

Preface

The 26th International Conference on Robotics in Alpe-Adria-Danube Region, RAAD 2017, will be held in the *Technical University Politecnico di Torino*, Turin, Italy, on June 21–23, 2017. The conference brought together academic and industry researchers in Robotics from 30 countries, the majority of them affiliated to the Alpe-Adria-Danube Region, and their worldwide partners in a collegial and stimulating environment.

Human activities in many sectors are currently supported or replaced by robots, which range from standard robots for industrial applications to service and autonomous robots for complex activities. The great versatility and flexibility of nowadays robots allows them to be employed in numerous sectors, to perform a diversity of tasks.

According to its tradition, RAAD 2017 covered all important areas of research, development, and innovation in Robotics, including new applications and trends such as unmanned aerial vehicles, personal robots for ambient assisted living, human–robot collaboration and interaction, bio-inspired and cognitive robots, visual servoing of robot motion, and cloud robotics.

The conference was arranged with Tracks, which cover specific topics of Robotics and which originated corresponding technical sessions. Each Track was managed by chairpersons, who proposed and promoted its topic, collected the related papers, and chaired the corresponding conference sessions. This allowed enriching the conference with subjects representing the ultimate frontier of the Robotics research. The Tracks organized in RAAD 2017 were as follows:

- *Optimization-based methods for planning and control of environment-aware robotic systems*
- *Exoskeletons and body shells: prospective with new materials, design and brain control*
- *UAV: innovation and new application fields in the next future*
- *Technological rehabilitation*
- *Safety related devices and applications*
- *Automation and robotics for vehicles*

- *Control, identification and calibration of robotic systems*
- *Wearable robotic systems for motion assistance*
- *Humanoids & cognitive systems*

Therefore, a special acknowledgment is due to all Track Chairs which gave their valuable collaboration to this task:

Marco Gabiccini, Alberto Rovetta, Marco Piras, Paolo Maggiore, Alberto Borboni, Giuseppe Carbone, Med Amine Laribi, Francesco Timpone, Mauro Velardocchia, Andreas Müller, Marina Indri, Hubert Gattringer, Tadej Petrič, Karsten Berns, Aleksandar Rodić.

The total number of papers was completed with articles authored by researchers from the RAAD community but also from other European and extra-European Countries, bringing further enrichment of conference topics.

Consequently, the following subjects completed the whole of the conference:

- *Robot kinematics and dynamics*
- *Vision systems*
- *Mobile robots and path planning*
- *Industrial applications*
- *Robotic grippers*
- *Biomedical applications*

This book collects 111 scientific papers and is articulated in 16 chapters, which reflect the 24 technical sessions of the conference. All papers have been selected through an accurate peer review process, which considered their relevance, novelty, clarity, and which guaranteed the high quality level of this work.

The topics are presented in a sequence starting from the classical robotic subjects, such as kinematics, dynamics, structures, control, and ending to frontier topics, such as human–robot interaction and biomedical applications.

We are confident that any researcher involved in the robotic field will find this book an extraordinary and up-to-date window on the last findings in this area.

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