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Intelligent Connectivity for Smart World

Call for Papers for
Symposium on Selected Areas in Communications
Machine Learning for Communications Track

TRACK CO-CHAIRS:

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SCOPE AND MOTIVATION:

Machine learning has become a prominent and rapidly growing research topic in the field of wireless communications. The application of machine learning to wireless communication systems is expected to deeply transform wireless communication engineering. In a discipline traditionally driven by well-established mathematical models, machine learning brings along a methodology that is data-driven and carries a major shift in the way wireless systems are designed and optimized. Research in the field of machine learning for wireless communications is still at its infancy. While machine learning has already been widely applied in domains such as self-organized networks, sensing or cognitive radio, its use is only emerging or not yet fully investigated in many research areas in wireless communications, and its viability for many such wireless applications continues to increase as the basic enabling technology and methods from machine learning continues to grow. The goals of this symposium are to provide a platform for the latest results in the field of machine learning for wireless communications, shed light on the challenges and prospect of this new research field, open new perspectives, and inspire innovation. The call for papers is driven towards the needs of 5G or beyond-5G wireless networks and associated new communication concepts in which machine learning has the potential to be a true enabler. Furthermore, we encourage submissions in algorithmic developments in machine learning that are motivated by the specific constraints posed by wireless communications (e.g., low latency, massive connectivity, distributed, and coordinated architectures).

TOPICS OF INTEREST:

We invite submissions of unpublished work related to application of ML for wireless communications. We do not restrict the type of ML techniques. A non-exhaustive list of relevant topics is given as follows:

- Machine learning driven design and optimization of modulation and coding schemes
- Machine learning techniques for channel estimation, channel modeling, and channel prediction
- Machine learning based enhancements for difficult-to-model communication channels, such as molecular, biological, multi-scale, and other non-traditional communications mediums

- Transceiver design and channel decoding using deep learning
- Machine learning driven techniques for radio environment awareness and decision making
- Machine learning for Internet of Things (IoT) and massive connectivity
- Machine learning for ultra-reliable and low latency communications (URLLC)
- Machine learning for massive MIMO, active and passive large intelligent surfaces (LIS)
- Machine learning for cell-free wireless systems
- Machine learning for vision-aided wireless communications
- Machine learning for positioning and location-based services
- Distributed learning approaches for distributed communications problems
- (Deep) Reinforcement Learning and Policy learning for resource management & optimization
- Reinforcement Learning for self-organized networks and AP/BTS optimization
- Machine learning techniques for non-linear signal processing
- Machine learning techniques for physical layer security including fingerprinting
- Machine learning techniques for network slicing and system coexistence
- Low-complexity and approximate learning techniques and power reduction applications
- Machine learning for edge intelligence, sensing platforms, and sense making
- Algorithmic advances in machine learning for communication systems
- Advancing the joint understanding of information theory, capacity, complexity and machine learning communications systems
- Applications of transfer learning in wireless communication
- Compression of neural networks for low-complexity hardware implementation
- Unsupervised, semi-supervised, and self-supervised learning approaches to communications
- Wireless transmission and protocol optimization for machine learning
- Privacy and security preserving distributed training over communications networks
- Machine learning framework for joint communication and control

IMPORTANT DATES:

Deadline for paper submission: 11 October 2021
Date for notification: 18 January 2022
Deadline for final paper submission: 15 February 2022