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Computer Aided Systems Theory – EUROCAST 2007

11th International Conference
on Computer Aided Systems Theory
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Revised Selected Papers

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Preface

The concept of CAST as Computer Aided Systems Theory was introduced by F. Pichler in the late 1980s to encompass computer-theoretical and practical developments as tools for problem-solving in system science. It was thought of as the third of three components (the other two being CAD and CAM) that together provide a complete picture of 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 1989. This proved to be a very successful gathering of systems theorists, computer scientists and engineers from Europe, North America and Japan.

It was agreed that EUROCAST international conferences would be organized every two years. Thus, successive EUROCAST meetings have taken place in Krems (1991), Las Palmas (1993), Innsbruck (1995), Las Palmas (1997), Vienna (1999), Las Palmas (2001), Las Palmas (2003) and Las Palmas (2005), in addition to an extra-European CAST Conference in Ottawa in 1994. Selected papers from those meetings were published in Springer's Lecture Notes in Computer Science series, as numbers 410, 585, 763, 1030, 1333, 1798, 2178, 2809 and 3643, and in several special issues of the international journal *Cybernetics and Systems*. EUROCAST and CAST have become well-established meetings, as has been shown by the number and quality of the contributions over the years.

EUROCAST 2007, held in the Elder Museum of Science and Technology of Las Palmas, February 12-16, continued in the same style as previous conferences as an international computer-related conference with a true interdisciplinary character. EUROCAST 2007 included a number of specialized workshops, which were devoted to the following subjects:

- Systems Theory and Simulation, chaired by Pichler (Linz) and Moreno-Díaz (Las Palmas);
- Computation and Simulation in Modelling Biological Systems, chaired by Ricciardi (Napoli);
- Intelligent Information Processing, chaired by Freire (A Coruña);
- Computers in Education, chaired by Martín-Rubio (Murcia);
- Grid Computing, chaired by Volkert (Linz);
- Applied Formal Verification, chaired by Biere (Linz);
- Cellular Automata, chaired by Vollmert (Karlsruhe);
- Computer Vision, chaired by Álvarez (Las Palmas);
- Heuristic Problem Solving, chaired by Affenzeller (Hagenberg);
- Signal Processing Architectures, chaired by Huemer (Erlangen) and Müller-Wipperfurth (Hagenberg);
- Robotics and Robotic Soccer, chaired by Kopacek (Vienna);

- Cybercars and Intelligent Vehicles, chaired by Parent (Paris) and García-Rosa (Madrid);
- Artificial Intelligence Components, chaired by Chaczko (Sidney).

Three invited lectures by Peter Weibel from Karlsruhe, Thomas Arts from Göteborg, and Ricardo García-Rosa from Madrid were complemented with demonstrations on Cybercars by members of the European Cybercar Group (Michel Parent and Ricardo García-Rosa), a presentation on the opportunities for research and experiment in FP7 by Fabrizio Minarini, a lecture on the history of communications, by James Buffalo Kreutzer, and demonstrations of robotic soccer by members of the IHRT Institute of Vienna Technical University, directed by Peter Kopacek.

The papers included in this volume are the result of two successive selection processes: the first for presentation at the conference, and the second a selection of full papers among those presented there. The selection process was the responsibility of the chairpersons, with the counselling of the International Advisory Committee. The present volume has been divided into 13 sections according to the 13 workshops of EUROCAST 2007.

The editors would like to thank all contributors for providing their material in hard and electronic forms on time. Special thanks are due to the Staff of Springer Heidelberg for their valuable support.

July 2007

Roberto Moreno-Díaz
Franz Pichler
Alexis Quesada-Arencia

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