

# Special Issue Proposal for ACM Transactions on Intelligent Systems and Technology

## Intelligent Edge Computing for Cyber Physical and Cloud Systems

Cyber Physical Systems (CPS) and Cloud Computing have received tremendous research interest and efforts from both academia and industry. Cloud computing extends the computing and storage ability of CPS and leads to a new paradigm - Cyber Physical and Cloud Systems (CPCS), which is a product of combining CPS and Cloud Computing together. It enables a new breed of applications and services, such as industrial process control, video surveillance, structural health monitoring, and intelligent agriculture, and can fundamentally change the way that people interact with the physical world.

However, CPCS face many important challenges. First, the cloud end can neither manage CPS devices directly nor satisfy the real-time requirement. Second, communication bottleneck exists between CPS and the cloud. Third, new security challenges need to be overcome in order to accelerate the development of these integrated applications. In particular, edge computing, acting as a new computing scheme, is a promising technology to address these challenges. It extends the Cloud Computing paradigm to the edge of the network. For example, edge computing devices, which are capable of intelligent computing, can reduce the network latency by enabling computation and storage capacity at the edge network. These so-called edge devices can bridge the gap between the CPS and the cloud end. The intelligent computing and storage on edge devices offer the potential probability to solve the problems including communication, real-time, and security.

These call for the urgent needs to consider and develop intelligent computing for edge devices in order to fill the gap between the CPS and the Cloud end. This Special Issue is proposed to bring together researchers to share the state-of-art research results with our target of solving the intelligent computing issues for so-called CPCS.

### Topics of Interest

The aim of the proposed Special Issue is to promote the related research and report the most recent advances of intelligent computing for edge devices in terms of Cyber Physical and Cloud Systems, with focus on the following aspects, but certainly not limited to:

- Concepts, theory, standardization and modelling for intelligent Cyber Physical and Cloud Systems
- Intelligent algorithm for Cyber Physical and Cloud applications
- Intelligent data mining and analytics for Cyber Physical and Cloud applications
- Heterogeneous data integration and processing for Cyber Physical and Cloud applications
- Information Diffusion and Sharing across Cyber Physical and Cloud systems
- Artificial intelligent for Cyber Physical and Cloud applications
- Device management for Cyber Physical and Cloud systems
- Intelligent edge computing for Cyber Physical systems
- Intelligent edge computing for Cloud-related applications
- Intelligent computing for edge devices in Cyber Physical and Cloud Systems
- Real-time communication and data collection for Cyber Physical and Cloud Systems
- Behavioral analysis and modeling in Cyber Physical and Cloud Systems
- Influence measure and model in Cyber Physical and Cloud Systems
- Mobile and edge computing for Cyber Physical and Cloud Systems
- Security model and protocols for intelligent Cyber Physical and Cloud Systems

- Data privacy for intelligent Cyber Physical and Cloud Systems
- Trust and reputation mining and application for intelligent Cyber Physical and Cloud Systems
- Data protection and data integrity for intelligent Cyber Physical and Cloud Systems
- Privacy metrics and policies for intelligent Cyber Physical and Cloud Systems
- Reliability issues for intelligent Cyber Physical and Cloud Systems
- Mobile sensing applications, detection, transmission and tracking for Cyber Physical and Cloud Systems
- Fault-tolerant systems for intelligent Cyber Physical and Cloud Systems

## Paper Solicitation

This issue is an open special issue where everyone is encouraged to submit papers. We plan to publicize an open call-for-papers (CFP) by listing the CFP in major academic announcement mailing lists/websites and by sending the CFP to researchers in the areas around the world. We estimate there will be a large number of submissions via the open call-for-papers.

Each paper will go through a rigorous peer-review process by at least three international experts. In total we plan to include 6-8 papers in this Special Issue. The acceptance rate will be 30% or less but we regard quality as our top priority. The anticipated readers of this Special Issue include both academic and industrial researchers working in relevant areas of the Cyber Physical and Cloud Systems.

## Important Dates

<b>Submission Due</b>	Dec. 31, 2018
<b>1<sup>st</sup> Round Notification</b>	Jan. 31, 2019
<b>Final Notification</b>	Apr. 31, 2019
<b>Publication</b>	2019

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