Preface

Robots are versatile machines that are increasingly being used not only to perform dirty, dangerous, and dull tasks in manufacturing industries, but also to achieve societal objectives, such as enhancing safety in transportation, reducing the use of pesticide in agriculture, helping people with health conditions, providing companionship, and improving efficacy in the fight against crime and civilian protection.

Compared to the manufacturing workcell, a public road, a cornfield, a hospital, a home, or a crime scene are open-ended environments, which require autonomous robots to be equipped with advanced cognitive capabilities, such as perception, planning, monitoring, coordination, and control in order to cope with unexpected situations reliably and safely.

In this scenario, the cost of creating new robotics products is significantly related to the complexity of developing software control systems that are robust, dependable, and whose correct behavior can be certified. This complexity can be managed by exploiting system engineering methodologies and tools that build on the power of software models and domain-specific programming languages to analyze, design, simulate, implement, test, and deploy complex robotic control systems.

The series of the International Conference on Simulation, Modeling, and Programming for Autonomous Robots (SIMPARG) is organized to foster research in the above topics. Gathering the most recent works in this field enhances the reusability of software for robotics and pushes research forward swiftly.

The 2014 event of SIMPAR was held at the “Giovanni XXIII” Conference Center in Bergamo, Italy during October 20–23. It followed the previous works of the first SIMPAR 2008 in Venice, Italy, the second SIMPAR 2010 in Darmstadt, Germany, and the third SIMPAR 2012 in Tsukuba, Japan and provided a forum for concentrated discussions on the topics of interest.

The number of submitted papers has increased steadily up to 62 for the SIMPAR 2014 event. Also the paper quality has increased significantly, which is demonstrated by the 49 contributed papers collected in this book. 41 papers were presented during regular sessions, while the remaining eight papers were presented as posters. Each submitted paper received at least two reviews by the members of a carefully selected international Program Committee.

We also had two impressive plenary talks presented by Raffaello D’Andrea (ETH Zurich, Switzerland) and Nate Koenig (Open Source Robotics Foundation, USA). A third plenary talk was planned to be given by Mike Stilman (Georgia Tech, USA), who passed away following an apparent accident in Atlanta on May 6th 2014, leaving all robotics community bereft of an emerging leader in humanoid robotics research.

We want to gratefully thank all Program Committee members and all other reviewers, supporters, organizers, and volunteers who contributed to this year's event of SIMPAR. Without their efforts, it would not be possible to hold this important conference.

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