# IEEE Control Systems Letters (L-CSS)

## Call for submissions to L-CSS Special Issue: "Fragility and Resiliency in Cyber-Physical Discrete Event Systems"

The L-CSS invites submissions for **a special issue** on **"Fragility and Resiliency in Cyber-Physical Discrete Event Systems"**.

Authors are invited to submit **six-page** manuscripts for review on this topic. The deadline for initial submissions is: **January 31, 2022**.
Submission for the special issue will be possible starting on **December 20, 2021.**
Submission instructions can be found in the L-CSS website at
http://ieee-cssletters.dei.unipd.it/Page_authors.php?p=1

**Guest Editors**:

- **Christoforos N. Hadjicostis**, University of Cyprus, Cyprus
- **Stéphane Lafortune**, University of Michigan, USA
- **Carla Seatzu**, University of Cagliari, Italy

The proliferation of digital technologies and interconnectivity has led to emergence of cyber-physical systems (CPS) in numerous applications, ranging from automated manufacturing systems and chemical processes to traffic networks and healthcare/information systems. CPS typically involve computation, networking and physical processes, by increasingly deploying sensors and actuators into "smart" feedback loops that connect the cyber and physical worlds to a multitude of computing and storage devices. These approaches have revolutionized numerous aspects of the scientific and commercial worlds (e.g., smart grids and microgrids, traffic networks, automated or autonomous transportation systems, water networks, etc.), and have led to systems (with discrete, continuous, or hybrid dynamics) of unprecedented interconnectivity. Apart from challenges due to the sheer size, complexity, and distributed nature of CPS, some of the most pressing open questions are issues of **fragility** and **resiliency**. Fragility is a term used to characterize situations where cumulative mild abnormalities (e.g., certain combinations of sensor failures, delays/losses in the transmission of sensory information and actuation commands, and/or malicious actions) result in large degradation in system performance or even unacceptable violations of system requirements. Resiliency is the ability of the system to cope with such abnormalities. Fragility analysis and resiliency provision are particularly important in CPS that involve critical infrastructures where human lives may be at risk.

The focus of this special issue is on models that comprise (compositions of) **discrete event systems** (DES), such as finite automata and Petri nets. In more detail, the goal of the special issue is that of collecting contributions that address fundamental research challenges that directly influence fragility and resiliency, such as losses, delays or malicious manipulations of sensory information or control commands.

The primary aspect of any contribution should be novelty and originality. Also, the results should be presented in a mathematical language, according to the L-CSS standard.

Specific topics of interest for this special issue include, but are not limited to:

- Cyber-physical DES fragility analysis
- Cyber-physical DES resiliency provision
- Supervisory control
- State estimation
- Detectability analysis
- Fault diagnosis and diagnosability analysis
- Opacity verification and enforcement
- Prognosability analysis

A manuscript submitted to the special issue should be **six pages long** in the journal format (style files are available on PaperPlaza), which is a strict limit.
The contribution may also be accompanied by **supplementary material** (up to 9 additional pages are allowed). However, according to the journal policy, **the value of the submission shall be decided based only on the main paper**, which must be self-contained, namely, the results can be understood and checked without reading the supplement.
The supplement is intended to present complementary information, such as simulations, videos, figures, or examples, but not, for instance, theorem proofs or definitions. Some mathematical background can be added to the supplement, for the reader's convenience, if it is already existing in the literature. However, crucial new derivations must be in the main paper.

The manuscripts will be peer-reviewed by international experts. According to the L-CSS policy, the final decision will be made within two rounds of reviewing with no exceptions. The final decision will be reached no later than 5 months from the initial submission deadline.

Important dates
**Submission deadline:** January 31, 2022.
**(Accepted) Papers online publication:** within one week from the submission of the final manuscript and in any case no later than 6 months after initial submission.