Call for Papers / Invitation to Special Session

SS06. Challenges for control structures under new automation architecture:

Requirements, adaptation and auto-tuning

Special Session Organizers
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Aim:

With the advent of Industry 4.0 the process automation architecture has come under scrutiny and the traditional automation pyramid structure might soon be a replaced by a new automation model, which could be a cloud-, agent- or other network based solution. Vendor companies such as Schneider Electric or ABB are envisioning a new area of automation. Facilitating technologies are the Industrial Internet of Things (IIoT) wireless communication, energy harvesting, low cost sensing together with overall increased computational and communication power.

At the same time, there is a need in industrial process applications for improving performance without loss of robustness. Optimal performance must be guaranteed at all times and in all circumstances. Achieving optimal robust performance is a demanding task, mainly due to complex, often uncertain and varying dynamics of industrial systems and the environment in which they operate. Within the context of Industrie 4.0 the requirements for flexible production and hence automation will increase.

This session invites contributions that reflect on new control structures suitable for the changes in the automation technology as well as contributions that describe the industrial requirements of such a new environment. This could include the inclusion of ways of how loops can communicate with each other or how control will be brought into assets such as pumps or reactors. In particular, this session will look at methods that deal with automatic tuning of control loops and adaptation of control structure to changing operating conditions.

This special session will be focusing on (but not limited to) the following topics:

- PID tuning for setpoint, disturbance rejection, LPV systems
- Simple alternatives to PID control
- Iterative learning PID control
- PID tuning for MIMO LPV systems
- Control architecture adaptation

Submission of Papers: The working language of the conference is English. Papers are limited to 8 double column pages in a font no smaller than 10-points. Manuscripts must be submitted electronically in PDF format, according to the instructions contained in the Conference web site.

Paper Acceptance: Each accepted paper must be presented at the conference by one of the authors. The final manuscript must be accompanied by a registration form and a registration fee payment proof. All conference attendees, including authors and session chairpersons, must pay the conference registration fee, and their travel expenses.

No-show Policy: The ETFA2017 Organizing Committee reserves the right to exclude a paper from distribution after the conference at IEEE Xplore if the paper is not presented at the conference.

Author's Schedule:
Deadline for submission of special sessions papers: April 9, 2017
Notification of acceptance of special sessions papers: May 15, 2017
Deadline for submission of final manuscripts – special sessions: July 2, 2017

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