Call for Papers

Special Issue on Dependability and Scalability of Distributed Systems in the Presence of Faults and Security Threats

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Guest Editors

Dr. Ali Ebnenasir, Michigan Technological University
Dr. Vijay K. Garg, University of Texas, Austin
Dr. Swen Jacobs, CISPA Helmholtz Center for Information Security

Theme and Scope: Parallel and Distributed Systems (PDS) play an important role in monitoring and controlling the infrastructure of our society, and form the backbone of many services we rely on (e.g., cloud services, air traffic management, power networks, e-commerce, etc.). Looking into the future with the advent of 5G/6G networks, the Internet of Things (IoT) and blockchain technology, the scale and the ubiquity of distributed systems will only increase, resulting in Ultra-large scale PDS (UPDS). Due to their sheer scale, ensuring their dependability is a tremendous challenge, especially when multiple dependability aspects (e.g., fault tolerance and security) should be met simultaneously. As such, the underlying algorithms and protocols of UPDS must be correct, even in the presence of faults and security threats regardless of their scale. What makes this problem even more challenging is the advent of the IoT networks where dependability and scalability must be achieved under resource constraints. The design and verification of scalable and resource-constrained UPDS that meet their dependability requirements is therefore a grand challenge before the scientific communities, especially researchers in distributed computing and formal verification. The main objective of this special issue is to accelerate research at the intersection of distributed computing and formal verification towards developing tomorrow's dependable and scalable ultra-large distributed systems. To this end, this special issue invites novel research contributions from researchers in academia and industry in (but not restricted to) the areas listed here.

Submission Guidelines: We ask the authors to please use the manuscript template/format of the Journal of Parallel and Distributed Computing explained at https://www.elsevier.com/journals/journal-of-parallel-and-distributed-computing/0743-7315/guide-for-authors. Submissions that extend previously published research (e.g., in conference or workshop proceedings) are expected to include at least 30% of significantly new material. The authors of such articles must submit a "Summary of Changes" describing how their submission extends previous work. The authors should use the Editorial Manager (EM) site for submitting their articles: https://www.editorialmanager.com/jpdc/default.aspx. During the submission process, please select "VSI-UPDS [MGE-Ali Ebnenasir]" for the "Article Type".

Important Dates

- Submission opening: September 7, 2022
- Submission deadline: February 5, 2023
- First notification date: April 20, 2023
- Submission deadline for revisions: June 30, 2023
- Final notification: August 5, 2023

Website

mtu.edu/cs/jpdc-call-for-papers

Topics Include

(but are not limited to)

- Formal models of heterogeneous UPDS
- Formal models of dependable, resource-constrained, and scalable IoT networks
- Design methodologies for highly scalable distributed protocols/systems
- Methods for the design of PDS that are fault-tolerant and/or secure by design
- Design of correct, fault-tolerant, and secure UPDS in the presence of reconfiguration and resource constraints
- Methods for runtime monitoring of PDS
- Monitoring of dependability aspects in UPDS
- Verification and synthesis of parameterized distributed protocols
- Verification and synthesis of fault-tolerant and secure parameterized protocols