

Preface

Current communication systems cover a wide range of computing platforms, from traditional fixed telephony to mobile computing, multimedia systems, peer-to-peer Internet services, and critical embedded systems.

The research topics in embedded systems have increased and gained in importance. Consequently, communication between and among these systems has also increased, which has led to the emergence of new problems and challenges that need to be studied and tackled.

The interoperation of all these systems is a crucial characteristic. Integrating, connecting, and coordinating communication is fundamental for software and middleware systems.

Therefore, the Workshop on Communication in Critical Embedded Systems (WoCCES) focuses on important innovations and recent advances in the specification, design, construction, and use of communication in critical embedded systems. Its goal is to bring together researchers and practitioners from industry and academia and give them an opportunity to learn about the latest developments, deployments, technology trends, and research results as well as initiatives related to embedded systems and their applications in a variety of industrial environments.

This volume on “Special Issue on Communication of Critical Embedded Systems” in the Springer *Communications in Computer and Information Science* series (Springer CCIS) consists of the best papers selected from WoCCES 2013–2016, namely, the first, second, third, and fourth edition of the Workshop of Communication in Critical Embedded Systems.

WoCCES, which brings together researchers as well as undergraduate and graduate students of computer science, electrical engineering, mechatronics engineering, mechanical engineering, and related areas, is part of the most important Brazilian conference on Computer Networks and Distributed Systems (SBRC). Annually, WoCCES receives paper submissions that contribute to the high standard of SBRC providing updates on hot topics for researchers and enthusiasts of embedded systems and computer networks.

The Program Committee members are from around the world, and we have received and accepted papers from several different countries in previous editions. WoCCES is a special workshop that takes place in different Brazilian cities, and is also joined by renowned researchers as invited speakers. Although the call for papers is made available in both Brazilian Portuguese and English versions, the authors are encouraged to submit papers mainly in English aiming at increasing the international visibility of the event.

Previous WoCCES events comprised: the first edition (2013) in Brasília, Distrito Federal, Brazil, on May 10; the second edition (2014) in Florianópolis, Santa Catarina Brazil, on May 9; the third edition (2015) in Vitória, Espírito Santo, Brazil, May 22; and the fourth edition (2016) in Salvador, Bahia, Brazil, on June 3. All WoCCES

editions were sponsored by the Brazilian Computer Society (SBC), with support from FAPs, CAPES, and CNPq.

We received 41 submissions, from which 24 papers were accepted. Each submitted paper was reviewed by at least three experts. The acceptance/rejection decision used the following criteria: All papers with two positive reviews were accepted, and those with two negative reviews were rejected. Borderline papers (with one positive and one negative review) were analyzed carefully by the conference chairs to evaluate the reasons given for acceptance or rejection. Our final decision on these submissions took into account mainly the potential of each paper to foster fruitful discussions and the future development of communication in critical embedded systems in the world, including those at initial stages. In some cases, one more review was carried out in order for a decision to be taken. The best papers were selected taking into consideration the best scores obtained by the papers according to the reviewers. We selected the 12 best papers from WoCCES 2013-2016. Extended and improved versions of the best papers were requested from the authors. The submitted papers were reviewed again by selected Program Committee members of the conferences and, after corrections, seven of these articles were accepted for publication in this volume of the CCIS series.

We would like to thank all the authors whose work and dedication made it possible to put together an exciting book and for their high-quality contributions. It is our hope that this Special Issue of the Springer CCIS volume will spark the interest of readers in these topics and motivate researchers all across the globe to intensify and extend their work in this field, as a solid basis for many more papers at future conferences. We are also enormously grateful to all Program Committee members and reviewers for their cooperation toward the success of this book.

We hope the papers will contribute to the development and evolution of this field, achieving a more realist balance between the communication and embedded system communities.

April 2017

Kalinka Branco
Alex Pinto
Daniel Pigatto

Communication in Critical Embedded Systems

First Workshop, WoCCES 2013, Brasília, Brazil, May, 10, 2013, Second Workshop, WoCCES 2014, Florianópolis, Brazil, May 9, 2014, Third Workshop, WoCCES 2015, Vitória, Brazil, May 22, 2015, 4th Workshop, WoCCES 2016, Salvador, Brazil, June 3, 2016, Revised Selected Papers

Branco, K.; Pinto, A.; Pigatto, D. (Eds.)

2017, XV, 131 p. 68 illus., Softcover

ISBN: 978-3-319-61402-1