international journal of applied mathematics and computer science
call for papers

SPECIAL SECTION/ISSUE

Title
Modelling, Analysis and Implementation of Cyber-Physical Systems

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About
A cyber-physical system (CPS) is an integration of computation with physical processes whose behaviour is defined by cyber and physical parts of the system. Rapid development of cyber-physical systems results in their huge impact on human life. They are used in a variety of domains, e.g., vehicular and transportation systems, medical and health-care systems, smart homes and buildings, social networks and gaming, power and thermal management systems, data centers, electric power grids and energy systems or networking systems. The design methodology of such systems includes the joint dynamics of computers, software, networks and physical processes. The physical part refers to the real world and is prone to environmental influences, while the control (cyber) part controls the objects and makes decisions.

Scope
This special publication is focused on the recent advances in the modelling, analysis, and application merits of cyber-physical systems. Such aspects involve various fields of science, thus a wide range of topics is covered (but not limited to):

Modeling techniques of cyber-physical systems:

- modeling dynamic behaviors of cyber-physical systems
- distributed and networked control of cyber-physical systems
- graphical modelling of the control part of CPS (including Petri nets, UML, SysML, etc.)
- sequential modeling, including finite-state machines
- decomposition and synchronization techniques of cyber-physical systems
- modeling techniques of the control part of cyber-physical systems
- modeling techniques of the physical part of cyber-physical systems.

Analysis and verification methods of cyber-physical systems:

- analysis techniques of the control and physical parts of a CPS
- analysis of the deterministic-related aspects in the control part of a CPS
- verification and validation techniques, including formal verification methods
- simulation techniques of cyber-physical systems
- performance evaluation
- analysis of concurrency and sequentiality relations in cyber-physical systems

- optimization techniques
- security aspects of cyber-physical systems, including. cryptographic algorithms.

Applications of cyber-physical systems:

- smart grids, power systems, smart cities, transportation, home area networks (HANs)
- mobile, wearable, and implantable cyber-physical systems in healthcare
- manufacturing, flexible manufacturing systems, smart factories, Industry 4.0
- reconfigurable control systems (including distributed and integrated systems)
- application of reconfigurable devices in CPS (FPGA, CPLD)
- application of microprocessors in cyber-physical systems (DSP, microcontrollers).

Important dates

Submission deadline: ~~**15 August 2021**~~ **30 September 2021**
Notification of acceptance: **15 November 2021**
Possible publication: **March 2022**

Information for authors

- The papers should meet high quality journal manuscript guidelines, in terms of research results, editorial quality, and language. Poorly written manuscripts will not be considered for review.
- The submission must be done online at `www.amcs.uz.zgora.pl/?action=submission`. **Important!** In your submission (paper file), please put as the first keyword capitalized *CYBER*.
- The papers should be prepared with the journal LaTeX template, following strictly the guide for authors available at `www.amcs.uz.zgora.pl/?action=guide`.
- The submissions will undergo a review process, following the journal rules.
- The final decision will be made by the journal's Editor-in-Chief and Guest Editors.
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Technical assistance

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