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Special Issue "Numerical Methods in Real-Time and Embedded Systems"

A special issue of *Mathematics* (ISSN 2227-7390). This special issue belongs to the section "Mathematics and Computer Science".

Deadline for manuscript submissions: **closed (31 March 2023)** | Viewed by 8233

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Special Issue Information

Dear Colleagues,

The continuous growth of emerging technologies such as Internet of things and cyber-physical systems presents a great opportunity to reanalyze embedded and real-time systems models and further develop them in order to include new emerging paradigms like real-time Internet of things, mixed criticality systems, cyber-physical systems and so on, and on the other hand to mathematically analyze further these systems in terms of feasibility, resource and energy efficiency and cyber security. Because of their special requirements in terms of safety criticality, resource constraints in terms of computation power, memory, and energy, the design and development of deterministic, predictable, safe, and secure real-time and embedded systems is still a challenge.

As real-time and embedded systems have become essential to our lives, from home use, medical care, and industrial control to autonomous vehicles, space and military applications, topics like real-time scheduling and resource management, real-time communications, real-time signal-processing and acquisitions become increasingly challenging and important in the context of the current scientific advancements.

Thus, this Special Issue welcomes contributions in the area of real-time and embedded systems and their emerging applications. Topics of interest include, but are not limited to, the following:

- Real-time systems models, analysis and applications.
- Embedded systems analysis and applications.
- Real-time operating systems architectures, performance analysis and applications.
- Energy efficiency in real-time embedded systems and applications.
- Resource management in real-time and embedded systems.
- Cybersecurity in real-time systems, embedded systems and edge computing.
- Internet of things.
- Mixed criticality systems.
- Edge and fog computing.
- Smart sensors.

Prof. Dr. Mihai-Victor Micea
Prof. Dr. Alex Doboli
Prof. Dr. Daniel-Ioan Curiac
Dr. Cristina Sorina Stângaciu
Guest Editors

Manuscript Submission Information

Manuscripts should be submitted online at **www.mdpi.com** by **registering** and **logging in to this website**. Once you are registered, **click here to go to the submission form**. Manuscripts can be submitted until the deadline. All submissions that pass pre-check are peer-reviewed. Accepted papers will be published continuously in the journal (as soon as accepted) and will be listed together on the special issue website. Research articles, review articles as well as short communications are invited. For planned papers, a title and short abstract (about 100 words) can be sent to the Editorial Office for announcement on this website.

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Keywords

- real-time systems
- embedded systems
- mixed criticality systems
- Internet of things
- fog computing
- edge computing

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Research

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Estimating Travel Time for Autonomous Mobile Robots through Long Short-Term Memory

by **Alexandru Matei**, **Stefan-Alexandru Precup**, **Dragos Circa**, **Arpad Gellert** and **Constantin-Bala Zamfirescu**

Mathematics **2023**, *11*(7), 1723; **https://doi.org/10.3390/math11071723** - 04 Apr 2023

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Abstract Autonomous mobile robots (AMRs) are gaining popularity in various applications such as logistics, manufacturing, and healthcare. One of the key challenges in deploying AMR is estimating their travel time accurately, which is crucial for efficient operation and planning. In this article, we propose **[...] Read more.**

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Enhancing the Modbus Communication Protocol to Minimize Acquisition Times Based on an STM32-Embedded Device

by **Ionel Zagan** and **Vasile Gheorghiță Găitan**

Mathematics **2022**, *10*(24), 4686; **https://doi.org/10.3390/math10244686** - 10 Dec 2022

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by **Arpad Gellert**, **Stefan-Alexandru Precup**, **Alexandru Matei**, **Bogdan-Constantin Pirvu** and **Constantin-Bala Zamfirescu**

Mathematics **2022**, *10*(15), 2725; **https://doi.org/10.3390/math10152725** - 02 Aug 2022

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Mathematics **2022**, *10*(15), 2637; **https://doi.org/10.3390/math10152637** - 27 Jul 2022

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A Hardware-Aware Application Execution Model in Mixed-Criticality Internet of Things

by **Cristina Sorina Stângaciu**, **Eugenia Ana Capota**, **Valentin Stângaciu**, **Mihai Victor Micea** and **Daniel Ioan Curiac**

Mathematics **2022**, *10*(9), 1537; **https://doi.org/10.3390/math10091537** - 03 May 2022

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Abstract The Real-Time Internet of Things is an emerging technology intended to enable real-time information communication and processing over a global network of devices at the edge level. Given the lessons learned from general real-time systems, where the mixed-criticality scheduling concept has proven to **[...] Read more.**

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