Special Session
Embedded Reconfigurable Computing in the Industrial Real-Time Domain – Systems, Methods and Applications
May 2-4, 2018, Santorini, Greece
co-located with the
14th International Symposium on Applied Reconfigurable Computing (ARC)

Call for Papers

Industrial systems are now built around multicore and programmable SoCs. In this domain it is important to ensure that communication between software and hardware remains reliable and safe for the entire operation cycle. Industrial systems should be robust and time-predictable to accommodate highly-critical workloads with rate-constrained and hard real-time requirements. At the same time other workloads of less-criticality, i.e. soft real-time and best-effort, might need to be served by the system. Solutions relying on reconfigurable computing have been proposed recently, while the use of dynamic reconfiguration - an arena in which ASICs or microprocessor-based solutions cannot play - in this domain is still in its infancy. In fact, run-time customization of circuits can bring unprecedented capabilities to the system, enabling its adaptation in order to operate deterministically yet effectively in dynamic environments. To this direction, bringing programmable hardware to the core of the closed loop of a control system can allow for low-latency operations and fast-response, but it introduces challenges in terms of security and safety. Contributions in this special session will benefit areas such as motor control, robotics, smart factories, and industrial transport.

Topics of the special session include, but are not limited to:
- Handling faults in programmable SoCs operating in harsh environments
- Reconfigurable hardware in the core of mixed-criticality systems
- Implementing real-time applications with programmable SoCs
- Ensuring functional safety of reconfigurable hardware, e.g. according to IEC 61508, ISO 13849, DO-254 standards
- FPGA-based machine vision systems, e.g. for real-time inspection
- Reconfigurable hardware in control systems
- FPGA-based systems and methods for power- and energy- efficient control
- FPGA-based systems for robotics, smart factories and industrial transport
- Time-sensitive communication buses and NoCs built with/around reconfigurable resources
- FPGA-based implementations of fuzzy logic, neural networks, and machine learning for industrial applications
- Security in industrial automation and control systems
- Programmable SoCs for IIoT and medical devices
- Surveys and future trends, e.g. industrial reconfigurable controllers

Submission

Perspective authors are invited to submit original contributions as full papers (12 pages) presenting mainly accomplished results, or short papers (6 pages) describing work-in-progress or position-papers. Accepted papers will be presented orally. Submission can be uploaded to ARC website (http://arc2018.esda-lab.cied.teiwest.gr/submit.html) and the format should follow Springer-Verlag LNCS Series format rules. During submission, the **"Industrial-ARC"** track should be selected.

Publication

Papers will appear in the ARC proceedings and published by *Springer-Verlag as a Lecture Notes in Computer Science (LNCS)* series volume. Selected papers will be invited for submission to *special issues of the IEEE Consumer Electronics Magazine and the Journal of Signal Processing Systems.*

Info - Submission
https://goo.gl/4uVHm4
https://goo.gl/aMnoYo

Important dates
Submission deadline:	January 31, 2018
Acceptance notification:	February 14, 2018
Camera-ready version:	February 22, 2018
Early-bird registration:	February 22, 2018

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