Call for Papers
IEEE Signal Processing Society
IEEE SIGNAL PROCESSING MAGAZINE

Special Issue on Signal Processing for the 5G Revolution

Cellular communication systems are continuing to incorporate advanced signal processing techniques. Third generation cellular systems are already widely deployed and are being followed by fourth generation (4G) systems. Since 4G cellular technology development is considered to have concluded in 2011, the attention of the research community is shifting towards what will be the next set of innovations in wireless communication technologies which we will refer to collectively as 5G (fifth generation technologies). Given a historical 10-year cycle for every generation of cellular advancement, it is expected that networks with 5G technologies will be deployed around 2020. While 4G standards were designed to meet requirements issued by the International Telecommunications Union-Radio, no definition for 5G is available presently. Experts vary in opinion whether the next generation of cellular networks will continue to enhance (peak) service rates further, or focus on spectral efficiency enhancements, or move to newer metrics such as energy efficiency, or even define new metrics around service quality experience. There is also the possibility that 5G will enable digital sensing, communication, and processing capabilities to be ubiquitously embedded into everyday objects, turning them into the Internet of Things (IoT, or machine-to-machine, M2M). In this new paradigm, smart devices will collect data, relay the information or context to each another, and process the information collaboratively over the 5G cellular networks. No matter what the eventual metric or system, it is certain that signal processing will play an important role in the features that define 5G.

This special issue is to present recent advances in signal processing for communication with an emphasis on signal processing techniques that may be relevant for emerging 5G cellular systems. Submissions of comprehensive overviews of methodological advances are encouraged, as well as more application-oriented contributions. Original papers will focus on potentially disruptive technologies that may form the core of 5G systems, as well as established techniques found in 4G systems.

Topics of interest include (but are not limited to):

- Physical-layer issues in 5G systems
- Higher-layer issues in 5G systems
- Interference coordination, avoidance, and mitigation for 5G systems
- Self organizing networks and system optimization for 5G systems
- Cellular and new network architectures
- Machine-to-Machine technologies in 5G systems
- Millimeter wave MIMO, full dimension MIMO, and massive MIMO
- Full Duplex Communication in 5G systems
- Novel features in 5G systems with an emphasis in signal processing
- Applications in 5G systems with advanced signal processing approaches

Submission Process

The Special Issue seeks to offer broad coverage of the field including most recent developments in both theory and applications. Submissions of comprehensive overviews of methodological advances are strongly encouraged, as well as papers dealing with new and emerging applications. All submissions will be peer reviewed according to the IEEE and Signal Processing Society guidelines. Submitted articles should not have been published or be under review elsewhere. Manuscripts should be submitted online at http://mc.manuscriptcentral.com/sps-ieee using the Manuscript Central interface, see http://www.signalprocessingsociety.org/publications/periodicals/spm/ for guidelines and information.

Important Dates

White papers (4 pages) due: October 7, 2013
Invitation notification: November 4, 2013
Manuscripts due: January 15, 2014
Acceptance notification: March 15, 2014
Revised manuscripts due: April 15, 2014
Final acceptance notification: May 30, 2014
Final manuscripts due: June 30, 2014
Publication due: **November 2014**

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