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Computer Aided Systems Theory – EUROCAST 2015

15th International Conference
Las Palmas de Gran Canaria, Spain, February 8–13, 2015
Revised Selected Papers

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Preface

The concept of CAST as computer-aided systems theory was introduced by Franz Pichler in the late 1980s to refer to computer theoretical and practical development as tools for solving problems in system science. It was thought of as the third component (the other two being CAD and CAM) required to complete the path from computer and systems sciences to practical developments in science and engineering.

Franz Pichler, of the University of Linz, organized the first CAST workshop in April 1988, which demonstrated the acceptance of the concepts by the scientific and technical community. Next, the University of Las Palmas de Gran Canaria joined the University of Linz to organize the first international meeting on CAST (Las Palmas, February 1989) under the name EUROCAST 89. This proved to be a very successful gathering of systems theorists, computer scientists, and engineers from most European countries, North America, and Japan.

It was agreed that EUROCAST international conferences would be organized every two years, alternating between Las Palmas de Gran Canaria and a continental European location. From 2001 the conference has been held exclusively in Las Palmas. Thus, successive EUROCAST meetings took place in Krems (1991), Las Palmas (1993), Innsbruck (1995), Las Palmas (1997), Vienna (1999), Las Palmas (2001), Las Palmas (2003), Las Palmas (2005), Las Palmas (2007), Las Palmas (2009), Las Palmas (2011) and Las Palmas (2013), in addition to an extra-European CAST conference in Ottawa in 1994. Selected papers from these meetings were published as Springer's *Lecture Notes in Computer Science* volumes 410, 585, 763, 1030, 1333, 1798, 2178, 2809, 3643, 4739, 5717, 6927, 6928, 8111, and 8112 and in several special issues of *Cybernetics and Systems: An International Journal*. EUROCAST and CAST meetings are definitely consolidated, as has been shown by the number and quality of the contributions over the years.

EUROCAST 2015 took place in the Elder Museum of Science and Technology of Las Palmas, February 8–13, and it continued with the approach tested at previous conferences as an international computer-related conference with a true interdisciplinary character. There were different specialized workshops, which, on this occasion, were devoted to the following topics:

1. Systems Theory and Applications, chaired by Pichler (Linz) and Moreno-Díaz (Las Palmas)
2. Modelling Biological Systems, chaired by Nobile and Di Crescenzo (Salerno)
3. Intelligent Information Processing, chaired by Freire and Castro-Souto (A Coruña)
4. Theory and Applications of Metaheuristic Algorithms, chaired by Affenzeller and Jacak (Hagenberg) and Raidl (Vienna)
5. Computer-Based Methods and Virtual Reality for Clinical and Academic Medicine, chaired by Rozenblit (Tucson), Klempous (Wroclaw), and Suárez-Araujo (Las Palmas)

6. Mobile and Autonomous Transportation Systems, chaired by González, Godoy, and Villagrá (Madrid)
7. Signals and Systems in Electronics, chaired by Huemer (Linz), Lunglmayr (Klagenfurt), and Jungwirth (Wels)
8. Traffic Behavior, Modelling and Optimization, chaired by Avineri (Tel Aviv), Paz (Las Vegas), Rossetti (Porto), Rubio-Royo and Sánchez-Medina (Las Palmas)
9. Computer Vision, Sensing, Image and Medical Images Processing and Visualization; Image Processing, chaired by Penedo (A Coruña) and Llorca (Madrid)
10. Model-Based System Design, Verification and Simulation, chaired by Ceska (Brno) and Nikodem (Wroclaw)
11. Digital Signal Processing Methods and Applications, chaired by Astola (Tampere), Moraga (Dortmund), and Stankovic (Nis)
12. Modelling and Control of Robots, chaired by Müller and Gattringer (Linz)
13. Mobile Computing Platforms and Technologies, chaired by Mayrhofer and Holzmann (Austria)
14. Process Modelling and Simulation, chaired by Grossmann and Rinderle Ma (Vienna)
15. Cloud and Other Computing Systems, chaired by Schwartzel (Munich)
16. Marine Sensors and Manipulators, chaired by Khatib (Stanford), Kruusmaa (Tallinn), Silva (Porto), and Sosa (Las Palmas)

In this conference, as in previous ones, most of the credit for the success is due to the chairs of the workshops. They and the sessions chairs, with the counseling of the International Advisory Committee, selected from 161 initially presented papers, after oral presentations and subsequent corrections, the 107 revised papers included in this volume.

The event and this volume were possible thanks to the efforts of the chairs of the workshops in the selection and organization of all the material. The editors would like to express their acknowledgement to all contributors and participants and to the invited speakers, Milan Ceska from Brno, Teresa de Pedro from Madrid, and Harmut Bremer from Linz, for their readiness to collaborate. We would also like to thank the director of the Elder Museum of Science and Technology, D. José Miranda, and the members of the museum. Special thanks are due to the staff of Springer in Heidelberg for their valuable support.

September 2015

Roberto Moreno-Díaz
Franz Pichler
Alexis Quesada-Arencibia

Organization

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