

Special Session on Heterogeneous Computation in Intelligent Industrial Systems Organized by

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ABB Corporate Research, Sweden, and Royal Institute of Technology (KTH), Sweden

Call for Papers

Recently, Big Data are being generated at an unprecedented rate across various industrial applications from machines, processes and humans. How to collect and process Big Data in a timely manner is a major obstacle we are facing nowadays. The growing diversity and heterogeneity of hardware platforms and software services just added another challenging difficulty in industrial automatic systems. For example, heterogeneous platforms, such as GPUs, Xeon Phis, and FPGAs, have been widely adopted. However, how to meet the ultrahigh reliability and ultralow latency requirements as well as security and safety in mission-critical automation and control systems, how to effectively and efficiently utilize different hardware accelerators together to serve different applications with distribution characteristics remains a challenge for heterogeneous computing researchers. The goal of this special session is to publish the latest research advancement in heterogeneous computation in intelligent industrial systems. We also encourage to publish the work in progress and research results in emerging research topics. This Special Session focus on the cross disciplinary approaches, solutions, and initiatives. Only unpolished original articles will be accepted.

Topics of interest include, but are not limited to:

- Enhanced industrial network architectures on heterogeneous systems.
- Microarchitecture design on heterogeneous processor/system
- Heterogeneous distributed or parallel programming paradigms and models.
- Energy efficient data transmission for heterogeneous platforms.
- Distributed or Parallel algorithms for heterogeneous and/or hierarchical systems, including many-cores and hardware accelerators (FPGAs, GPUs, Xeon Phis, etc.)
- Heterogeneous computation supports for autonomous vehicle driving, or other applications using artificial intelligent algorithms (e.g. images processing, features recognition, etc.)
- Heterogeneous computing in large-scale datacenter.
- Software engineering implementation on heterogeneous computing.
- Multiple objectives optimization on heterogeneous systems.
- Task scheduling algorithms on heterogeneous computation, cloud and datacenter platforms.
- Experience of porting parallel software from supercomputers to heterogeneous systems.
- Security, Fault tolerance of parallel computations on heterogeneous systems.
- Application-driven cross-layer optimization on heterogeneous systems
- Edge and fog computing for low latency on heterogeneous systems

Submissions Procedure: All the instructions for paper submission are included in the conference website <http://icps19.org/final-paper-submission>

Deadlines: Reception of full paper: December 31, 2018
Paper acceptance notification: March 1, 2019

