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Preface

The market demands for skills, knowledge and personalities have positioned robotics as an important field in both engineering and science. To meet these challenging demands, robotics has already seen its success in automating many industrial tasks in factories. And, a new era will come for us to see a greater success of robotics in non-industrial environments. In anticipating a wider deployment of intelligent and autonomous robots for tasks such as manufacturing, eldercare, homecare, edutainment, search and rescue, de-mining, surveillance, exploration, and security missions, it is necessary for us to push the frontier of robotics into a new dimension, in which motion and intelligence play equally important roles.

After the success of the inaugural conference, the purpose of the Second International Conference on Intelligent Robotics and Applications was to provide a venue where researchers, scientists, engineers and practitioners throughout the world could come together to present and discuss the latest achievement, future challenges and exciting applications of intelligent and autonomous robots. In particular, the emphasis of this year's conference was on "robot intelligence for achieving digital manufacturing and intelligent automations."

This volume of Springer's *Lecture Notes in Artificial Intelligence* and *Lecture Notes in Computer Science* contains accepted papers presented at ICIRA 2009, held in Singapore, December 16–18, 2009. On the basis of the reviews and recommendations by the international Program Committee members, we decided to accept 128 papers having technical novelty, out of 173 submissions received from different parts of the world.

This volume is organized into chapters covering: Ubiquitous and Cooperative Robots in Smart Space, Advanced Control on Autonomous Vehicles, Intelligent Vehicles: Perception for Safe Navigation, Novel Techniques for Collaborative Driver Support, Robot and Automation in Tunneling (973), Robot Mechanism and Design, Robot Motion Analysis, Robot Motion Control, Visual Perception by Robots, Computational Intelligence by Robots, Robots and Challenging Applications, Robots and Current Investigations. We hope that this volume is a useful source of information to inspire new initiatives and new opportunities of collaboration toward the advancement of intelligent robotics and challenging applications of robots in both industrial and non-industrial environments.

We would like to thank all the contributors and authors for their continuous support of the ICIRA conference series. Also, we would like to thank the international Program Committee for their generous efforts and critical reviews. Thanks also go to the keynote speakers, Sadayuki Tsugawa, Meijo University, Japan, Zhengyou Zhang, Microsoft

Research, USA, and Yongkiang Koh, ST Kinetics Ltd., Singapore, for providing very insightful talks. Finally, we would like to thank those who devoted their time and effort to make ICIRA2009 a successful scientific meeting.

October 2009

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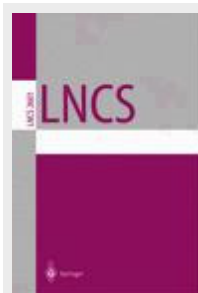
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