
FOREWORD

Special Section on Cognitive Radio and Heterogeneous Wireless Networks in Conjunction with Main Topics of CrownCom2011

Radio spectrum is being exhausted due to the growing demand for wireless broadband communications. To cope with this problem, a paradigm shift from conventional exclusive use of frequency resources to flexible frequency utilization is indispensable for future deployment of wireless networks. Cognitive radio and heterogeneous wireless networks are key technologies that allow the emerging paradigm of flexible frequency spectrum usage to be implemented in the real world. By acquiring knowledge of the radio frequency environment, cognitive radio terminals may dynamically select the optimal frequency and transmission parameters towards cooperation of networks. Technologies for heterogeneous wireless networks must also allow seamless roaming among wireless systems. On June 1–3, 2011, the 6th international conference on cognitive radio oriented wireless networks and communications (CrownCom2011) was held in Osaka, Japan and many high quality papers were presented. To facilitate active discussion and further promote research and development, this special section was planned.

In response to a call for papers, 51 papers and 12 letters were received. Based on peer-to-peer review, two invited papers on the latest standardization activities of cognitive radio in ITU-R, and on the results on the performance of a new algorithm for distributed dynamic spectrum allocation, 25 papers and 4 letters were accepted for the publication. These papers cover a wide range of topics including dynamic spectrum access and management, cognitive networks, architecture, and implementations, as well as regulation, standardizations, and applications. The editorial committee hopes that this issue will provide useful information and promote innovation in the field of cognitive radio and networks.

As the guest editor-in-chief, I would like to express my sincere appreciation to all the authors for their contributions and to all the editors and reviewers for their voluntary activities.

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Kazuhiro Uehara, Guest Editor-in-Chief

Kazuhiro Uehara (*Senior Member*) received the B.E., M.E., and Ph.D. degrees from Tohoku University, Miyagi, in 1987, 1989, and 1992, respectively. In 1992, he joined NTT and engaged in research on array antennas, active antennas and indoor propagation in the millimeter-wave and microwave frequency bands. From 1997 to 1998, he was a Visiting Associate at the Department of Electrical Engineering, California Institute of Technology, USA. From 2003 to 2010, he was a part-time lecturer at the Department of Electrical Engineering, Tohoku University. He is currently a Senior Research Engineer, Supervisor, Group Leader, Wireless Systems Innovation Laboratory, NTT Network Innovation Laboratories, and his current interests include research and development of software defined radio and cognitive radio systems and millimeter-wave multi-gigabit wireless systems. From 2009 to 2011, he was Chair of the Technical Committee on Software Radio, TCSR, IEICE Communication Society. He was a General Co-Chair of the 6th International Conference on Cognitive Radio Oriented Wireless Networks and Communications, CrownCom, June 2011. He was a Guest Editor-in-Chief of the Special Section on Wireless Distributed Networks, IEICE Transactions on Communications, December 2010. From 2011, he is an Adviser of the TCSR, and a Councilor of Tokyo Section, IEICE. He received the Young Researcher's Award, the Best Paper Award, the Communications Society Outstanding Contributions Award, and the Communications Society Distinguished Contributions Award from IEICE in 1995, 1997, and twice in 2011, respectively, the 1st YRP Award, and the 18th Telecom System Technology Award from the Telecommunications Advancement Foundation in 2002 and 2003, respectively. He is a senior member of IEEE.

