

IEEE JOURNAL ON SELECTED TOPICS ON SIGNAL PROCESSING

Call for Papers

SIGNAL PROCESSING ADVANCES FOR NON-ORTHOGONAL MULTIPLE ACCESS IN NEXT GENERATION WIRELESS NETWORKS

Non-orthogonal multiple access (NOMA) has received considerable attention in both industry and academia for addressing the dramatically increasing demand for massive user access, heterogeneous data traffic, high bandwidth efficiency, and ultra-low latency services. The key concept of NOMA is to accommodate multiple users in the same orthogonal resource block, such as time slots, frequency bands, and spatial directions. By doing so, high bandwidth efficiency and massive connectivity can be attained. Because of its superior performance, NOMA has already been included in the 3rd generation partnership project long-term evolution advanced (3GPP-LTE-A) standard, the next general digital TV standard (ATSC 3.0), and the 5G New Radio (NR) standard. However, realizing the full potential of NOMA in practical communication scenarios is challenging, and there are still many important open problems that have not been solved. For example, in NOMA, users are sharing the same bandwidth resource block and can cause strong interference to each other. Therefore, sophisticated digital signal processing algorithms for multi-user detection and interference control have to be developed for successful implementation of NOMA in next generation wireless systems, where the key features of NOMA networks should be efficiently exploited. In addition, the multi-user nature of the NOMA principle implies that a NOMA network is a typical example of complex systems, to which recent advances in machine learning and big data signal processing promise significant advantages in terms of the performance-complexity tradeoff.

This special issue seeks to bring together contributions from researchers and practitioners on signal processing techniques for NOMA systems, and provide a forum for the latest research, innovations, and applications on next generation wireless networks, which will bridge the gap between theory and applications. We solicit high-quality original research papers on topics including, but not limited to:

- Machine learning and big data aided adaptive NOMA
- Multiple antenna signal processing techniques for NOMA
- Cooperative signal processing for NOMA
- Resource allocation for NOMA assisted wireless caching and mobile edge computing
- Security provisioning for NOMA with interference exploitation
- Advanced signal processing algorithms for cross-layer design of NOMA
- Energy-efficient signal processing design for NOMA
- Signal detection and joint transceiver design for NOMA
- Low-complexity channel estimation for NOMA
- NOMA for Internet-of-Things (IoT)
- Signal processing for NOMA aided UAV and V2X communications
- Invoking NOMA techniques towards ultra-reliable low-latency communications
- Compatibility of NOMA with other 5G key technologies
- Advanced design of channel coding and modulation for interference exploitation in NOMA.

Prospective authors are invited to visit <http://www.signalprocessingsociety.org/publications/periodicals/jstsp/> for information regarding paper submission. Manuscripts should be submitted using Manuscript Central system at <http://mc.manuscriptcentral.com/jstsp-ieee>. Manuscripts will be peer reviewed according to the standard IEEE process.

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