



Special issue: Advances in real-time embedded systems design

Heechul Yun¹ · Cong Liu²

Published online: 17 May 2023

© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2023

This special issue features extended versions of three outstanding papers from the 2022 IEEE Real-Time and embedded technology and applications Symposium (RTAS).

Over the past 28 years, RTAS has established itself as a premier venue for applied systems research in the broad field of real-time embedded systems. RTAS'22 received 91 submissions, of which 22 papers were accepted with an acceptance rate of 24%.

Of the accepted papers, three papers received the honor of being selected as Outstanding Papers. We invited the authors to submit an extended version of their outstanding papers for this special edition. The received submissions then went through a rigorous peer review process to further enhance the quality of the papers. The results are the three papers included in this special edition.

The first paper in this special issue is “Real-Time Systems Partial-Order Reduction in Reachability-based Response-Time Analyses of Limited-Preemptive DAG Tasks” by Sayra Ranjha, Geoffrey Nelissen, Mitra Nasri. The paper presents a scalable schedule-abstraction graph based response-time analysis, utilizing partial order reduction rules, which resulted in orders of magnitude reduction in analysis runtime at a negligible overestimation cost.

The second paper, “Real-Time Systems FlyOS: Rethinking Integrated Modular Avionics for Autonomous Multicopters” by Anam Farrukh, Richard West, presents a separation kernel based integrated modular avionics approach to safely consolidate mixed-criticality flight software systems on heterogeneous multicore platforms.

The third paper, “Generalized Self-Cueing Real-Time Attention Scheduling with Intermittent Inspection and Image Resizing” by Shengzhong Liu, Xinzhe Fu, Maggie

✉ Heechul Yun
heechul.yun@ku.edu

Cong Liu
congl@ucr.edu

¹ University of Kansas, Lawrence, USA

² University of California, Riverside, USA

Wigness, Philip David, Shuochao Yao, Lui Sha, Tarek Abdelzaher, proposes a scheduling framework for DNN based visual perception pipelines on resource constrained embedded systems that can prioritize important regions of interest to improve computational efficiency.

We hope you enjoy this special issue.

Guest Editors: Heechul Yun and Cong Liu

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.