

30th Euromicro Conference on Real-Time Systems

ECRTS 2018, July 3rd–6th, 2018, Barcelona, Spain

Edited by
Sebastian Altmeyer



Editor

Sebastian Altmeyer
University of Amsterdam
Amsterdam, The Netherlands
altmeyer@uva.nl

ACM Classification 2012

Computer systems organization → Real-time systems, Computer systems organization → Embedded and cyber-physical systems, Software and its engineering → Real-time systems software, Software and its engineering → Real-time schedulability

ISBN 978-3-95977-075-0

Published online and open access by

Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at <http://www.dagstuhl.de/dagpub/978-3-95977-075-0>.

Publication date

June 2018

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

License

This work is licensed under a Creative Commons Attribution 3.0 Unported license (CC-BY 3.0):
<http://creativecommons.org/licenses/by/3.0/legalcode>.



In brief, this license authorizes each and everybody to share (to copy, distribute and transmit) the work under the following conditions, without impairing or restricting the authors' moral rights:

- Attribution: The work must be attributed to its authors.

The copyright is retained by the corresponding authors.

Digital Object Identifier: 10.4230/LIPIcs.ECRTS.2018.0

ISBN 978-3-95977-075-0

ISSN 1868-8969

<http://www.dagstuhl.de/lipics>

Contents

Preface <i>Sebastian Altmeyer</i>	0:vii–0:viii
Deterministic Memory Abstraction and Supporting Multicore System Architecture <i>Farzad Farshchi, Prathap Kumar Valsan, Renato Mancuso, and Heechul Yun</i>	1:1–1:25
Worst-case Stall Analysis for Multicore Architectures with Two Memory Controllers <i>Muhammad Ali Awan, Pedro F. Souto, Konstantinos Bletsas, Benny Akesson, and Eduardo Tovar</i>	2:1–2:22
HWP: Hardware Support to Reconcile Cache Energy, Complexity, Performance and WCET Estimates in Multicore Real-Time Systems <i>Pedro Benedicte, Carles Hernandez, Jaume Abella, and Francisco J. Cazorla</i>	3:1–3:22
Compiler-based Extraction of Event Arrival Functions for Real-Time Systems Analysis <i>Dominic Oehlert, Selma Saidi, and Heiko Falk</i>	4:1–4:22
A Measurement-Based Model for Parallel Real-Time Tasks <i>Kunal Agrawal and Sanjoy Baruah</i>	5:1–5:19
Efficiently Approximating the Probability of Deadline Misses in Real-Time Systems <i>Georg von der Brüggen, Nico Piatkowski, Kuan-Hsun Chen, Jian-Jia Chen, and Katharina Morik</i>	6:1–6:22
Transferring Real-Time Systems Research into Industrial Practice: Four Impact Case Studies <i>Robert I. Davis, Iain Bate, Guillem Bernat, Ian Broster, Alan Burns, Antoine Colin, Stuart Hutchesson, and Nigel Tracey</i>	7:1–7:24
Push Forward: Global Fixed-Priority Scheduling of Arbitrary-Deadline Sporadic Task Systems <i>Jian-Jia Chen, Georg von der Brüggen, and Niklas Ueter</i>	8:1–8:24
A Response-Time Analysis for Non-Preemptive Job Sets under Global Scheduling <i>Mitra Nasri, Geoffrey Nelissen, and Björn B. Brandenburg</i>	9:1–9:23
Beyond the Weakly Hard Model: Measuring the Performance Cost of Deadline Misses <i>Paolo Pazzaglia, Luigi Pannocchi, Alessandro Biondi, and Marco Di Natale</i>	10:1–10:22
Intractability Issues in Mixed-Criticality Scheduling <i>Kunal Agrawal and Sanjoy Baruah</i>	11:1–11:21
Improving the Schedulability and Quality of Service for Federated Scheduling of Parallel Mixed-Criticality Tasks on Multiprocessors <i>Risat Mahmud Pathan</i>	12:1–12:22
Virtual Timing Isolation for Mixed-Criticality Systems <i>Johannes Freitag, Sascha Uhrig, and Theo Ungerer</i>	13:1–13:23

AdaptMC: A Control-Theoretic Approach for Achieving Resilience in Mixed-Criticality Systems <i>Alessandro Vittorio Papadopoulos, Enrico Bini, Sanjoy Baruah, and Alan Burns</i>	14:1–14:22
Verifying Weakly-Hard Real-Time Properties of Traffic Streams in Switched Networks <i>Leonie Ahrendts, Sophie Quinton, Thomas Boroske, and Rolf Ernst</i>	15:1–15:22
Quantifying the Resiliency of Fail-Operational Real-Time Networked Control Systems <i>Arpan Gujarati, Mitra Nasri, and Björn B. Brandenburg</i>	16:1–16:24
Camera Networks Dimensioning and Scheduling with Quasi Worst-Case Transmission Time <i>Viktor Edpalm, Alexandre Martins, Karl-Erik Årzén, and Martina Maggio</i>	17:1–17:22
Early Design Phase Cross-Platform Throughput Prediction for Industrial Stream-Processing Applications <i>Tjerk Bijlsma, Alexander Lint, and Jacques Verriet</i>	18:1–18:20
Protecting Real-Time GPU Kernels on Integrated CPU-GPU SoC Platforms <i>Waqar Ali and Heechul Yun</i>	19:1–19:22
Avoiding Pitfalls when Using NVIDIA GPUs for Real-Time Tasks in Autonomous Systems <i>Ming Yang, Nathan Otterness, Tanya Amert, Joshua Bakita, James H. Anderson, and F. Donelson Smith</i>	20:1–20:21
Instruction Caches in Static WCET Analysis of Artificially Diversified Software <i>Joachim Fellmuth, Thomas Göthel, and Sabine Glesner</i>	21:1–21:23
Vulnerability Analysis and Mitigation of Directed Timing Inference Based Attacks on Time-Triggered Systems <i>Kristin Krüger, Marcus Völp, and Gerhard Fohler</i>	22:1–22:17
Recovery Time Considerations in Real-Time Systems Employing Software Fault Tolerance <i>Anand Bhat, Soheil Samii, and Ragunathan (Raj) Rajkumar</i>	23:1–23:22
Whole-System Worst-Case Energy-Consumption Analysis for Energy-Constrained Real-Time Systems <i>Peter Wägemann, Christian Dietrich, Tobias Distler, Peter Ulbrich, and Wolfgang Schröder-Preikschat</i>	24:1–24:25
Using Lock Servers to Scale Real-Time Locking Protocols: Chasing Ever-Increasing Core Counts <i>Catherine E. Nemitz, Tanya Amert, and James H. Anderson</i>	25:1–25:24
On Strong and Weak Sustainability, with an Application to Self-Suspending Real-Time Tasks <i>Felipe Cerqueira, Geoffrey Nelissen, and Björn B. Brandenburg</i>	26:1–26:21