IEEE Workshop on Cyber-Physical Networking (CPN 2019)

Co-located with 16th IEEE Consumer Communications and Networking Conference (CCNC 2019)
Las Vegas, Nevada, USA, 11–14 January 2019

Call for Contributions

Increasing the data rates of communication systems has been a major research objective of the past decades. The corresponding research efforts lead to the modern information society of today. Recently, we see a rapid spread of cyber-physical applications such as telemedicine, smart production and infrastructure systems. Such systems build the backbone for e.g. Industry 4.0 environments and operate with feedback control loops that are closed over communication channels and, thus, impose real-time requirements on the communication system. Predictably low latency is generally a desirable property, however, it challenges concurring requirements for high reliability, spectral, and energy efficiency in particular when wireless links used. Classical approaches for the independent design of communication and control have reached their limits for quite some time.

The research objective in the area of cyber-physical networking is to develop a theoretical and practical basis for the paradigmatic change from throughput- to real-time-oriented communication in networked control systems. In order to meet the requirements of cyber-physical applications, a tight (horizontal and vertical) integration of all communication, control, and system components is necessary in order to fully exploit their individual elasticity and mutual adjustment potential. We understand cyber-physical networking as including all aspects of such a system, in particular network and communication, control and the physical system itself. Ultimately, this workshop aims to bring together leading researchers in the area of communication, control and systems design - to share views on approaches to bring together these domains for enabling cyber-physical networking.

Submissions

The workshop allows two types of submissions: **papers** & **demos**.

Submitted **papers** must represent original material that is not currently under review in any other conference or journal, and has not been previously published. All paper submissions should be written in English with a maximum paper length of six (6) printed pages (10-point font) following the IEEE format.

All **demo** submissions come in form of an extended abstract with a maximum length of two (2) printed pages with the same format as paper submissions. At the workshop, demos are required to bring a poster (A0) that accompanies their presentation. We also encourage the paper authors to optionally present a demo. This does not require a separate submission of an extended abstract but is covered by the paper submission.

We encourage the submission of courageous research ideas and proposals that explore the potential of cyber-physical networks, also off the beaten track.

Topics of Interest

Submissions are encouraged to cover multiple of the following top-level topics.

- Application Scenarios for Cyber-Physical Networks
  - Benchmarks, Quality Metrics, and Testbeds
  - Industry Case Studies and Experience Reports
  - Consumer Products
- Control Design and Architectures for Cyber-Physical Networks
  - Performance, Stability, and Robustness Guarantees
  - Machine Learning and Artificial Intelligence
  - Model-Predictive, Optimal, Learning-Based, and Robust Control
- Network Architectures and Protocols for Cyber-Physical Networks
  - Mobility Aspects
  - Latency and Resilience Awareness
  - Time-Sensitive Networking
- Operating System Approaches for Cyber-Physical Networks
  - Resource Management
  - Timeliness and Energy Awareness
  - Local and Distributed Dependability

Important Dates

Workshop paper submission deadline: ~~October 5~~ **October 15, 2018**
Acceptance notification: October 26, 2018
Final camera-ready paper due: November 4, 2018
Workshop presentations: **January 11, 2019**

Organization and Contact

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