics of Asynchronous Sigma-Delta ADC '359***

Dariusz Koscielnik (AGH University of Science and Technology, Poland); Marek Miskowicz (AGH University of Science and Technology, Poland); Marek Jableka (AGH University of Science and Technology, Poland)

### ***Efficient Computation of Spherical Harmonic Transform using Parallel Architecture of CUDA '367***

Weiyu Huang (The Australian National University, Australia); Zubair Khalid (The Australian National University, Australia); Rodney Andrew Kennedy (The Australian National University, Australia)

### ***Revisiting Slepian Concentration Problem on the Sphere for Azimuthally Non-Symmetric Regions '373***

Zubair Khalid (The Australian National University, Australia); Salman Durrani (The Australian National University, Australia); Rodney Andrew Kennedy (The Australian National University, Australia); Parastoo Sadeghi (The Australian National University, Australia)

## **Session 6: Signal Processing Algorithms**

### ***Sparse Bayesian Consensus-based Distributed Field Estimation '37:***

Thomas Buchgraber (Graz University of Technology, Austria); Dmitriy Shutin (Princeton University, USA)

### ***Clustering and Polygon Merging Algorithms for Fingerprinting Positioning in LTE '388***

Torbjörn Wigren (Ericsson AB, Sweden)

### ***Gravity Search Adaptive Algorithm '398***

Byung-Jae Kwak (Electronics and Telecommunications Research Institute, Korea); Nah-Oak Song (KAIST, Korea); Bumsoo Park (Electronics and Telecommunications Research Institute, Korea); Young-Hoon Kim (Electronics and Telecommunications Research Institute, Korea)

### ***Low Complexity Kalman Filtering for Inter-Cell Interference and Power Based Load Estimation in the WCDMA Uplink '3: 5***

Torbjörn Wigren (Ericsson AB, Sweden)

## **Poster Session 1: Communication Systems**

### ***Interconnection of IEEE 802.15.4 Islands through Free Space Optical Communication Links '3; 5***

Samer Shammaa (The University of Oklahoma, USA); Pramode K. Verma (The University of Oklahoma, USA)

### ***Physical Layer Network Coding for Information Exchange Over a Relay Node '424***

Harry Tan (The Aerospace Corporation, USA); Robert Liang (The Aerospace Corporation, USA); Joseph Han (Aerospace Corporation, USA)

### ***Symbol-error rate of selection combining over two-wave with diffuse power fading '429***

Beng Soon Tan (Nanyang Technological University, Singapore); Kwok Hung Li (Nanyang Technological University, Singapore); Kah Chan Teh (Nanyang Technological University, Singapore)

### ***Rotating a Circular Array Antenna to Improve Performance of OFDM Receivers '434***

Hironori Ogihara (Graduate School of Aichi Prefectural University, Japan); Hiroshi Yasukawa (Aichi Prefectural University, Japan)

### ***A Design of Authentication Architecture for Service Safety in Heterogeneous Network '438***

Sunghyun Yoon (ETRI, Korea); Soon-Seok Lee (Electronics and Telecommunications Research Institute, Korea); Sang-Ha Kim (Chungnam National University, Korea)

### ***Towards a short-range 60 GHz digital communication system for cost-effective high-rate applications '443***

Simone Ferlin Oliveira (Ludwig-Maximilians-Universität (LMU) & Leibniz-Rechenzentrum, Germany); Vitalian A. Danciu (Ludwig-Maximilians-Universität München, Germany)

### ***RF Loading Impact on WCDMA Jamming '44;***

Benjamin Peddicord (Naval Postgraduate School, USA); Weilian Su (Naval Postgraduate School, USA); John C. McEachen (Naval Postgraduate School, USA)

### ***Integer Frequency Offset Estimation for IEEE 802.15.4g SUN MR-OFDM PHY '45;***

Byounghak Kim (ETRI, Korea)

### ***Simulation and Measurement of Spatial Correlation in MIMO Systems with Ray Tracing '465***

Saliha Büyükkorak (Istanbul Technical University, Electrical and Electronics Engineering Faculty, Turkey); Gunes Karabulut Kurt (Istanbul Technical University, Turkey)

### ***End-to-End QoS Evaluation of IP over LEO/GEO Satellites Constellations for FTP '46:***

Lukman Audah (University of Surrey, United Kingdom); Zhili Sun (University of Surrey, United Kingdom); Haitham Cruickshank (University of Surrey, United Kingdom)

### ***Powermesh Medium Access Control Protocol '475***

Ehsan Seyedin (Simon Fraser University, Canada); Daniel Lee (Simon Fraser University, Canada); Shaoyun Yang (Simon Fraser University, Canada); Eric Lee (Simon Fraser University, Canada); David Boone (Awesense Wireless Inc., Canada); Mischa Steiner-Jovic (Awesense Wireless Inc., Canada)

### ***Radio Resources Reuse and Partitioning for OFDMA Multi-hop Relay Cellular Networks '485***

Saad Alabeedi (Carleton University, Canada); Roshdy H Hafez (Carleton University, Canada)

### ***Efficient 2-D Mesh Election Algorithms for OFDMA-Based Wireless Mesh Networks '493***

Wooram Shin (Electronics and Telecommunications Research Institute, Korea); Anseok Lee (ETRI, Korea); Hyunjae Kim (ETRI, Korea); Kwangjae Lim (ETRI, Korea); Dongseung Kwon (ETRI, Korea)

### ***The Crosspoint-Queued Switches with Virtual Crosspoint Queueing '499***

Kenji Yoshigoe (University of Arkansas at Little Rock, USA)

### ***Non-Orthogonal STBC for Four Transmit Antennas with High Coding Gain and Low Decoding Complexity '4: 4***

Nidhi Sharma (Indian Institute of Technology Delhi, India); Manav Bhatnagar (Indian Institute of Technology Delhi, India); Monika Agrawal (IIT, India)

**New Detector in Ultra short pulse Radar '4: 9**

Seyyed Mohammad Ali Tayaranian Hosseini (Amirkabir University of Technology, Iran); Hamidreza Amindavar (Amirkabir University of Technology (AUT), Iran)

**Efficient Methods of Interference Suppression for Spectrum Pooling Cognitive Radios using OFDM signals '4; 3**

Krzysztof Malon (Military University of Technology, Poland); Jerzy Lopatka (Military University of Technology, Poland)

## **Poster Session 2: Signal Processing**

***A comparative study for turbo code interleavers designed for short frame size and relatively high SNR channel '4; 9***

Saul Lazcano (National Autonomous University of Mexico, Mexico); Francisco García-Ugalde (National Autonomous University of Mexico, Mexico)

***Fixed codebook design for ACELP coder using algebraic trellis vector codes '523***

Sungjin Kim (Hanyang University, Korea); Heewan Park (Hanyang University, Korea); Sangwon Kang (Hanyang University, Korea); Thomas Fischer (Washington State University, USA)

***Binary Hybrid GA-PSO Based Algorithm for compression of Hyperspectral Data '526***

Pedram Ghamisi (Geodesy and Geomatics Engineering Faculty K N Toosi University of Technology, Iran); Farshid Sepehrband (Sharif University of Technology, International Campus Kish Island, Iran); Jeiran Choupan (Sharif University of Technology, International Campus Kish Island, Iran); Mohammad Mortazavi (Islamic Azad University of Abhar Faculty of School of Engineering and Technology, Iran)

***A comparative study on the optimization of global optimum active contours '534***

Jonas De Vylder (Ghent University, Belgium); Jan Aelterman (Ghent University, Belgium); Koen Douterloigne (Ghent University, Belgium); Wilfried Philips (Ghent University, Belgium)

***Dense Image Registration using Sparse Coding and Belief Propagation '544***

Aminmohammad Roozgard (University of Oklahoma, USA); Nafise Barzigar (University of Oklahoma, USA); Samuel Cheng (University of Oklahoma, USA); Pramode K. Verma (The University of Oklahoma, USA)

***Localization of Passive UHF RFID Label with Unscented Kalman Filter Based on Angle-Dependent RSSI Measurements '549***

Theresa Nick (TU Dortmund University, Germany); Md. Zahidul I. Khan (Technische Universität Dortmund, Germany); Jürgen Götze (TU Dortmund University, Germany); Werner John (System Integration Laboratory, Germany)

***Low Complexity Time Delay Estimation Using Propagator Based on Matrix Partitioning '556***

Seonghyun Jang (Hanyang university, Korea); Jong-Wha Chong (Hanyang University, Korea)

***A novel DWT-SVD video watermarking scheme using side view '559***

Charles Fung (Federal University of Technology, Brazil); Walter Godoy Jr. (Federal University of Technology - Paraná, Brazil)

***Global vs. Local Stability of Recurrent Neural Networks as Vector Equalizer '563***

Mohamad Mostafa (University of Ulm, Germany); Werner G. Teich (Ulm University, Germany); Juergen Lindner (Uni Ulm, Germany)

***An Eigenvalue Approach to Enhance Energy Detection in a Mobile Spectrum Monitoring Network '568***

Jan-Willem van Bloem (University of Twente, The Netherlands); Anne Hendrikse (University of Twente, The Netherlands); Roel Schiphorst (University of Twente, The Netherlands); Cornelis Slump (University of Twente, The Netherlands)

**Noise Estimation Based ON AN Adaptive Smoothing Factor For Improving Speech Quality In A Dual-microphone Noise Suppression System '574**

Xianxian Zhang (Broadcom Corporation, USA)

**A HMM-based Fundamental Motion Synthesis Approach for Gesture Recognition '579**

Wei Cheng Chen (Chung Gung University, Taiwan); Ren-yuan Lyu (Chang Gung University, Taiwan)

**Overlay Construction Based on Dynamic Coalition Formation Game in P2P networks '584**

Arezou Soltani Panah (Amirkabir University of Technology, Iran); Siavash Khorsandi (University, Iran)

**Deadlock in Process Networks: a Dynamic Detection and Resolution '592**

Maria Castillo (Public University of Navarre, Spain); Federico Fariña (Public University of Navarre, Spain); Alberto Córdoba (Universidad Pública de Navarra, Spain)

**Design of High-rate Long-length Structured QC-LDPC with Good Error Performance '59;**

Yin Xiong (HuaZhong University of Science and Technology, P.R. China); Zhaoxia Zheng (HuaZhong University of Science and Technology, P.R. China)

**A Bilinear Interpolation Mean Shift Small Target Tracking Algorithm '5: 5**

Yimei Kang (Software School, Beihang University, P.R. China); Guan Wang (Software School, Beihang University, P.R. China); Jiang Hu (Beijing Institute of Computer Technology and Application, P.R. China)

## **Session 7: Wireless Networking 2**

**Inter-Cell Interference Mitigation and Indoor Positioning System Based on Carrier Allocation Visible Light Communication '5: ;**

Hyun-Seung Kim (Yonsei University, Korea); Deok-Rae Kim (Yonsei University, Korea); Se-Hoon Yang (Yonsei University, Korea); Yong-Hwan Son (Yonsei University, Korea); Han Sang-Kook (Yonsei university, Seoul, Korea)

**Novel Length Aware Packet Aggregation and Coding Scheme for Multi-hop Wireless LANs '5; 8**

Yuki Sangenya (Kyoto University, Japan); Daisuke Umehara (Kyoto Institute of Technology, Japan); Masahiro Morikura (Kyoto University, Japan); Nobuaki Otsuki (Nippon Telegraph and Telephone Cooporation, Japan); Takatoshi Sugiyama (NTT, Japan)

**Evaluation of Supercapacitor Models for Wireless Sensor Network Applications '626**

Hengzhao Yang (Georgia Institute of Technology, USA); Ying Zhang (Georgia Institute of Technology - Savannah, USA)

**Device Connectivity Management for Mobile All-IP Broadband Network Architecture '632**

Marius Corici (Fraunhofer FOKUS, Germany); Jens Fiedler (Fokus Fraunhofer, Germany); Dragos Vingarzan (Fraunhofer-FOKUS Institute, Germany); Thomas Magedanz (Fraunhofer FOKUS, Germany)

**EDA based Joint Power, Subcarrier Allocation and Relay Assignment Scheme For Multiuser Relaying in OFDMA based Cognitive Radio Systems '639**

Jaspreet Oberoi (Simon Fraser University, Canada); Udit Pareek (Simon Fraser University, Canada); Muhammad Naeem (Simon Fraser University, Canada); Daniel Lee (Simon Fraser University, Canada)

**Network Formations to Bridge or Extend Wireless Sensor Networks '646**

Robert Severinghaus (Naval Postgraduate School, USA); Murali Tummala (Naval Postgraduate School, USA); John C. McEachen (Naval Postgraduate School, USA)

## **Session 8: Signal Processing for Multimedia 2**

### ***Sparseness Controlled Partially-Updated Proportionate Multi-Delay Adaptive Filter '652***

Kirill Sakhnov (Czech Technical University in Prague, Czech Republic); Ekaterina Verteletskaya (Czech Technical University in Prague, Czech Republic); Boris Simak (Czech Technical University in Prague & Faculty of Electrical Engineering, Czech Republic)

### ***A Dominant-Noise Discrimination System for Images Corrupted by Content-Independent Noises Without A Priori References '65:***

Robert Grou-Szabo (The University of Tokyo, Japan); Tadashi Shibata (The University of Tokyo, Japan)

### ***Error Correcting and Weighted Noise Tolerant Message Authentication Codes '666***

Obaid Ur-Rehman (University of Siegen, Germany); Natasa Zivic (University of Siegen, Germany); S. Amir Hossein A. E. Tabatabaei (University of Siegen, Germany); Christoph Ruland (University of Siegen, Germany)

### ***Video Acquisition between USB 2.0 CMOS Camera and Embedded FPGA system '674***

Abderrazek Abdaoui (Universite de Technology de Troyes, France); Krishna Gurram (Indian Institute of Technology, Rajasthan, India); Mehakdeep Singh (IIT Rajasthan, India); Abdelghani Errandani (Universite de technologie de Troyes, France); Eric Chatelet (Universite de technologie de Troyes, France); Abderrahim Doumar (University of Troyes, France)

### ***Can Your Eyebrows Tell Me Who You Are? '679***

Felix Juefei-Xu (Carnegie Mellon University, USA); Marios Savvides (Carnegie Mellon University, USA)

## **Session 9: Wireless Networking 3**

### ***MIMO AF Semi-blind Relay Networks with OSTBC Transmission over Nakagami-m Fading '687***

Hoc Phan (Blekinge Institute of Technology, Sweden); Trung Q. Duong (Blekinge Institute of Technology, Sweden); Hans-Juergen Zepernick (Blekinge Institute of Technology, Sweden)

### ***Short Huffman Codes Producing 1s Half of the Time '692***

Fabian Altenbach (RWTH Aachen University, Germany); Georg Böcherer (RWTH Aachen University, Germany); Rudolf Mathar (RWTH Aachen University, Germany)

### ***Optimization of Adaptive Modulation and Coding Techniques for OFDM Systems '697***

George Sworo (Drexel University, USA); Ryan Measel (Drexel University, USA); Moshe Kam (Drexel University, USA); Kapil Dandekar (Drexel University, USA)

### ***Efficient Data Replication Mechanism to Maximize Data Survivability in Unattended Wireless Sensor Networks '6: 2***

Maytham M. Hamood (University of Arkansas at Little Rock, USA); Kenji Yoshigoe (University of Arkansas at Little Rock, USA)

## **Session 10: Communication Theory 3**

### ***Chaos shift keying receiver with a polarization sensitive array '6: 8***

Georges Kaddoum (LACIME laboratory, Canada); Thomas Lambard (LACIME - Ecole de Technologie Supérieure, Canada); Francois Gagnon (Ecole de Technologie Supérieure, Canada)

### ***Analysis of Error in the Estimation of the Temporal ACF of Ergodic Sum-of-Cisoids Simulators for Mobile Fading Channels '6; 4***

Carlos A. Gutiérrez (Panamericana University, Mexico); Hermes Rodriguez (Panamericana University, Mexico); Melesio Miranda-Burgos (Universidad Panamericana, Mexico)

### ***Performance Analyses of Communications Receivers Employing Wavelet-Domain Minimum Mean-Squared Error Equalizers '723***

Canute Vaz (Rutgers, The State University of New Jersey, USA); David G. Daut (Rutgers University, USA)

***The Impact of Unknown Correlated Rayleigh Fading on the Information Rates of Dual-Hop Amplify and Forward Relay Channels '728***

MohammadAli Mohammadi (K.N.Toosi University of Technology, Iran); Parastoo Sadeghi (The Australian National University, Australia); Tharaka Anuradha Lamahewa (DSTO, Australia); Mehrdad Ardebilipour (Khajeh Nasir university, Iran)

***Time-of-Arrival, Angle-of-Arrival, and Angle-of-Departure Statistics of a Novel Simplistic Disk Channel Model '734***

Alireza Borhani (University of Agder, Norway); Matthias Pätzold (University of Agder, Norway)

## **List of Authors**