

Editorial for Chinacom2015 Special Issue

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Editorial:

This special issue features twelve selected papers with high quality from the conference Chinacom 2015, which was held in Shanghai, China, August 15–17, 2015. This first article, “Optimal Energy Harvesting-based Weighed Cooperative Spectrum Sensing in Cognitive Radio Network”, co-authored by Xin Liu, Kunqi Chen, Junhua Yan and Zhenyu Na, proposes an energy harvesting-based weighed cooperative spectrum sensing method to improve spectrum sensing performance to primary user (PU) and decrease energy wastage of secondary user (SU) in cooperative spectrum sensing in cognitive radio (CR) network.

The second article titled “An Adaptive Power Control Scheme for Multicast Service in Green Cellular Railway Communication Network” from Jiying Huang, Zhangdui Zhong and Jianwen Ding, considers enhanced multimedia broadcast multicast service (E-MBMS) for high speed

data handling. In this paper, in order to achieve an energy efficient solution for wireless cellular railway network, they propose an optimal power control solution to adjust eNodeB’s transmission power adaptively based on actual signal to interference plus noise ratio (SINR) for multimedia broadcast multicast service. They also establish the system model and propose the optimization algorithms to adjust the E-MBMS transmitting power.

The third article is titled “QoS Guaranteed Resource Allocation Scheme for Cognitive Femtocells in LTE Heterogeneous Networks with Universal Frequency Reuse”. The authors (Salman Saadat, Da Chen and Tao Jiang) propose a novel resource allocation scheme for co-channel interference avoidance in LTE heterogeneous networks with universal spectrum reuse, where both macro users (MUs) and cognitive femto base stations (FBSs) within the same macrocell coverage can dynamically reuse whole spectrum.

The fourth article, “A 16 MHz, 59.2 ppm/°C CMOS DLL-assisted VCO with Improved Frequency Stability Towards Single Chip Wireless IOT,” from Yan Li, Zhen Cao, Shaohua Liu, Lai Jiang and Hang Yu, reports a 16 MHz, highly stable voltage controlled oscillator (VCO) in this paper. The proposed VCO consists of three cross-coupled RC stages, and is fully compatible with standard CMOS process. A positively biased PN junction with negative temperature coefficient is incorporated in the design to compensate frequency drift. In addition, a delay locked loop (DLL) directly following the VCO is utilized to further improve the output stability caused by temperature variations.

In the fifth article with the title “Resource Allocation for Uncoded Multi-user Video Transmission over

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Wireless Networks”, the authors (Dian Liu, Hao Cui, Jun Wu and Chong Luo) propose an uncoded video transmission framework to deliver the multi-user video over wireless networks. In order to evaluate the overall performance of multi-user network more practically, three optimization strategies are proposed in this paper: 1) minimizing the total distortion; 2) minimizing the maximal distortion; 3) minimizing the summation of square root distortion.

The sixth article, “Distributed Approximation Algorithms for Spectrum Allocation in Wireless Ad Hoc Networks,” from Yalin Shi, Jian Chen, Limin Wang, Ming Chen and Xiaoyan Zhang, considers the spectrum allocation problem and allocates the least number of spectrum blocks in a field to ensure the service on any random k locations simultaneously. Their solution to the spectrum allocation problem is the minimum k -Roman dominating set. They propose two distributed algorithms for the issue of spectrum allocation in wireless ad hoc networks. One is a distributed 6 k -approximation algorithm for the spectrum allocation of satisfying any random k ($k \geq 2$) locations in the class of unit ball graphs. The other one is a better distributed algorithm for finding a $(1 + \epsilon)$ -approximation for the spectrum allocation problem of serving any random two locations, in the class of growth-bounded graphs.

The seventh article is titled “SWIFT: A Computationally-Intensive DSP Architecture for Communication applications”. The authors (Haoqi Ren, Zhifeng Zhang and Jun Wu) introduce the VLIW feature, SIMD capability of SWIFT, the vector register file, store buffer, and multi-banked memories. Then, the structure of nine stages pipeline with powerful bypass logics is disclosed. Finally, the hardware implementation of SWIFT is shown. In SWIFT, computation, data access and control operation can be handled orthogonally. With the efficient SIMD feature, multi-accessible local data memories, and the fine-tuned VLIW instructions, it is possible to achieve high utilization of the DSP data path in SWIFT.

In the eighth article with the title “GRT-duplex: A Novel SDR Platform for Full-Duplex WiFi,” the authors (Haoyang Wu, Tao Wang, Jiahua Chen, Sanjun Liu, Shuyi Tian, Songwu Lu, Meng Ma, Lingyang Song and Bingli Jiao) present GRT-duplex, a novel full-duplex wireless platform for the WiFi family, which possesses both flexibility and real-time features. They have also prototyped a full-duplex WiFi instance on this platform, which delivers throughput up to 92.45Mbps, and the frame interaction intervals can be as small as 9.85us.

The ninth article, “The Performance Evaluation of Hybrid Localization Algorithm in Wireless Sensor Networks,” from Chungang Liu, Songlin Liu, Wenbin Zhang and Donglai Zhao, considers that wireless sensor networks has become a key technology for different kinds of smart environments. The paper discusses the drawbacks of some typical works on localization, and proposes a hybrid localization algorithm integrated with approximate point in triangle (APIT) and distance vector-hop (DV-HOP). To address the positioning accuracy and coverage rate, the objectives of this paper are three folds: firstly, adopting angle detection to determine the exact direction of unknown nodes. Then, the APIT algorithm is adopted over all unknown nodes within the triangle and its localization error is reduced from 14.7215 m in conventional APIT to 3.2348 m in the considered scenario. Finally, the DV-HOP algorithm is adopted with different weights for the nodes within the minimum hops, and localizes the rest unknown nodes in WSN with localization accuracy increased by 49 %.

The tenth article, titled “Compressive Sensing Based Soft Video Broadcast Using Spatial and Temporal Sparsity,” is from Wenbin Yin, Xiaopeng Fan, Yunhui Shi and Debin Zhao. In order to overcome cliff effects and provide a graceful degradation to multi-receivers, in this paper, they use the nonlocal sparsity and hierarchical GOP structure to propose a novel CS based soft video broadcast scheme.

The eleventh article, titled “Joint Power Allocation in Wireless Relay Networks: the Case of Hybrid Digital-Analog Transmission,” is from Hancheng Lu, Xinzhu Kong, Xiaoda Jiang and Baiyang Chen. This paper focus on HDA transmission in wireless relay networks (WRNs). The authors propose a power allocation scheme for HDA transmission in a three-node WRN (3-WRN) to eliminate the quality saturation effect and improve the distortion performance.

The last article titled “A Store-and-Forward Cooperative MAC for Wireless Ad Hoc Networks” is from Yun Li, Shufang Song and Mahmoud Daneshmand. In this work, a simple store-and-forward cooperative MAC (SFC-MAC) is proposed, which is fully compatible with IEEE 802.11 MAC. Furthermore, an model is built to analyze the performance of relay methods in the ideal channel and imperfect channel. The analysis and simulation results show that the proposed simple SSF-MAC can increase the system throughput.

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Dr. Xin-Lin Huang (S'09-M'12-SM'16) is currently an Associate Professor with the Department of Information and Communication Engineering, Tongji University, Shanghai, China. He received the M.E. and Ph.D. degrees in information and communication engineering from Harbin Institute of Technology (HIT), China, in 2008, and 2011, respectively. His research focuses on massive MIMO, cognitive radio networks, machine learning, and multimedia transmission. He published over 50 research papers and 4 patents in these fields. Dr. Huang was a recipient of Scholarship Award for Excellent Doctoral Student granted by Ministry of Education of China in 2010, Best PhD Dissertation Award from HIT in 2013, Shanghai High-level Overseas Talent Program in 2013, and Shanghai "Chenguang" Scholar Program in 2014. From Aug. 2010 to Sept. 2011, he was supported by China Scholarship Council to do research in the Department of Electrical and Computer Engineering, University of Alabama (USA), as a visiting scholar. He was invited to serve as Session Chair for the IEEE ICC2014. He served as a Guest Editor for IEEE Wireless Communications. He is a Senior Member of the IEEE

maintained good cooperation with international laboratories and well-known enterprises such as NASA, IBM, Cisco Systems, Boeing, Huawei, etc.



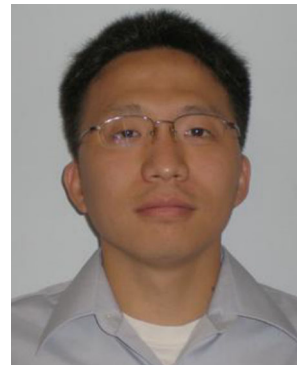
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