Guest Editorial
Special Section on the 11th Workshop on the Algorithmic Foundations of Robotics (WAFR 2014)

I T IS A pleasure to present Part II of the Special Section on the 11th Workshop on the Algorithmic Foundations of Robotics (WAFR), which was held at Boğaziçi University, Istanbul, Turkey, during August 3–5, 2014. WAFR is a prestigious biennial single-track workshop on algorithms for robotics and automation. It features cutting-edge research in a broad range of planning problems (including manipulation, motion, path, multirobot, and kynodynamic planning), geometric and topological computation, and novel applications like surgical planning, active sensing, and informative path planning. A total of 42 contributed papers were presented at WAFR 2014; invited talks were given by Vijay Kumar on "Aerial Robot Swarms," Cagatay Basdogan on "Haptic Role Exchange and Negotiations for Human Robot Interaction," and Oussama Khatib on "Working with the New Robots."

Part II of the Special Section contains revised and extended versions of three of the best papers presented at WAFR 2014. All three papers have undergone the same thorough review process as regular submissions. Part I of the Special Section, consisting of four papers, appeared in the October 2015 issue of T-ASE.

The paper "Optimal Path Planning in Complex Cost Spaces with Sampling-based Algorithms" by Didier Devaurs, Thierry Siméon, and Juan Cortés presents new sampling-based approaches to path planning that offer probabilistic completeness and asymptotic optimality guarantees. The approaches are shown to converge faster towards the optimal solution than existing methods when applied to problems involving various complex cost spaces.

The paper "Online Coverage of Planar Environments by a Battery Powered Autonomous Mobile Robot," by Iddo Shnaps and Elon Rimon considers an autonomous mobile robot that has to cover an unknown planar environment using a limited capacity battery. The authors present a competitive coverage algorithm using position and local obstacle detection sensors, along with a universal lower bound over all online battery powered coverage algorithms.

The paper "Stochastic Extended LQR for Optimization-Based Motion Planning Under Uncertainty" by Wen Sun, Jur van den Berg, and Ron Alterovitz introduces an optimiza-tion-based motion planner that explicitly takes into account the impacts of motion uncertainty. The planner computes a trajectory along with an associated control policy with the objective of minimizing the expected value of a user-specified cost function.

We owe many thanks to the Associate Editors and Reviewers for their efforts to guarantee the high standards of the IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING, to Editorial Assistant Samantha Jacobs for streamlining the review process and communication with the authors, and to Editor-in-Chief Ken Goldberg for offering the opportunity of having a Special Section devoted to WAFR 2014. We also thank the program committee members, the invited speakers, the authors, NSF, and the local organizers for making WAFR 2014 a tremendous success.

The 12th Workshop on the Algorithmic Foundations of Robotics (WAFR) will be held December 18–20, 2016 on the waterfront in San Francisco, CA. Paper submissions are due on July 8 and talks will be presented at the Exploratorium. Details are available at: http://wafr.org.

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