Selected Areas in Communications Symposium

Track on Molecular, Biological and Multi-Scale Communications

TRACK CHAIR

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SCOPE AND MOTIVATION

Advances in nanotechnology, synthetic biology, and lab-on-a-chip techniques have inspired both the understanding of natural communication and the design of new communication systems that operate in these domains. It is now possible to design biochemical circuits, synthetic cells, swarms of devices, and many other systems at "small" length scales (i.e., nanoscale and microscale) and to interact with systems at these scales. Achieving communication for such systems could facilitate a wave of revolutionary and interdisciplinary applications in fields from manufacturing to personalized medicine.

This track is devoted to the principles, design, analysis, implementation, and control of signaling and information systems that rely on physics beyond conventional telecommunications, particularly for "small" and multi-scale applications. These include molecular, terahertz, and other techniques inspired by the natural sciences (physics, chemistry, and biology), as well as novel signaling techniques to **revolutionize communication** at these scales. In recognition of the interdisciplinary nature of this track, contributions from a diversity of disciplines are *strongly encouraged*.

TOPICS OF INTEREST

Original research articles are solicited in, but not limited to, the following topics of molecular, biological, or multi-scale communications:

- Active or passive transport molecular communication (e.g., diffusion, flow, microfluidic, motor-assisted)

- Biological data storage and computing (e.g., DNA)

- Biochemical or biophysical signaling and computing

- Communication between and within natural and/or synthetic organisms

- Neuronal signaling or interfacing with neurons

- Synthetic or systems biology

- Unconventional electromagnetism for small or multi-scale applications (e.g., Terahertz-based wireless)

Submissions are expected (but not limited) to make contributions in at least one of the following areas:

- Channel modelling or characterization

- Computer simulation methods

- Information-theoretic analysis

- Interface and control between communication systems in different physical domains

- Laboratory experiments or testbeds

- Standards and datasets

- Synchronization, routing, and other higher layer communication techniques

- Transmitter and receiver design or analysis, including modulation, detection, and estimation techniques

IMPORTANT DATES

Paper Submission: 15 April 2020

Notification: 25 July 2020

Camera Ready and Registration: 1 September 2020

SUBMISSION INSTRUCTION

All papers for technical symposia should be submitted via EDAS through the following link: https://edas.info/N27054