

CALL FOR CONTRIBUTIONS TO: WODES'18 Special Session

**Title: Applications of Discrete-Event Systems**

**Keywords: Application, discrete-event systems**

**Organizers:**

Kai Cai

Department of Electrical and Information Engineering, Osaka City University

3-3-138 Sugimoto, Sumiyoshi-ku, Osaka 558-8585 Japan

Email: [kai.cai@eng.osaka-cu.ac.jp](mailto:kai.cai@eng.osaka-cu.ac.jp)

Eric Rutten

INRIA Grenoble Rhône-Alpes

Antenne GIANT, Batiment 50C Minatec, 17 rue des Martyrs 38054 Grenoble Cedex, France

[eric.rutten@inria.fr](mailto:eric.rutten@inria.fr)

**Description and Aim:**

Since the seminal work of Ramadge and Wonham in 1987, the control of discrete-event systems (DES) has been an active research area in the controls community in the past 30 years. Many systematic methods, tools and algorithms have been developed for DES analysis, control synthesis and verifications. Leveraging the developed tools, many potential applications of DES control have been proposed in the literature; relatively few, however, have been demonstrated on actual hardware or software implementation in a lab or commercial environment.

The principal objective of this special session is, therefore, to present the state of the art DES control applications, with special emphasis on 'real demonstrations'. By 'real demonstration' we mean to include actual hardware demonstration, software implementation, and elaborated case studies demonstrated with simulation; toy examples are excluded. Our aim is to show that DES control methods are not only theoretically sound, but also practically useful. We welcome contributions that demonstrate the impact of DES control on any aspects of (engineering) practice. Owing to the emphasis on applications, this special session aligns with the recent initiative of the IEEE Technical Committee for promoting applications of DES.

An additional purpose of this special session is to promote synergy of DES research and topics of cyberphysical systems, event-triggered systems, and formal methods. These research topics often target the same type of dynamic systems and applications that have both continuous and discrete dynamics. It is thus common that these topics emphasize discrete, logical aspects of target systems, and share the goal of correct-by-construction control design. This special session aims to provide a forum at WODES 2018, to explore similarities and differences among methods developed in these areas, and to motivate discussions on how to effectively synergize different yet similar tools for control design of real complex systems.