34th Euromicro Conference on Real-Time Systems

ECRTS 2022, July 5–8, 2022, Modena, Italy

Edited by

Martina Maggio

Editors

Martina Maggio
Universität des Saarlandes, Department of Computer Science, Saarbrücken, Germany
Lund University, Department of Automatic Control, Sweden
maggio@cs.uni-saarland.de

ACM Classification 2012
Computer systems organization → Embedded and cyber-physical systems; Computer systems organization → Real-time systems; Software and its engineering → Real-time systems software

ISBN 978-3-95977-239-6

Published online and open access by
Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at https://www.dagstuhl.de/dagpub/978-3-95977-239-6.

Publication date
July, 2022

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 https://portal.dnb.de.

Digital Object Identifier: 10.4230/LIPIcs.ECRTS.2022.0

LIPIcs – Leibniz International Proceedings in Informatics

LIPIcs is a series of high-quality conference proceedings across all fields in informatics. LIPIcs volumes are published according to the principle of Open Access, i.e., they are available online and free of charge.

ISSN 1868-8969

https://www.dagstuhl.de/lipics

Contents

Papers

34th Euromicro Conference on Real-Time Systems (ECRTS 2022).
Editor: Martina Maggio
Leibniz International Proceedings in Informatics
LIPICS Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Preface

Message from the Chairs

We welcome you to ECRTS 2022, in Modena, Italy. This is especially a pleasure given that ECRTS 2022 follows two editions that were forced to be virtual by the global pandemic.

Alongside RTSS and RTAS, ECRTS ranks as one of the top three international conferences on real-time systems, and is the premier European conference series on this topic. Given the lessons learned during the pandemic, this year ECRTS includes the possibility to participate online. We are delighted to have you join the first *hybrid* ECRTS, for an exciting program consisting of both scientific talks and opportunities for socializing and collaborative work.

ECRTS has been at the forefront of recent innovations in the real-time systems community such as artifact evaluation, open-access proceedings, and a flexible page limit. This year we have consolidated the experience, and repeated a double-blind submission process with flexible page limit, that does not constrain the authors, and allows them to put the effort into optimizing the content of their submission, rather than space utilization.

ECRTS 2022 received a total of 52 submissions from Asia, Europe, and North America. Each submission was reviewed by at least three expert members of the program committee nd discussed at a virtual committee meeting that took place on April 5 and 6, 2022. The program committee accepted 19 papers for publication and presentation, which translates to an acceptance rate of 37%. In addition, on the scientific side, the ECRTS industrial challenge will be presented and discussed at the conference, following a long-lasting tradition of industrial challenges coming from the WATERS workshop.

A major conference such as ECRTS rests on many shoulders. First of all, we would like to thank the program committee members, for their hard work despite all the burdens of yet another challenging year. Similarly, thanks to all external and secondary reviewers, who provided many valuable perspectives and important feedback. We are especially grateful to those PC members and additional reviewers who went "above and beyond" serving as shepherds. We would also like to extend our thanks to the Artifact Evaluation Chairs, Matthias Becker and Angeliki Kritikakou, and their board of Artifact Evaluators for running the AE process, and to the Real-Time Pitches Chair, Timothy Bourke, for bringing fresh new ideas and discussions to the conference.

Finally, we would like to thank the ECRTS Executive Committee, Sebastian Altmeyer, Sophie Quinton, and Marcus Völp, for the outstanding service to the community, and the long-serving Euromicro Real-Time TC Chair Gerhard Fohler for developing ECRTS into what it is today, and for agreeing to give a retrospective talk on the history of ECRTS. Last but not least, we thank all authors for submitting to ECRTS 2022. Whether or not the submission was ultimately accepted for publication, we deeply appreciate your fine work and the tremendous effort and care that has gone into it; this conference would not be possible without you.

We are looking forward to an inspiring scientific program in Modena and online. Please join us in enjoying both the technical content and everything around it, especially with the return to in-person events.

Marko Bertogna
General Chair ECRTS 2022

Martina Maggio
Program Chair ECRTS 2022

34th Euromicro Conference on Real-Time Systems (ECRTS 2022).
Editor: Martina Maggio

Leibniz International Proceedings in Informatics
Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Organizers

Euromicro Real-Time Technical Committee

Sebastian Altmeyer, University of Augsburg, Germany
Sophie Quinton, INRIA Grenoble Rhône-Alpes, France
Marcus Völp, SnT, University of Luxembourg, Luxembourg

General Chair

Marko Bertogna, Università degli Studi di Modena e Reggio Emilia, Italy

Program Chair

Martina Maggio, Universität des Saarlandes, Germany, and Lund University, Sweden

Artifact Evaluation Chairs

Angeliki Kritikakou, IRISA, Rennes, France
Matthias Becker KTH Royal Institute of Technology

Real-time pitches chair

Timothy Bourke, INRIA, France

Local Organization Team

Benjamin Rouxel, Università degli Studi di Modena e Reggio Emilia, Italy
Francesco Guaraldi, Università degli Studi di Modena e Reggio Emilia, Italy
Filippo Muzzini Università degli Studi di Modena e Reggio Emilia, Italy

Program Committee

Sebastian Altmeyer, University of Augsburg, Germany
Sanjoy Baruah, Washington University in St. Louis, United States of America
Andrea Bastoni, TU Munich, Germany
Matthias Becker, KTH Royal Institute of Technology, Sweden
Marko Bertogna, Università degli Studi di Modena e Reggio Emilia, Italy
Marc Boyer, ONERA, France
Björn Brandenburg, Max Planck Institute for Software Systems (MPI-SWS), Germany
Daniel Bristot de Oliveira, Red Hat, Italy
Daniel Casini, Scuola Superiore Sant'Anna, Pisa, Italy
Francisco Cazorla, Barcelona Supercomputing Center, Spain
Anton Cervin, Lund University, Sweden
Thidapat Chantem, Virginia Tech, United States of America
Rolf Ernst, TU Braunschweig, Germany
Nathan Fisher, Wayne State University, United States of America
Gerhard Fohler, TU Kaiserslautern, Germany
Steve Goddard, University of Iowa, United States of America
Giovani Gracioli, Federal University of Santa Catarina, Brasil

34th Euromicro Conference on Real-Time Systems (ECRTS 2022).
Editor: Martina Maggio

Leibniz International Proceedings in Informatics
Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Organizers

Angeliki Kritikakou, University of Rennes 1, France
Risat Mahmud Pathan, Zenuity, Sweden
Renato Mancuso, Boston University, United States of America
Julio Medina, Universidad de Cantabria, Spain
Geoffrey Nelissen, Eindhoven University of Technology, The Netherlands
Alessandro Papadopoulos, Mälardalen University, Sweden
Rodolfo Pellizzoni, University of Waterloo, Canada
Linh Thi Xuan Phan, University of Pennsylvania, United States of America
Isabelle Puaut, INRIA, France
Sophie Quinton, INRIA, France
Jan Reineke, Universität des Saarlandes, Germany
Christine Rochange, University of Toulouse, France
Stefanos Skalistis, Collins Aerospace, Ireland
Leandro Soares Indrusiak, University of York, The United Kingdom
Marcus Völp, University of Luxembourg, Luxembourg
Georg von der Brüggen, TU Dortmund, Germany
Bryan Ward, Massachussets Institute of Technology, United States of America
Dirk Ziegenbein, Bosch GmBH, Germany