

# Annals of Telecommunications



**Call for papers  
Special Issue on**

## **Machine Learning Algorithms for Signal Processing and Communication**

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Research in the communications and signal processing area focuses on issues regarding the efficient processing and transmission of data. Some examples of sources of data include sound, images, and sensor output signals. Much of modern statistical and adaptive signal processing relies on learning algorithms of one form or another. More commonly, this method is more significant in communication and signal processing. However, large amount of audio, video and text data have been generated by modern connected devices. Hence, there is a need for efficient ML algorithms in terms of accuracy and speed becomes progressively important for signal processing. At a practical level, machine learning and signal processing are frequently combined. The most common relationship is that signal processing is used as a pre-processing step before the application of machine learning. This significant combination will solve digital signal processing and communication problems: from computational efficiency, online adaptation, and learning with limited supervision, to their ability to combine heterogeneous information, to incorporate prior knowledge about the problem, or to interact with the user to achieve improved performance. Many machine learning techniques have already been applied to address the relevant problems. For example, convolutional neural networks have demonstrated superior performance on large-scale image classification. Semi- and weakly-supervised learning methods have significantly improved the performance when only small amount of annotated data is available. Correlation analysis, transfer learning, and multi-task learning have shown the potential in integrating severely heterogeneous data. Sparse representation and clustering approaches have been exploited in denoising and selecting of exemplary samples from the raw data. This special issue aims to demonstrate the contribution of machine learning techniques to the research and development of advance signal processing and communication. The special issue seeks high-quality, original technical papers from academia, government, and industry. Topics of interest include, but are not limited to:

- Neural hardware systems for signal processing and communication
- Machine learning for video coaching and streaming over wireless communication
- Multimodal Learning algorithms for signal processing and communication
- Incremental learning for signal processing and communication
- Structure learning for signal processing and communication
- Machine learning algorithms for audio, video and image processing
- Data-driven optimization of wireless networks and signal processing
- Cognitive systems for signal processing, transformations and communication
- mathematical foundations of machine learning for signal processing and communication
- Machine learning algorithms for signal detection and synchronization
- Distributed, decentralized, and cooperative signal processing using machine learning algorithms
- Machine learning for 5G system and PHY/MAC optimization (massive MIMO, mmWave,...)
- Pattern recognition and classification for signal processing and communication
- Machine learning enabled Ultra-Reliable and Low-Latency Communications
- Machine learning enabled Hardware for Communications System
- Deep Learning/Machine Learning in Cognitive Radio

- Machine learning based signal processing for software defined and cognitive radio
- Machine learning based signal processing for green communications, communications powered by energy harvesters and wireless power transmissions
- Machine learning based signal processing for optical, smart grid and powerline communications
- Machine learning algorithms for spread-spectrum localization, positioning and tracking techniques
- Machine learning based spatial and distributed transmission techniques
- Cloud-based and fog-based communications with machine learning schemes for signal processing

#### Guest Editors

- Gunasekaran Manogaran, University of California, Davis, USA
- Naveen Chilamkurti, LaTrobe University, Melbourne, Australia
- Ching-Hsien Hsu, National Chung Cheng University, Taiwan
- Claude D'Amours, University of Ottawa, Canada

Papers must describe original research that advances state-of-the-art in the area of cybersecurity and must not be simultaneously submitted to a journal or a conference with proceedings. Papers must be written in excellent English and should not exceed 10 pages. Previously published or accepted conference papers must contain at least 40% new material to be considered for the special issue. A covering letter to the Guest editors clearly describing the extensions made must accompany these types of submissions. All submissions must be made using the instructions available at:

<http://annalsoftelecommunications.wp.mines-telecom.fr/how-to-publish/>

The authors can directly submit their papers at: <https://www.editorialmanager.com/ante/> and must select the menu "Choose Article Type" and then the item "CfP: Machine Learning Algorithms for Signal Processing and Communication".

#### Proposed schedule

- **Manuscript submission** March, 31 2019
- **Notification** May, 31 2019
- **Online with DOI** As soon as accepted
- **Printed issue** Early 2020



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