Call for Papers:

IEEE Open Journal of Control Systems (OJ-CSYS)
Special Section on Formal Verification and Synthesis of Cyber-Physical Systems

Cyber-Physical Systems (CPSs) are complex systems resulting from intricate interactions of computational devices with the physical plants. Recent advances in device manufacturing, computation, and storage have made tremendous advances in hardware and systems platforms for CPSs. With this growing trend in computational devices, CPSs are becoming more and more ubiquitous with many safety-critical applications including autonomous transportations, robot-assisted surgery, medical devices such artificial pancreas, smart manufacturing, smart buildings, etc. Unfortunately, the analysis and design of CPSs nowadays are still based on ad-hoc solutions sought by simply taking the union of the classical techniques in control theory and computer science. This results in error-prone analysis or design, and very high testing and validation costs. Formal-methods based approach to CPS design recommends rigorous requirement specification in every stage of the system development. Formal verification and controller synthesis are two leading approaches to provide correctness guarantees for CPS with respect to such requirements. While formal verification aims at providing a proof of correctness with respect to the given specifications, the goal of the controller synthesis approach is more ambitious: it takes a control system together with the specification and produces a controller such that the resulting closed-loop satisfies the specification. This special section aims to contribute to the growing area of formal methods for CPS and calls thus for papers in this topical area.

Prospective authors are invited to submit original contributions on related topics including, but are not limited to the following:

- Foundations of CPS
- Analysis, verification, and validation
- Design, synthesis, planning, and control
- Network science and network-based control
- Modeling paradigms and specification languages and requirements
- Security, trust, and privacy in CPS
- Safe autonomy, AI and Machine learning in CPS
- Software tools for the above topics
- Applications of CPS technologies such as transportation, autonomous systems, avionics, energy and power, robotics, and medical devices.

Special Section Schedule:

- **Special Section Submission Window: 15 September 2022 – 15 March 2023**
- Notification of reviews of and recommendations: 10 weeks after initial submission
- Final notification of regular papers: 20 weeks after initial submission
- Manuscript publication on IEEE Xplore: 24 weeks after initial submission

* Review process starts at time of manuscript submission

Submission Site: https://css.paperplaza.net/
Length: 12 pages or under, not including references. Justification of longer papers is required.

Open Journal of Control Systems (OJ-CSYS) is a new IEEE journal which covers significant theoretical and applied developments that impact the field of dynamic systems and control. The field integrates elements of sensing, communication, decision and actuation components as relevant for the analysis, design and operation of dynamic systems and control. The systems considered include: technological, physical, biological, economic, organizational and other entities, and combinations thereof.