1st Workshop on

Massive Intelligent Sensor Systems (MISS'17)

(Co-located with the IEEE WiSEE 2017 Conference)

Recent developments of microelectromechanical systems (MEMS) and nanotechnology, in conjunction with extensive investments in new large-scale programs, such as the Internet of Things (IoT) and the 5G wireless systems, redirect our previous *Wireless Sensor Systems* (WSS) Workshop to serve the technological improvements of sensors under a more suitable title of *Massive Intelligent Sensor Systems* (MISS). This important development enables to achieve our near future objectives of penetrating harsh and unconventional scenarios in space, underwater, underground, and other extreme environments.

Under the new title this workshop would encourage two main parties of such developments, the users and the scientific communities to consider networking aspects of very dense networks with a large number of sensors. Due to their ever shrinking size and energy-efficient operation, new solutions to our world of science and engineering are emerging at much lower cost. The variety of applications is huge and ranges from monitoring security zones, ageing buildings, climate change, water pollution, seismic activities, species extinction, and disease propagations to medical purposes and health observation.

For a successful task accomplishment in the comprehensive range of applications it is essential to deploy intelligent devices so that maximum collaboration at device-level is achievable. This kind of collaboration requires highly dynamic and loosely connected ad-hoc networking, autonomous sensor activation and controlled operations, self-clustering, self-positioning, centralized and decentralized data processing, synchronous and asynchronous communication capabilities, adoption of multi-hop techniques, energy harvesting for lifetime improvement, amplify- and decision-forwarding methods, and data fusion strategies. In addition, the whole sensor system should be designed for robustness to overcome specific circumstances such as extreme and unpredictable environments, channel fluctuations, device failure, and inadvertent sensor distributions. To achieve all these goals and to adopt intelligent sensor systems where they are mainly required, we need to challenge new concepts and novel methods based on the recent advancements.

The workshop on *Massive Intelligent Sensor Systems* aims to close the gap between the practice and the idealistic notions by providing a 'gathering platform' for both the practical experts and the theoretical scientists for presenting and discussing their recent achievements. This workshop is co-located with the *2017 IEEE International Conference on Wireless for Space and Extreme Environments* in Montreal, Canada. Interested authors are encouraged to submit their unpublished contributions from a broad range of topics, including but not limited to the following areas:

- Energy conversion and harvesting
- Energy-efficient and green sensor systems
- Lifetime- and latency-aware sensor systems
- Resource allocation, services, QoS, and fault tolerance in sensor networks
- Opportunistic and delay-tolerant sensing
- Time-sensitive sensing and virtualization
- New trends in wireless sensing
- Distributed sensing and radars
- Localization aspects and positioning
- Target detection, classification, and tracking
- Sensor and system calibration
- Centralized and decentralized data processing
- High-speed and big-data processing techniques
- Smart cities, smart homes, and smart transportation
- IoD- (Internet-of-Drones) and IoT-based systems
- Body-area and smart-dust sensor networks
- Error control techniques and communication protocols
- Modeling, optimizing and designing sensor systems
- Wave propagation and channel modeling for sensor systems
- Reliability, resiliency, and performance analysis of sensors
- Methods for multivariate analysis of sensor responses
- Space, air, underwater, underground, and industrial communication techniques
- Single- and multi-parameter measurements
- Sensor-system architectures and cross-layering in communication and computation
- Deployments and implementations of sensor networks

Researchers working in emerging fields of massive sensor systems or on novel applications of sensor networks are especially encouraged to submit original findings. The submitted work and the published version are limited to 6 pages in the standard IEEE conference format. Submitted papers should be of sufficient detail to allow for review by experts in the field. Authors should refrain from submitting multiple papers on the same topic. Information about when and where papers can be submitted will be posted on the conference web page.

We look forward to welcoming you to the 1st workshop on Massive Intelligent Sensor Systems in Montreal.

General Co-Chairs: Habib Rashvand and Gholamreza Alirezaei