



10th International Conference on Control,
Decision and Information Technologies

July 01- 04, 2024

Valletta, Malta

CALL FOR PAPERS - SPECIAL SESSION

“Estimation, Filtering, and Control of Stochastic Systems”

for **CODIT 2024**

July 01-04, 2023 ▪ **Valletta, Malta**

Session Co-Chairs:

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Session description :

The most practical problems in the fields of engineering, physics, economics, and biology often fall under the category of stochastic systems. Stochastic models accurately represent the scenarios of these systems, encompassing the uncertainties that surround them. The presence of uncertainty, whether in observations or noise, propels the evolution of the system, influenced by the probability distribution of random noise. Numerous fields such as controller design, filtering techniques, signal processing, and communications, derive substantial benefits from stochastic systems theories. These theories offer systematic methods for modeling and addressing random events in dynamic systems. Dealing with stochastic systems constitutes the primary challenge in this domain. Consequently, there is a pressing need for estimation and filtering algorithms, rendering this a vast and active research area. In the context of these stochastic systems, designing a controller that is robust to uncertainty and performs as expected becomes imperative. Conventional techniques address uncertainty through robust controls and stochastic controls, where uncertainties are represented by uncertainty sets and probabilistic constraints. Recent developments in this field also incorporate data-driven approaches wherever data is available.

This special session aims to explore innovative ideas based on both theoretical and data-driven approaches for estimation, filtering, and control designs of stochastic systems. The session, specifically designed to attract researchers from multidisciplinary backgrounds, has a broad application area that encompasses all fields, utilizing the stochastic systems framework.

Areas of interest include, but are not limited to :

- Stochastic Systems Modeling (Markov Chains, Stochastic Differential Equations, Hidden Markov Models)
- Estimation Algorithms (State estimation, Parameter estimation)
- Filtering Techniques (Kalman filtering, EKF, UKF, Particle filtering, Carleman filtering)
- Control System Design (Path integral control, Model predictive control)

- Data-Driven Approaches (Machine learning techniques, Gaussian processes, Reinforcement learning)
- Optimal Control under Uncertainty (Markov decision processes)
- Adaptive Control Strategies

Researchers are encouraged to contribute innovative ideas and findings within these areas or related topics that advance the understanding and application of stochastic systems in various domains.

SUBMISSION

Papers must be submitted electronically for peer review through PaperCept by **February 03, 2024**: <http://controls.papercapt.net/conferences/scripts/start.pl>. In PaperCept, click on the **CoDIT 2024 link** “Submit a Contribution to CoDIT 2024” and follow the steps.

IMPORTANT: All papers must be written in English and should describe original work. The length of the paper is limited to a maximum of 6 pages (in the standard IEEE conference double column format).

DEADLINES

February 03, 2024: deadline for paper submission

April 14, 2024: notification of acceptance/reject

May 10, 2024: deadline for final paper and registration