IEEE Globecom 2020 Workshop 7: Information Freshness, Communications, Control, and Computing for Industrial IoT

Date: Monday, 7 December 2020

Call for Workshop Papers

Industrial Internet of Things (IIoT) integrates advanced digital computing, communications, and control technology. Within the Industry 4.0 framework, IIoT aims to tackle a set of new technological challenges in industrial control, automation, and intelligence. Since most of the IIoT applications, such as intelligent transportation, telesurgery, industry automation, power systems automation, and power electronics control, are mission-critical and demand real-time communications and computation capabilities for successful closed-loop operation, IIoT requires the joint design and optimization of communications, control and computing (3C). Moreover, the freshness and value of information is significant in real-time IIoT applications.

Age of Information (AoI) has emerged as a concept that has recently gained increasing attention as a performance metric for quantifying information freshness at the destination. It is important to note that improving first-order metrics (e.g., for providing high throughput and low delay) that render enhanced performance in traditional communication networks, are inadequate when it comes to improving the information freshness. Therefore, there is an urgent need to re-examine existing metrics and develop new ones for emerging time-critical applications.

The workshop is expected to bring together academic and industrial researchers to identify and discuss the major technical challenges and recent breakthroughs related to AoI, communications, control, and computing in IIoT.

- AoI analysis and optimization
- Multiuser scheduling for optimizing information freshness
- Cooperative status update for improved information freshness
- The application of emerging technologies (e.g., cloud and edge computing, machine learning) for improving AoI performance
- AoI approaches for industrial control applications
- Fundamental tradeoffs between communications, control and computing in IIoT
- Resource allocation for next generation wireless sensing and control applications in IIoT
- MAC layer and network layer design for supporting multi-loop control applications
- Edge computing for low-latency control
- Cyber-physical security in IIoT
- Prototypes and testbeds for validating AoI and communications-control-computing codesign protocols.

Workshop Organizers

- Yonghui Li, The University of Sydney, Australia (yonghui.li@sydney.edu.au)
- He (Henry) Chen, The Chinese University of Hong Kong, Hong Kong SAR, China (he.chen@ie.cuhk.edu.hk)
- Nikolaos Pappas, Linköping University, Sweden (nikolaos.pappas@liu.se)
- Sheng Zhou, Tsinghua University, China (sheng.zhou@tsinghua.edu.cn)
- Zhibo Pang, ABB AB, Corporate Research, Sweden (pang.zhibo@se.abb.com)

TPC Chairs

- Wanchun Liu, USYD, Australia
- Jing Yang, Pennsylvania State Univ.
- Elif Uysal, METU
- Zhiyuan Jiang, Shanghai Univ.
- Guodong Zhao, University of Glasgow

Key Dates

- Paper submission: 15th July 2020
- Acceptance notification: 1st September 2020
- Final paper due: 1st October 2020
- Workshop date: 7th December 2020

Submission Guidelines

Prospective authors are invited to submit technical unpublished work. Accepted workshop papers will be part of the Conference Proceedings and will be uploaded to IEEE Xplore. Papers should be submitted via EDAS. Papers should follow the same Author guidelines of the general symposium, which are available at http://globecom202.ieee-globecom.org/.