EURASIP Journal on Wireless Communications and Networking

Special Issue on Optimization Techniques in Wireless Communications

Call for Papers

Recent advances in nonlinear optimization facilitate progress in many areas of communications. In wireless and mobile communications, this progress provides opportunities for introducing new standards and improving existing services. Supporting multimedia traffic with end-to-end quality-of-service (QoS) guarantee over multihop wireless networks (e.g., wireless sensor networks, mobile ad hoc networks, wireless mesh networks) is a challenging technical problem due to various factors and constraints: limited bandwidth and battery power, channel variability and user mobility, protocol and standard compatibility, fairness consideration, desire for guaranteed QoS, higher data rates, system robustness, and seamless service, to name a few. In addition, several wireless networks may be allowed to coexist and share the same spectrum, which leads to the requirement of minimal (acceptable) interference between different networks.

Optimization methods have been recognized as extremely useful techniques helping to address the aforementioned challenges. Convex optimization techniques are especially popular since they often help with gaining insight into the optimal solution structure and developing fast implementations. However, optimization for wireless communications is not limited only by convex optimization and techniques such as monotonic optimization and others have also attracted considerable attention. Regardless of the type of optimization technique applied, a variety of issues need to be considered when designing wireless communications system. Indeed, such problems as complexity, convergence, robustness, scalability, ease of implementation, predictability (if relaxations or approximations are used), and more are the issues. Therefore, although the general theory of optimization is relatively well developed, any particular optimization problem in wireless communications typically requires additional extensive studies

This issue solicits high-quality unpublished research papers on applications of optimization methods for addressing important problems in designing wireless communication systems. A general preference will be given to system-oriented papers with a particular focus on optimization methods. Topics include (but are not limited to):

- Optimization techniques for resource allocation in wireless systems
- Optimization techniques for beamforming and precoding in wireless systems
- Optimization techniques for MIMO detection
- Optimization techniques in cooperative communications
- Optimization techniques for cognitive radio systems
- Optimization techniques for protocol design and analysis
- Cross-layer optimization
- Robust optimization algorithms in wireless communications
- Decentralized optimization algorithms in wireless communications

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