Proposal for Special Session at ICNSC'23

Session Title: Security analysis and supervisory control of discrete event systems

Description and Aim:

In this session we will focus on security analysis and supervisory control of discrete event systems (DESs). There are several DES modelling frameworks such as Petri nets, automata, process algebras, rewriting logic, markov chains, Queues, max-plus algebras. DES models can be used to describe many kinds of systems, such as manufacturing systems, transportation systems, logistic systems, database management systems, communication protocols, computer communication networks, distributed software systems, and cyber-physical systems. The rapid and expeditious development of information and network technology makes the security and reliability of a discrete event system be the key to its survivability. Recently, much work has been conducted in the security analysis in the context of control of discrete event systems.

The aim of this session is to present recent advances in the modeling, security analysis, control, as well as performance evaluation of discrete event systems. Prospective authors are invited to share their academic results and practical experiences to deal with these challenging issues in this area.

The potential topics include (but are not limited to):

Models (qualitative and/or quantitative) for the specification of behaviors and/or properties: Automata, Petri nets, Process algebras, Rewriting logic, Markov chains, Queues, Max-plus algebras, ...

Methodological aspects: composition, refinement, object orientation, multi-model approaches, ...

Property analysis: liveness, boundedness, opacity, diagnosability, controllability, security, reliability, fault diagnosis, state estimation

Cyber attack: attack model, attack analysis, attack detection, sensor attack, actuator attack, …

Control: resilient control; robust control, adaptive control, supervisory control, controller synthesis, supervision, monitoring, opacity enforcement, …

Fields of application: manufacturing systems, circuits, embedded systems, discrete event systems; networked discrete event systems; cyber-physical systems, real-time systems, mobile systems, robotics, system security, industrial systems and trade industry, transportation, logistic systems, …

Expected number of papers: 6

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