

## Preface

Shuzhi Sam Ge<sup>1</sup> · Oussama Khatib<sup>2</sup>

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For this regular issue, we are honored to introduce a collection of ten papers which cover a wide range of exciting topics in social robotics.

In the first paper, “Robots, Rape, and Representation” by Robert Sparrow, the author exams the ethics of the “rape” of robots. Some essentials when designing a robot are discussed, and the author believes that designing robots that lack the capacity to explicitly refuse consent may be morally problematic depending on which of two accounts of the representational content of sex with realistic humanoid robots is correct.

In the second paper, “Non-human Looking Robot Arms Induce Illusion of Embodiment” by Laura Aymerich-Franch, Damien Petit, Gowrishankar Ganesh, and Abderrahmane Kheddar, the authors claim that humans are able to experience a strong sense of embodiment towards non-human looking robot arms. Two experiments have been conducted, in which participants experienced high levels of embodiment of a robotic arm that had a blue end effector with no fingers and of a robotic arm that ended with a gripper when it was stroked synchronously with the real arm.

The third paper, “The Emotional, Cognitive, Physiological, and Performance Effects of Variable Time Delay in Robotic Teleoperation” by Euijung Yang and Michael C. Dorneich, investigates the effects of intermittent and

variable time delay to understand the cognitive and physical consequences of gaps between an input from an operator and the corresponding feedback response from the system. Experiments show that operator frustration, anger, and workload increased while usability and task performance decreased when intermittent and variable feedback lag was introduced to a robotic navigation task.

The fourth paper, “Foundations of Visual Linear Human-robot Interaction via Pointing Gesture Navigation” (Michal Tölgyessy, Martin Dekan, František Ducho, Jozef Rodina, Peter Hubinský, and L’uboš Chovanec) presents a human-robot interaction approach for controlling an autonomous mobile robot with a referential pointing gesture. The term “Linear HRI” and three laws of Linear HRI, which, the authors believe will help to shape and simplify the future research in human-robot interaction.

In the fifth paper, “Stroke Reasoning for Robotic Chinese Calligraphy Based on Complete Feature Sets” (Zhe Ma and Jianbo Su), an approach in stroke reasoning for Chinese calligraphy with robots is investigated. The complete feature set is introduced to characterize Chinese calligraphy. The hierarchical reasoning pyramid is proposed to assist the determination of stroke order and final writing order. The proposed approach has been successfully tested in robotic Chinese calligraphy.

In the sixth paper, “A Feasibility Study Evaluating the Emotionally Expressive Robot SAM” (Sarah A. Koch, Carl E. Stevens, Christian D. Clesi, Jenna B. Lebersfeld, Alyssa G. Sellers, Myriah E. McNew, Fred J. Biasini, Fracklin R. Amthor and Maria I. Hopkins), a feasibility study for the functionality and acceptability of socially animated machines is investigated. Two part evaluations were carried out to show the accuracy of a socially animated machine’s emotional facial expressions, and the comparison between the social animated machine and adult experimenters, respectively. It

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✉ Shuzhi Sam Ge  
samge@nus.edu.sg

Oussama Khatib  
ok@cs.stanford.edu

<sup>1</sup> Social Robotics Laboratory, Interactive Digital Media Institute, National University of Singapore, Singapore, Singapore

<sup>2</sup> Artificial Intelligence Laboratory, Department of Computer Science, Stanford University, Stanford, CA, USA

is specially shown that a socially animated machine is one of useful tools for children to improve social skills, especially children with autism spectrum disorder.

The seventh paper, “Development of a Framework for Human-Robot Interactions with Indian Sign Language Using Possibility Theory” (Neha Baranwal, Avinash Kumar Singh and G. C. Nandi) develops a framework for NAO based human-robot communication systems, where possibility theory is applied for classification of gestures. Experimental validation is provided to show the effectiveness of the proposed framework.

The eighth paper, “Perceived Comfortableness of Anthropomorphized Robots in U.S. and Japan” by Hiroko Kamide and Tatsuo Arai, investigates the difference in perceptions of comfortableness with robots in U.S. and Japan. Three hundred and sixty respondents are participated to complete the comfortableness measurements. The experimental results illustrate the difference levels of comfortableness perceptions between Americans and Japanese, which may be caused by different patterns of cultural background.

In the ninth paper, “Avoiding Playfulness Gone Wrong: Exploring Multi-objective Reaching Motion Generation in a Social Robot” (Martin Cooney and Anita Sant’ Anna), a study for exploring “playfulness” interactions to avoid some undesired impressions is investigated. A model for the scenario of a social robot reaching for an object is proposed, which is integrated into a mathematical framework to perform generated motions. The results provide some insights for designing “playfulness” robot motions.

Last but not least, “Cooperative Dynamic Manipulation of Unknown Flexible Objects” (Philine Donner, Franz Christange, Jing Lu and Martin Buss), a leader and follower control strategy based on the fundamental dynamics of pendulums is presented. This control strategy can be used to regulate the swing energy contained in uncertain objects. Experimental validation is provided to show the efficiency of the proposed strategy.

**Shuzhi Sam Ge** received the B.Sc. degree from Beijing University of Aeronautics and Astronautics, Beijing, China, in 1986, and the Ph.D. degree from the Imperial College of Science, Technology and Medicine, University of London, London, U.K., in 1993. He is the Founding Director of the Social Robotics Laboratory, Interactive Digital Media Institute, National University of Singapore and on leave with University of Electronic Science and Technology of China, Chengdu 610054, China. He has authored or coauthored six books and more than 400 international journal and conference papers. His current research interests include social robotics, multimedia fusion, medical robots, and intelligent systems. Dr. Ge is the Editor-in-Chief of the International Journal of Social Robotics. He has served/been serving as an Associate Editor for a number of flagship journals. He also serves as an Editor of the Taylor & Francis Automation and Control Engineering Series. He also served as the Vice President of Technical Activities, 2009–2010, and the Vice President for Membership Activities, 2011–2012, IEEE Control Systems Society.

**Oussama Khatib** received his Doctorate degree in Electrical Engineering from Sup’Aero, Toulouse, France, in 1980. He is a Professor of computer science with Stanford University, Stanford, CA, USA. His research interests include human-centered robotics, humanoid control architectures, human motion synthesis, interactive dynamic simulation, haptics, and human-friendly robot design. He is the Co-Editor of Springer Handbook of Robotics and the Springer Tracts in Advanced Robotics. Prof. Khatib was the Program Chair of IEEE International Conference on Robotics and Automation in 2010, the General Chair of the IEEE/RSJ International Conference on Intelligent Robots and Systems in 2011, and is the President of the International Foundation of Robotics Research (IFRR). He received a JRA Award in Research and Development and received the 2010 IEEE RAS Pioneer Award in Robotics and Automation.