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Preface

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On behalf of the Editorial Board, it is our great pleasure and privilege to present the first issue of the International Journal of Social Robotics. Launching this new journal would not have been possible without the great and much appreciated contributions from International Advisory Board members, Editorial Board members, authors, and reviewers.

Social Robotics is the study of robots that interact and communicate among themselves, with humans, and with the environment, within the social and cultural structure attached to their roles.

The journal aims to provide a common platform for researchers to share their innovative results and latest developments in social robotics, built on advances in engineering, mechatronics, biomechatronics, robotics, computer sciences, cognitive sciences, arts, social sciences, and philosophy. The journal also aims to serve as an international forum for all issues within the editorial focus, in an effort to bring social robots into the social fabric with scientific rigor, technical excellence, and artistic appeal.

The journal is presently focused on scientific contributions in the following topics:

- Affective and cognitive sciences for socially interactive robots
- Context awareness, expectation and intention understanding
- Design philosophies and socially appealing design methodologies
- Biomechatronics, neuro-robotics, and biomedical robotics
- Human factors and ergonomics in human-robot interactions
- Intelligent control and artificial intelligence for social robotics
- Knowledge representation, information acquisition, and decision making
- Learning, adaptation and evolution of intelligence
- Interaction and collaboration between robots, humans and environments
- Multimodal sensor fusion and communication
- Robot-ethics in human society
- Interactive robotic arts
- Social acceptance and impact in the society
- Compliance, safety and compatibility in the design of social robots "living" with humans
- Software architecture and development tools
- Human-robot interaction and robot-robot interaction
- Models of human and animal social behavior as applied to robots
- Applications in education, entertainment, games, and healthcare

This inaugural issue features nine scientific contributions from around the world, including Asia, America and Europe, devoted to the latest developments, findings, and studies of social robotics in design, psychology, arts, social sciences, and design philosophy.

The first paper, by H. Kozima, M.P. Michalowski and C. Nakagawa, describes Keepon, a small creature-like ro-

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bot designed for simple, natural, non-verbal interaction with children. The authors present their observations of Keepon's interactions with children at various levels of physical, mental, and social development, collected over the past few years. With typically developing children, they observed varying styles of play that suggest a progression in ontological understanding of the robot. With children suffering from developmental disorders such as autism, they observed interactive behaviors that suggest Keepon's design is effective in eliciting a motivation to share mental states.

The second paper, by J.H. Kim, I.B. Jeong, I.W. Park and K.H. Lee, is on ubiquitous robots. The authors present a novel multi-layer architecture to address the problems of interoperability between different hardware and software platforms in an environment offering services to user regardless of space or time constraints. Through computer simulations and experiments, the authors demonstrated the effectiveness of their proposed five-layer architecture, classified according to device and environment independency, for modularity, scalability and interoperability between different hardware and software.

The third paper, by J.J. Cabibihan, S. Pattofatto, M. Jomâa, A. Benallal and M.C. Carrozza, is on artificial skin. Touch is important in social interactions of sociable robots and users of prosthetic hands. Oriented towards replicating the human-like social touch, the authors compared the compliance, conformance, and hysteresis of typical robotic and prosthetic skin materials with the biomechanical behavior of the human fingertip by using finite element simulations and experimental approaches.

The fourth paper, by J. Butterfield, O.C. Jenkins, D.M. Sobel and J. Schwertfeger, proposes Markov random fields (MRF) as a probabilistic mathematical model for incorporating the internal states of other agents, both human and robotic, into robot decision making. By using estimates of Theory of Mind (ToM), the mental states of other agents can be incorporated into decision making through statistical inference, allowing robots to balance their own goals and internal objectives with those of other collaborating agents. The authors describe how MRF models can be used to explain experimental findings from the ToM literature and how their framework can be applied to a social robotics task.

The fifth paper, by W.C. Stirling and M.S. Nokleby, describes a new concept of multi-agent satisficing, defined in terms of relative effectiveness and efficiency, is an alternative to classical optimization-based decision theory. The authors developed a multi-agent utility aggregation structure that avoids the subjugation of the interests of any individual to the interests of the group. By expressing a society as a directed acyclic graph, Bayesian network theory is applied to artificial societies.

The sixth paper, by C. Bartneck, D. Kulić, E. Croft and S. Zoghbi, is motivated by a need for standardized measurement tools for human robot interaction (HRI). Using semantic differential scales, five consistent questionnaires have resulted from the authors' survey of the literatures on the measurement of key concepts in HRI: anthropomorphism, animacy, likeability, perceived intelligence and perceived safety.

With a particular view toward the form of the embodiment of virtual agents, the seventh paper, by T. Holz, M. Dragone and G.M.P. O'Hare, surveys the field of social interaction research with embodied agents. By placing social interaction research on Milgram's Reality-Virtuality Continuum, according to the nature and extent of their embodiment in a physical or virtual environment, robots and virtual agents can be viewed as embodied at the extremes of the said continuum. The authors present some of the issues and the advantages associated with this recent field of social interactions with mixed reality agents.

The eighth paper, by J.E. Young, R. Hawkins, E. Sharlin and T. Igarashi, discusses several adoption-of-technology models for the acceptance of domestic robots by examining the social psychology literature and applying it directly to human-robot interaction. Key points were raised on how the users respond to domestic robots; the authors provide a set of guidelines that roboticists and designers of domestic robotic interfaces.

Finally, the paper of H. Osawa, R. Ohmura and M. Imai presents a new approach to HRI in which common objects are anthropomorphized using attachable humanoid parts so that the users can perceive the intention of the object. With this approach, the authors conclude that the users better remember the functions of the anthropomorphized object.

While social robots are still in their infancy and their integration into our society requires much investigation, it is our hope that this collection of articles will be a valuable resource for the International Journal of Social Robotics readers and that it will further stimulate research into the vibrant area of social robotics.

Editors