

Preface

The 12th International Symposium of Robotics Research (ISRR 2015) was held from September 12–15, 2015, in Sestri Levante, Italy. The ISRR series on conferences began in 1983, and it is sponsored by the International Foundation of Robotics Research (IFRR), an independent organization comprised of top researchers around the world.

The goal of the ISRR is to bring together active, leading robotics researchers from academia, government, and industry, to assess and share their views and ideas about the state of the art of robotics and to discuss promising new avenues for future research exploration in the field of Robotics.

The choice of the location of ISRR 2015 reflects a tradition in ISRR, holding the conference in a beautiful place where the natural and cultural setting can inspire deeper and longer-sighted thoughts in the pauses of a very intense working program. Having the symposium in Italy was also meant to be suggestive of the ideal link between the most advanced robotics research with the ideas and dreams of the great engineers of the past. They, in particular those who are named “Renaissance Engineers,” thought and dreamed of realizing intelligent machines, including robots, but could not build them. Nowadays, robotics technology can make this possible. Some ideas, like the openings toward human sciences and the concept of human-centered design, are as much valid now as they were at that time.

Special emphasis in ISRR 2015 was given to the emerging frontiers, such as the fields of flying robots, soft robotics and natural machine motion, hands and haptics, multi-robot systems, cognitive robotics and learning, humanoids and legged locomotion, robot planning and navigation, and knowledge-based robots.

The goal of the ISRR Symposia is to bring together active leading robotics researchers and pioneers from academia, government, and industry to assess and share their views and ideas about the state of the art of robotics and to discuss promising new avenues for future research. Papers representing authoritative reviews of established research areas as well as papers reporting on new areas and pioneering work were sought for presentation at the symposium. In addition to the open call, a well selected number of leading researchers have been solicited to contribute by personal invitation.

A Greatest Hits track was introduced in ISRR 2015. A small number of research papers which have been selected for the most prestigious awards in the last year have been invited for presentation. This offered a unique possibility to have a synoptic view of what the robotics community considered to be the best of robotics research and put it in a larger context.

During the four-day symposium, 49 papers were presented in a single track, to cover the broad research area of robotics; two forum sessions integrated the program by facilitating group discussions. Poster sessions were also held, in a very informal interactive style. The procedure to select the papers and the participants was very strict. A number of selected leading researchers were invited to be part of the program committee, providing overview talks and participating in the review process. In addition to an open call for contributions, researchers who had made significant new contributions to robotics were invited to submit papers to a competitive review process. All papers were reviewed by the Symposium Program Committee and the International Foundation of Robotics Research (IFRR, the symposium sponsor) for final acceptance.

The symposium included visits to several beautiful sites in the area, as well as at encouraging greater participant interaction, also by stimulating cultural discussions and reflection on robotics, its historical background, and its future challenges. It furthermore included a technical tour to the Istituto Italiano di Tecnologia where a large variety of leading edge robotics science and systems were presented to the participants.

This book collects the papers presented at the symposium, with authoritative introductions to each section by the chairs of the corresponding sessions.

The ISRR 2015 co-chairs/editors would like to thank Floriana Sardi, for their invaluable help in the organization of the program; Monica Vasco and Simona Ventriglia for their tireless secretarial work on local organization; Nick Dring for the management of the Web site; and Abhinav Valada for helping especially in the final assembly of this book.

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Antonio Bicchi
Wolfram Burgard

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