

Preface

FSR, the International Conference on Field and Service Robotics, is the leading single track conference of robotics for field and service applications. Its goal is to report and encourage the development and experimental evaluation of field and service robots, and to generate a vibrant exchange and discussion in the community. Field robots are non-factory robots, typically mobile, that operate in complex and dynamic environments: on the Earth, or other planetary surface, under the ground, underwater, in the air, or in space. Service robots are those that work closely and interactively with humans to help them with their lives.

The first FSR conference was held in Canberra, Australia, in 1997. Since then it has been held every two years in rotation in Australia, America, Europe, and Asia, such as Pittsburg, USA (1999), Helsinki, Finland (2001), Mount Fuji, Japan (2003), Port Douglas, Australia (2005), Chamonix, France (2007), and Cambridge, USA (2009). Following this tradition, the eighth FSR conference was originally planned for 2011 with the venue of Matsushima in Tohoku region of Japan. However, on March 11, 2011, a magnitude M9.0 earthquake occurred off the Pacific coast of Tohoku, and a large-scale disaster was caused by the Tsunami which resulted. However, the Matsushima area suffered relatively minor damage, so rather than cancelling the conference, it was decided to postpone it to July 2012.

In fact, this earthquake raised issues concerning the contribution of field and service robotics technology to emergency scenarios. A number of precious lessons were learned from operation of robots in the resulting, very real and challenging, disaster environments. We therefore organized a special session to feature the up-to-date study on disaster response, relief, and recovery on 16 July 2012, the first day of the conference held in Tohoku University. Then, three-day technical sessions were followed in Matsushima on 17–19 July.

This book presents the results of FSR2012, the eighth conference of Field and Service Robotics. There are 43 papers in this volume. Thirty-seven papers were presented in oral sessions and six were presented in an interactive session. The papers cover a broad range of topics including: Disaster Response, Service/Entertainment Robots, Inspection/Maintenance Robots, Mobile Robot Navigation, Agricultural Robots, Robots for Excavation, Planetary Exploration, Large Area Mapping, SLAM for Outdoor Robots, and Elemental Technology for Mobile Robots.

In addition to the paper presentations, there were eight keynote talks in the conference. We would like to acknowledge these talks with great appreciation and thanks to the speakers:

- “Damage Due to the 2011 Tohoku Earthquake Tsunami and its Reconstruction”
by Prof. Fumihiko Imamura, Tohoku University, Japan
- “Spatio-Temporal Video Archive of 3.11 Earthquake and Tsunami Disasters and Their Visualization Supported by Computer Vision Techniques”
by Prof. Koichiro Deguchi, Tohoku University, Japan
- “Human-Robot Interaction Lessons from Unmanned Vehicles at Fukushima and Tohoku Tsunami Response”
by Prof. Robin R. Murphy, Texas A&M University, U.S.A.
- “Rescue Mobile Robot Quince: Toward Emergency Response to Nuclear Accident at Fukushima Daiichi Nuclear Power Plants on March 2011”
by Prof. Keiji Nagatani, Tohoku University, Japan
- “Therapeutic Robot, PARO, and Mental Care for Victims of Disaster by Earthquakes in Japan”
by Dr. Takanori Shibata, National Institute of Advanced Industrial Science and Technology, Japan
- “Autonomous Agile Aerial Robots”
by Prof. Vijay Kumar, University of Pennsylvania, U.S.A.
- “Design and Navigation of Wheeled, Running and Flying Robots”
by Prof. Roland Siegwart, ETH Zurich, Switzerland
- “Thoughts on Fully Autonomous Vehicles”
by Prof. Alberto Broggi, Università di Parma, Italy

The abstract of the talks and the speakers’ biographies can be viewed in:
<http://www.astro.mech.tohoku.ac.jp/FSR2011/KeynoteSpeakers.html>

Kazuya Yoshida
Satoshi Tadokoro

Field and Service Robotics

Results of the 8th International Conference

Yoshida, K.; Tadokoro, S. (Eds.)

2014, XIII, 658 p. 426 illus., 367 illus. in color.,

Hardcover

ISBN: 978-3-642-40685-0