Second Workshop on Next Generation Real-Time Embedded Systems

NG-RES 2021, January 20, 2021, Budapest, Hungary

Edited by
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Preface

This volume collects the papers presented at the second edition of the Workshop on Next Generation Real-Time Embedded Systems (NG-RES 2021). The workshop is co-located with the 2021 edition of the HiPEAC conference and was held on January 20th, 2021. Although the workshop was originally planned to take place at Budapest, Hungary, due to the COVID-19 pandemic it switched to a virtual online event.

The traditional concept of embedded systems is constantly evolving to address the requirements of the modern world. Cyber-physical systems, networked control systems and Industry 4.0 are introducing an increasing need for interconnectivity. A steadily increasing algorithmic complexity of embedded software is fueling the adoption of multicore and heterogeneous architectures. As a consequence, meeting real-time requirements is now more challenging than ever. The NG-RES workshop focuses on real-time embedded systems, with particular emphasis on the distributed and parallel aspects. The workshop is a venue for both the networking and multicore real-time communities aiming at cross-fertilization and multi-disciplinary approaches to the design of embedded systems.

The scope of the NG-RES workshop include the following topics:

- Programming models, paradigms and frameworks for real-time computation on parallel and heterogeneous architectures
- Networking protocols and services (e.g., clock synchronization) for distributed real-time embedded systems
- Scheduling and schedulability analysis for distributed and/or parallel real-time systems
- System-level sofware and technologies (e.g. RTOSs, hypervisors, separation kernels, virtualization) for parallel and heterogenous architectures
- Application of formal methods to distributed and/or parallel real-time systems
- Compiler-assisted solutions for distributed and/or parallel real-time systems
- Middlewares for distributed and/or parallel real-time systems

In this second edition of the workshop four regular papers were accepted, each of which receiving three peer reviews. In addition, we are glad to have an invited paper by Khalil Esper, Stefan Wildermann and Jürgen Teich titled “A Comparative Evaluation of Latency-Aware Energy Optimization Approaches in Many-Core Systems”. We would like to thank the authors of the NG-RES 2021 papers, the members of our program committee, our publisher Schloss Dagstuhl as well as the HiPEAC organizers for contributing to the success of this workshop.

Marko Bertogna and Federico Terraneo

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