IEEE VTC Fall 2019 Workshop on Small Data Networks

SmallDataNets´19
Honolulu, Hawaii (US), Sep. 22, 2019

Call for Papers

"Small data" refers to a rising paradigm in modern wireless networks, pointing to information exchanged by a massive number of smart devices and sensors in the broad context of machine-type communications. Small data sets span from metering data and status reports to remote commands and information generated and transmitted within the IoT. They are generally produced by a myriad of devices which access the communication infrastructure sporadically, generating a massive amount of short packets that have to be received with high reliability, exploiting the available spectrum resources efficiently even in absence of coordination. In such a framework, the design of network protocols departs from conventional approaches used for predictable, persistent, and coordinated data sources. Major changes have to be applied to the physical (PHY) and medium access control (MAC) layers to account for the sporadic and uncoordinated nature of the transmissions, touching all basic aspects: from signal detection, channel estimation, coding and modulation up to the medium sharing policies and possibly involving the higher layers of the communication stack. While traditional protocols are designed to avoid interference, in recent years several innovative developments have been proposed, such as physical layer network coding and various techniques based on successive interference cancellation (SIC), where interference is embraced and creatively utilized. These developments have opened a completely new perspective for uncoordinated multiple access protocols, paving the way to dramatic performance improvements, and rendering the throughput of interference-limited channels competitive to that of systems that serve predictable data sources. This is calling for new studies on the fundamental limits of such setups, as well as on finding optimal waveform design, signal-processing algorithms, error correcting schemes and access protocols, and on theoretical tools to drive the system design. Research in the field is further buttressed by clearly defined and market-driven goals from the industry, in the quest for highly reliable, highly efficient, low-complexity access solutions for a massive number of devices. The road towards beyond-5G communications is only one relevant example of where upcoming research has the potential to leave a fundamental mark. The goal of this workshop is to stimulate new contributions to the topic, with emphasis on cross-layer interactions between the MAC and PHY layers of the protocol stack, as well as on the connections to coding and information theory. Topics of interest include, but are not limited to:

- Fundamental limits on communications for small data packets
- Wireless access protocols for vehicular networks
- Wireless access protocols for the IoT, M2M communications and large-scale wireless sensor networks
- Efficient access schemes for very short-packet communications
- Access protocols for low-latency, ultra-reliable communications
- Signal processing for M2M and vehicular networks
- Innovative techniques for 5G and IoT radio access networks
- Channel coding and modulation for sporadic wireless transmissions
- Error control coding for ultra-reliable communications
- Network coding and physical-layer network coding in multiple access schemes
- Energy efficient cross-layer MAC-PHY design
- Channel estimation and user detection in massive access protocols

The workshop accepts only novel, previously unpublished papers. All submitted papers should be written in English with a maximum paper length of 5 printed pages (10-point font), plus a maximum of two (2) additional pages for the final version (overlength fee of 100 USD/page). Accepted papers will be submitted for inclusion in IEEE Xplore/IEEE Digital Library, provided they are covered by one registration and they are presented at the workshop.

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Important dates:

Full paper submission:	**July 8**, 2019
Acceptance notification:	**July 19**, 2019
Final Paper Submission:	**July 29**, 2019