Editorial

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We are pleased to present this very special issue which brings completion to the 12th volume of SORO. This is an Anniversary Issue marking an important milestone reached by the Journal. Last year we celebrated the 10th anniversary of SORO. The journey of the International Journal of Social Robotics started in 2009 with the very first January issue. It contained ten articles and an inaugural preface authored by the Founding Members of the Editorial Board, Shuzhi Sam Ge and Maja Mataric. The preface concluded with the following paragraph: "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".

10 years later, social robots are not in infancy anymore, they have become toddlers. There is still a long way ahead towards adulthood, and a long way to autonomy that comes with it. However, social robots continue to advance through their developmental stages, being currently in the phase of exploring the world and testing their own potential of interacting with it. We believe that ultimately, they will be capable of contributing to our societies.

To endow social robots with the ability to benefit societies, much research effort in this area must be devoted to the development of robots that are able to interact with humans autonomously, effectively, safely and *socially*. These robots must be able to perceive human social signals and respond accordingly. The effort in social robotics requires an interdisciplinary approach: joining forces across the fields of robotics, psychology, cognitive science, human-friendly design, social neuroscience and artificial intelligence. Major advances in social robotics will take time and the introduction of robots in our daily lives will happen gradually—by moving from lab-based experiments to robust and reliable capabilities in more real-life settings. Robot deployment will continue to take place in partially structured environments and for simple tasks, such as providing information and guidance to passengers at airports or delivering goods to a hotel room or medicine in hospitals. Progressively, robots will emerge in the natural environment of humans such as homes, offices, or schools. What is certain, is that robots will continue to evolve and gain increased cognitive and physical capabilities moving closer and closer to humans, impacting many aspects of our daily lives.

This Anniversary Issue is a collection of articles that represent the efforts of the social robotics community, spanning across various scientific disciplines. As such, it serves as a testimony to how interdisciplinary research can foster progress in science and can enable application of scientific results to societal needs.

The eight papers included in our special issue cover the key research foci related to social robotics for which *social* human-robot interaction is essential. Human-robot interaction requires addressing the human, the robot, and the interaction itself. We grouped the papers of our anniversary issue along these three main components.

A. *The human side* In order to design robots that are well accepted by humans in a potentially shared social environment, we need to recruit the disciplines of psychology, cognitive science, social and cognitive neuroscience as well as sociology and other social sciences for the purpose of elucidating the mechanisms of the human (social) cognition in interaction with a robot, how humans approach robots, attitudes towards robots

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and all other "human" aspects of human-robot interaction. This dimension of social robotics is represented in our special issue by the first three papers. The first paper addresses, in a comprehensive review of literature, one of the most crucial questions related to social robots: the aspect of trust, anxiety and acceptance. The second paper approaches social robots from the angle of human social cognition and argues that the social robots can play an important role in understanding whether similar socio-cognitive mechanisms are evoked by artificial interaction partners (robots) as by natural partners (other humans). The third paper of this category highlights the importance of addressing the aspect of group dynamics in the context of social robotics. The paper offers a conceptual framework for group dynamics for social contexts involving robots.

B. *The robot side* Obviously, robots cannot function autonomously in social environments if they are not equipped with adequate capabilities. Developing solutions for robot sensing, perception, reasoning, action, manipulation, navigation, as well as detection, and appropriate reaction to, human social signals is obviously of utmost importance for social robotics. The "robot" side of human-robot interaction is represented in this special issue by three contributions. The first paper of this category presents a new social robot Mini, designed to assist the elderly, at home or in a nursing facility, supporting them in mental and cognitive tasks. The paper highlights a host of challenges related to designing a new social robot, thereby providing guidelines and important information for researchers developing new robot platforms for use in elderly care. The subsequent paper proposes an approach enabling robots with scene understanding by means of semantic comprehension of objects via reference to dictionary definitions of objects. Finally, the last paper of this category presents an important aspect that needs to be taken into account when developing social robotics, namely the robots' socially-aware behaviour while not interacting with humans, but sharing their environment.

C. *The interaction* Apart from focusing on the issues related specifically to the human or robot elements in human-

robot interaction, certain research questions are related predominantly to the quality of the interaction itself. This aspect is covered here by the two final papers of the special issue. One of them presents an interesting study which examined the impact of timing of robot feedback on aggressive behaviours of children towards the robot. This type of knowledge is crucial for designing robots which are meant to interact with children, or to provide training of social skills for typically and atypically developing individuals. The final paper of this special issue offers a review of literature, based on systematic search of electronic databases, evaluating the impact of various design features of embodied conversational agents on relationship quality and social perception or behaviour towards the agents.

We hope that this collection of papers will bring some reflection on the past, present, and future roles of social robots. We also hope that it will inspire present and future scholars whose research is either already dedicated to the exciting area of social robotics, or who will feel encouraged by the scientific approaches presented here, and will consider whether their research can contribute to building the future of social robotics.

Finally, The Editor-in-Chiefs of SORO, Agnieszka Wykowska, Shuzhi Sam Ge, and Oussama Khatib, would like to highlight that 10 years of success of our journal would have not been possible without the great and much appreciated contributions from the International Advisory Board members, the Editorial Board members, the Editors at Springer, the Editorial Assistants, the Authors, and the Reviewers. Thank you all for your valuable contributions to this success, and we look forward to an exciting new decade of the International Journal of Social Robotics endeavour!