

# Lecture Notes in Artificial Intelligence 7628

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# Simulation, Modeling, and Programming for Autonomous Robots

Third International Conference, SIMPAR 2012  
Tsukuba, Japan, November 5-8, 2012  
Proceedings

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# Preface

The application fields of autonomous robots are considered to be getting wider and wider. Living and office spaces will be the most promising domain for autonomous robotics, in which robots should complete complicated and intelligent tasks under uncertain environments including human behaviors. Disaster areas and deep space are also important application domains, in which robots are required to behave flexibly and (semi-)automatically against unexpected situations.

No-one doubts the importance of software for such robotics applications. Simulation is required to design complex behaviors of robots and to confirm the stability and safety of action plans. Modeling of robots and environments is a necessary part of developing autonomous robotic systems. Programming tools and libraries are the most active area in the development of robotics research. Many projects of autonomous robots have recently started from preparing such software platforms.

The series of 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 re-usability of software for robotics and pushes research forward swiftly.

The third SIMPARG 2012 was held during November 5–8, at the National Institute of Advanced Industrial Science and Technology in Tsukuba, Japan. It followed the previous works of the first SIMPARG 2008 in Venice, Italy, and the second SIMPARG 2010 in Darmstadt, Germany, and provided a forum for free and concentrated discussions on the topics of interest.

This book collects 34 contributed papers, selected among a total 46 submissions. Ten papers describe the design of complex behaviors of autonomous robots, nine are on software layers, eight papers are related to modeling and learning, and six are simulation-related works. Each submitted paper received at least two reviews by the members of a carefully selected international Program Committee.

We also had three impressive invited talks presented by Yoshiyuki Sankai, Jean-Paul Laumond, and Michael Beetz, which discussed the subject field in relation to clinical application, cognitive science, and artificial intelligence.

We want to gratefully thank the Program Committee members and all other supporters, organizers, and volunteers who contributed for SIMPARG. Without their effort, it would be impossible to hold this important conference.

November 2012

Noriaki Ando  
Davide Brugali  
James Kuffner  
Itsuki Noda



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