

Call For Papers

Special Session: Formal Methods for Cyber-Physical Systems

Conference: The 2022 International Conference on Cyber-physical Social Intelligence (ICCSI)

Date: October 21-24, 2022

Meeting mode: Hybrid

Location: Nanjing, China

Web site: <https://iccsi2022.agist.org>

Cyber-physical systems (CPS) are being widely used in our daily lives, e.g., smart home, intelligent traffic, and medical services. In reality, the business processes of CPS become much more complex and need to continually adapt to the changing environments and requirements resulted in by a large number of distributed sensors and business units. Thus, how to guarantee the correctness and reliability of CPS has become a bone of contention in industry and academia. Although the testing-based methods can detect errors, they need to design a series of test cases to cover as many execution paths as possible. In fact, CPS comprise digital, analog, physical, and human components engineered for functions through integrated physics and logics. Due to the difficulty in the completeness of test cases, it is hard to guarantee CPS (especially for some critical systems) error-free.

The formal method is a prominent mathematically-based technique to analyze CPS. It provides a framework within which large, complex CPS may be specified, developed, and verified systematically. This session considers the state-of-the-art researches and applications in the formal methods of CPS. It is conducive to bridging the gap between researchers and practitioners so as to expose unsolved challenges, explore significant advancements and provide visions for future researches.

The topics in this session include but are not limited to:

- Model checking
- System verification
- Real-time system
- Intelligent traffic
- Sensor networks
- Production and service systems
- Embedded systems
- Hybrid systems
- Distributed systems
- Planning and scheduling
- IoT interactions
- Error detection

Important Dates:

May 15, 2022,	Full paper submission
July 1, 2022,	Acceptance/Rejection notification
August 31, 2022,	Final camera-ready papers due

Special Session Co-chairs:

Lecturer. Dongming Xiang (Zhejiang Sci-Tech University, CHINA), email flysky_xdm@163.com

Associate Professor Liang Qi Wuhan (Shandong University of Science and Technology, CHINA), email qiliangsdkd@163.com

Professor Guanjuan Liu Wuhan (Tongji University, CHINA), email liuguanjun@tongji.edu.cn

Contributions:

1. "Time-soundness of Time Petri Nets Modeling Time-critical Systems" by Guanjuan Liu.

2. “A Backward Deriving Method for Reachability Analysis of Ordinary Petri Nets based on State Equation” by Liang Qi.
3. “Detecting Data Inconsistency Based on the Unfolding Technique of Petri Nets” by Dongming Xiang.
4. “Time-point-interval Prioritized Time Petri Nets Modelling Multi-core Multi-task Real-time Systems and TCTL Model Checking” by Guanjun Liu.