2009 4th International Conference on Cognitive Radio Oriented Wireless Networks and Communications

(CROWNCOM 2009)

Hanover, Germany
22 – 24 June 2009

IEEE Catalog Number: CFP0978B-PRT
ISBN: 978-1-4244-3423-7

TABLE OF CONTENTS

Capacity Achievable by Spectrum Sharing with Adaptive Transmit Power Control: Based on Field Measurements 1
Hiromasa Fujii, Takahiro Asai, Yukihiko Okumura, Ryoko Kawauchi, Ikuo Hiradate, Hayato Akazawa, Takayuki Sotoyama

A Study on the Application of Wavelet Packet Transforms to Cognitive Radio Spectrum Estimation 7
D. D. Ariananda, M. K. Lakshmanan, H. Nikookar

A Context-Aware and Intelligent Dynamic Channel Selection Scheme for Cognitive Radio Networks 13
Kok-Lim Alvin Yau, Peter Komisarczuk, Paul D. Teal

Wavelet Packet Multi-Carrier Modulation MIMO Architecture for Spectrum Pooling Systems 19
M. K. Lakshmanan, I. Budiarjo, H. Nikookar

A Quantitative Assessment of Wireless Spectrum Measurements for Dynamic Spectrum Access 25
Srikanth Pagadarai, Alexander M. Wyglinski

Performance Comparison of Time Delay Estimation for Whole and Dispersed Spectrum Utilization in Cognitive Radio Systems 30
Hasari Celebi, Khalid A. Qaraqe, Huseyin Arslan

Research Project Concerning Cooperative Heterogenious Radio Networks for Reliability Improvements 36
Kanshiro Kashiki, Kazunori Takeuchi, Akira Yamaguchi

User Clusters Based Hierarchical Cooperative Spectrum Sensing in Cognitive Radio Networks 41
Bin Shen, Chengshi Zhao, Zheng Zhou

A Novel Algorithm for Blind Adaptive Recognition between 8-PSK and π/4-Shifted QPSK Modulated Signals for Software Defined Radio Applications 47
A. Abavisani, M. Soleimani, V. Tabatabavakili

Enhancing Cognitive Radios with Spatial Statistics: From Radio Environment Maps to Topology Engine 53
Janne Riihijärvi, Petri Mähönen, Marina Petrova, Vinay Kolar

Traffic Studies for DSA Policies in a Simple Cellular Context with Packet Services 59
Hany Kamal, Marceau Coupechoux, Philippe Godlewski

A Frequency Rendezvous Approach for Decentralized Dynamic Spectrum Access Networks 65
Di Pu, Alexander M. Wyglinski, Mike McLernon

Cyclostationary Multitone Beacon Signal for Opportunistic Spectrum Access 71
Hanwen Cao, Qipeng Cai, João Paulo Miranda, Thomas Kaiser

Optimal Power Allocation in Joint Spectrum Underlay and Overlay Cognitive Radio Networks 77
Haipeng Yao, Zheng Zhou, He Lie, Luyong Zhang

Cognitive Radio with Reinforcement Learning Applied to Heterogeneous Multicast Terrestrial Communication Systems 82
Mengfei Yang, David Grace

On Regulation of Spectrum Sharing: An Analysis Supporting a Distributed Pilot Channel 88
Jens P. Elsner, Leonid Chaichenets, Hanns-Ulrich Dehner, Friedrich Jondral

Coexistent Intra-Symbol SMSE Waveform Design: Variation in Waveform Update Latency and Update Rate 94
E. C. Like, M. A. Temple

A Partial Spectrum Transmission Method for Dynamic Spectrum Access 101
Yasunori Futatsugi, Shousei Yoshida, Masayuki Ariyoshi

The Smart Radio Channel Change Protocol 107
Mark D. Silvius, Rohit Rangnekar, Allen B. MacKenzie, Charles W. Bostian

Eigenvalues Based Spectrum Sensing Against Untrusted Users in Cognitive Radio Networks 113
Shaoyi Xu, Yanlei Shang, Haiming Wang

An Approach for Realizing Future Internet with Cognitive Technologies 119
Panagiotis Demestichas, Aggelos Saatsakis, Wolfgang Koening

Performance of Spectrum Sensing Using Welch's Periodogram in Rayleigh Fading Channel 125
Marja Mtinmikko, Heli Sarvanko, Miia Mustonen, Aarne Mämmelä

Interference-Throughput Tradeoff in Dynamic Spectrum Access: Analysis Based on Discrete-Time Queuing Subjected to Bursty Preemption 130
Yuhua Xu, Jinlong Wang, Qihui Wu

Aggregated Interference Control for Cognitive Radio Networks Based on Multi-Agent Learning 136
Ana Galindo-Serrano, Lorenza Giupponi

Performance Evaluation of Cognitive Radio Spectrum Sensing Using Multitaper-Singular Value Decomposition 142
Owayed A. Alghamdi, Mosa A. Abu-Rgheff

Deepen Spectrum Notch of CR Signals with Partial Response System 148
Bing Liang, Luyong Zhang, Zheng Zhou

A Component-Based Architecture for Cognitive Radio Resource Management 153
Mohamed Ahmed, Vinay Kolar, Marina Petrova, Petri Mähönen, Stephen Hailes

Smart Femto-Cell Controller Based Distributed Cognitive Pilot Channel 159
Markus Mueck, Christian Rom, Wen Xu, Andreas Polydoros, Nikos Dimitrious, Holger Jaekel, Tobias Renk, Friedrich Jondral, Ana Sierra Diaz, Radoslaw Piesiewicz, Hanna Bogucka, Sven Zeisberg, Peter Jung

Cooperative Spectrum Sensing Using Quantized Soft Decision Combining 164
Miia Mustonen, Marja Matinmikko, Aarne Mämmelä

Implementation of Cyclostationary Feauture Detector for Cognitive Radios 169
Vesa Turunen, Marko Kosunen, Anu Huttunen, Sami Kallioinen, Petri Ikonen, Aarno Pärssinen, Jussi Ryynänen

Opportunistic Band Sharing for Point-to-Point Link Connection of Cognitive Radios 173
Hyewon Lee, Kwanghun Han, Youngwoo Hwang, Sunghyun Choi

Cognitive Radio-Enabled Distributed Cross-Layer Optimization via Genetic Algorithms 179
Si Chen, Alexander M. Wyglinski

Exact Non-Asymptotic Threshold for Eigenvalue-Based Spectrum Sensing 185
Federico Penna, Roberto Garello, Davide Figlioli, Maurizio A. Spirito

A Hardware Demonstrator of a Cognitive Radio System Using Temporal Opportunities 190
Lionel Biard, Dominique Noguet, Tassilo Gernandt, Paulo Marques, Atílio Gameiro

Research and Development on Heterogeneous Type and Spectrum Sharing Type Cognitive Radio Systems 196
Hiroshi Harada, Homare Murakami, Kentaro Ishizu, Stanislav Filin, Goh Miyamoto, Ha Nguyen Tran, Yohannes D. Alemseged, Chen Sun

On the Statistics of Cognitive Radio Capacity in Shadowing and Fast Fading Environments 203
Muhammad Fainan Hanif, Peter Smith, Mansoor Shafi

Signal Classification Based on Spectral Redundancy and Neural Network Ensembles 209
Luca Bixio, Marina Ottonello, Hany Sallam, Mirco Raffetto, Carlo S. Regazzoni

Successive Interference Cancelation and Strongest Users Detectors for Randomly Spread DS-CDMA 215
Avi Steiner, Shlomo Shamai, Uri Katz, Valentin Lupu

Security Threats to Signal Classifiers Using Self-Organizing Maps 221
T. Charles Clancy, Awais Khawar

Locally Optimum Detection for Spectrum Sensing in Cognitive Radio 227
Mounir Ghogho, Marco Cardenas-Juarez, Ananthram Swami, Tim Whitworth

On the Benefits of Bandwidth Limiting in Decentralized Vector Multiple Access Channels 233
Samir M. Perlaza, Mérouane Debbah, Samson Lasaulce, Hanna Bogucka

Resource Allocation and Packet Scheduling in OFDMA-Based Cellular Networks 239
Emanuel B. Rodrigues, Fernando Casadevall, Pawel Sroka, Marco Moretti, Giulio Dainelli

Performance Comparison of Antenna Selection Algorithms in WiMAX with Link Adaptation 245
Aamir Habib, Christian Mehlführer, Markus Rupp

Cyclostationarity Feature Matched Detection and Application to IFDMA System 250
Wensheng Zhang, Yukitoshi Sanada

Optimal Power and Bit Allocation Schemes for Ultra Wideband Cognitive Radio Systems 255
Liaoyuan Zeng, Sean McGrath, Eduardo Cano

Cognitive Channel and Power Allocation: Information Theoretic Bounds 261
Alister G. Burr

Significant Cycle Frequency Based Feature Detection for Cognitive Radio Systems 267
Shen Da, Gan Xiaoying, Chen Hsiao-Hwa, Qian Liang, Xu Miao

Modified Criterion of Hypothesis Testing for Signal Sensing in Cognitive Radio 271
Mohammed Alamgir, Michael Faulkner, Phillip Conder, Peter Smith

A Proposal of Adaptive Traffic Route Control Scheme in QoS Provisioning for Cognitive Radio Technology with Heterogeneous Wireless Systems 275
Toshiaki Yamamoto, Tetsuro Ueda, Sadao Obana

Optimal Admission Control in Cognitive Radio Networks 281
Diego Pacheco-Paramo, Vicent Pla, Jorge Martinez-Bauset

Multiantenna Detection of Multicarrier Primary Signals Exploiting Spectral a Priori Information 288
Roberto López-Valcarce, Gonzalo Vazquez-Vilar, Marcos Álvarez-Díaz

Clustered Hybrid Energy-Aware Cooperative Spectrum Sensing (CHESS) 294
Luca De Nardis, Daniele Domenicali, Maria-Gabriella Di Benedetto

Time Divisional and Time-Frequency Divisional Cooperative Spectrum Sensing 300
Sithamparanathan Kandeepan, Abdur Biswas Rahim, Tuncer C. Aysal, Radoslaw Piesiewicz

Distributed Spectrum Management Based on Reinforcement Learning 306
Francisco Bernardo, Ramon Agustí, Jordi Pérez-Romero, Oriol Sallent

n-ratio' Logic Based Cooperative Spectrum Sensing Using Double Threshold Energy Detection 312
Shishir Kumar Srivastava, Adrish Banerjee

A Novel Hybrid Overlay/Underlay Cognitive Radio Waveform in Frequency Selective Fading Channels 318
Vasu Chakravarthy, Xue Li, Roulin Zhou, Zhiqiang Wu, M. A. Temple

A Cooperative Sensing Area Expansion Using Orthogonal Frequency Based Information Collection Method 324
Mai Ohta, Takeo Fujii, Kazushi Muraoka, Masayuki Ariyoshi

Reinforcement Learning Based Spectrum-Aware Routing in Multi-Hop Cognitive Radio Networks 330
Bing Xia, Muhammad Husni Wahab, Yang Yang, Zhong Fan, Mahesh Sooriyabandara

On the Co-Existence of Dual-Polarized CDMA Networks 335
Jean-Michel Dricot, François Horlin, Philippe De Doncker

Using Cognitive Radio to Deliver 'Green' Communications 341
David Grace, Jingxin Chen, Tao Jiang, Paul D. Mitchell

Spectral Occupation Measurements and Blind Standard Recognition Sensor for Cognitive Radio Networks 347
Miguel López-Benítez, Fernando Casadevall, Anna Umbert, Jordi Pérez-Romero, Rachid Hachemani, Jacquez Palicot, Christophe Moy

Seamless Spectrum Handover Improving Cell Outage in Cognitive Radio Systems 356
Ohyun Jo, Hyun Ho Choi, Dong-Ho Cho

Author Index