Trust, Acceptance and Social Cues in Human-Robot Interaction (SCRITA)

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Trust is a fundamental aspect that helps to foster effective collaboration between people and robots. It is imperative that people trust robots to not create a hazardous situation, such as starting a fire when trying to make a cup of tea or giving the wrong medicine to a vulnerable person. Likewise, people should be able to trust robots not to create an unsafe situation, such as leaving the door open unattended or providing personal information to strangers - and potentially to thieves. Trust, however, is a complex feeling and it can be affected by several factors that depend on the human, the robot and the context of the interaction. Trust might hinder a robot's assistance or lead to a loss of interest in robots after the novelty effect fades. Unreasonable over-trust in a robot's capabilities could even have fatal consequences. It is therefore important to design and develop mechanisms to increase and mitigate people's trust in service and assistive robots. A positive and balanced trust, indeed, is fundamental for building a high-quality interaction. Similarly, socially aware robots are perceived more positively by people in social contexts and situations. Social robotics systems, therefore, should integrate people's direct and indirect modes of communication. Moreover, robots should be capable of self-adapting to satisfy people's needs (i.e. personality, emotions, preferences, habits), and incorporating a reactive and predictive meta-cognition models to reason about the situational context (i.e. its own erroneous behaviours) and provide socially acceptable behaviours. This special issue is composed of 24 manuscripts. The following collection of papers covers a wide range of topics of interest to identify some of the principal points to explore the role of trust in social robotics to effectively design and develop socially acceptable and trustable robots. The contributions include different aspects of people's acceptance and trust of robots in different human-centred environments, such as educational, assistive, and collaborative scenarios. Some works introduce new notions of acceptance and trust for autonomous artificial agents as tolerance, and distrust and by considering interdisciplinary, such as sociology, psychology, and philosophy. Some

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papers focus on defying the factors affecting people's trust in robots, such as society's general attitudes, perceptions, and prejudices, expectations, cognitive and emotional effects. Other contributions, instead, investigate how to recover from a loss of trust, such as after different types of errors, or enhance trust in robots, such as by using personalisation of gaze, navigation, workload and interaction based on individuals' characteristics (e.g., personality traits). Another group of works propose models for measuring and evaluating trust during a human-robot interaction. Finally, in this special issue, a necessary focus has been provided by some authors on moral considerations, ethics, the definition of existing and new policies, and the integration of robotics and AI in the EU's policy plans.

1 Additional Information

This Special Issue is based on the conjunction of the workshops SCRITA (Trust, Acceptance and Social Cues in Human Robot Interaction) and TRAITS (The Road to a successful HRI: AI, Trust and ethicS) respectively organised at IEEE RO-MAN and ACM/IEEE HRI 2021 conferences. The main research focus of the SCRITA workshops is based on trust, acceptance and social cues in HRI, while TRAITS investigates the role and effects of trust, AI and ethics in HRI. The conjunction of these fundamental topics presents a range of research areas that guides researchers in building a successful human-robot interaction.

Alessandra Rossi is Assistant Professor at the University of Naples Federico II (Italy). She has a PhD as part of the Marie Sklodowska-Curie Research ETN SECURE project (https://secure-robots.eu/) at the University of Hertfordshire (UK), under the supervision of Prof. Dr. Kerstin Dautenhahn. She is a Visiting Lecturer at University of Hertfordshire. Alessandra received her B.Sc. and M.Sc. degrees in Computer Science from the University of Naples Federico II. Her research interests include multi-agent systems, social robotics, Human–(Multi) Robot Interaction, home companion and user profiling. She is the team leader of RoboCup team "Bold Hearts" at the University of Hertfordshire (UK), and TC member of the RoboCup Humanoid League since 2021. She is Virtual Organizing Chair of IEEE RO-MAN 2021 conference, and she has been Registration Chair and Social Media Responsible for IEEE RO-MAN 2020. More info at alessandrarossi.net.

Patrick Holthaus is a Senior Research Fellow and Manager of the Robot House research facility at the University of Hertfordshire (UK). He is also a Visiting Lecturer at the School of Physics, Engineering and Computer Science. His research interests include systems integration in heterogeneous environments, interaction architectures and behaviour coordination, and the social credibility of companion robots. He is currently an advisory board member of the Norwegian project "Human Interactive Robotics in Healthcare" and is a CoI of the UKRI TAS hub's pump priming project "Kaspar explains". He was also a CoI of the AAIP-funded feasibility project "Assuring safety and social credibility". Patrick was previously a post-doctoral researcher at the cluster of excellence Cognitive Interaction Technology (CITEC) and a member of the Cognitive Systems Engineering group working on the large-scale project "Cognitive service robotics apartment". Patrick received his Ph.D. on the topic of an "Integrated concept of spatial awareness" which originates from research conducted in the Applied Informatics Group and SFB 673 "Alignment in Communication" at Bielefeld University where he also received a master's and a bachelor's degree in computer science. More info at https://patrick.holthaus.info/.

Sílvia Moros is Lecturer at the School of Physics, Engineering and Computer Science at the University of Hertfordshire (UK). She completed her master's in Robotics and Automation at the Universidad Carlos III in Madrid, Spain, and is currently pursuing a master in Neuropsychology at the Universitat Oberta de Catalunya, Spain. Her research interests include mainly HRI, social robotics and neuroscience. She was co-organiser of the previous iterations of this workshop at the RO-MAN's 2018-2020 conferences and a guest editor of special issues on the same topic for Interaction Studies (IS), at the International Journal of Social Robotics (IJSR), and Paladyn, Journal of Behavioral Robotics (PJBR).

Gabriella Lakatos is a Senior Lecturer at the Adaptive Systems Research Group and a Visiting

Lecturer at the School of Physics, Engineering and Computer Science at the University of Hertfordshire. She completed her PhD in the field of Ethology at the Eotvos Lorand University, Hungary, after which she transferred her skills to the field of Ethorobotics and Human-Robot Interactions (HRI). Her research interests include HRI and robot-assisted therapy. She has expertise in the development of socially acceptable companion robots through the design of biologically inspired credible social behaviour as well as in experimentally evaluating user acceptance. Her experience was gained in European projects such as LIREC and BabyRobot, in addition to the EPSRC-funded project Trustworthy Robotic Assistants. Gabriella has extensive reviewer experience, reviewing scientific papers for several peer-reviewed journals such as PLOS One, Interface, International Journal of Advanced Robotic Systems, Ethology, Animal Cognition, Animal Behaviour and Behavioural Processes among others.

Antonio Andriella is a Postdoctoral Researcher at the Artificial Intelligence Research Institute (IIIA) working in the Value-Aware Artificial Intelligence (VALWAI). Antonio has been Ph.D candidate at the Institut de Robòtica i Informàtica Industrial (IRI) in the Perception and Manipulation Group. Since 2017, he has been holding a Marie Skłodowska-Curie Fellowship as part of an Innovative Training Network (ITN) called SOCRATES. Prior to joining IRI, he worked as AI expert at Cogisen for 8 years. His research interests are in the areas of human-robot interaction and human-centred design technologies for older adults with cognitive impairments. His work focuses on design- ing, developing, and evaluating interactive social systems that personalise and adapt to their users over short-term and long-term interaction, based on individual needs and goals.

Marcus Scheunemann is a Visiting Research Fellow at the Adaptive Systems Research Group and a Visiting Lecturer at the School of Physics, Engineering and Computer Science at the University of Hertfordshire. He studied Computer Science at the University of Ulm and Humboldt-Universität zu Berlin, in Germany. He later obtained a PhD with the topic of "Autonomous and Intrinsically Motivated Robots for Sustained Human-Robot Interaction" from the University of Hertford- shire. His focus was on the fully autonomous behaviour generation for robots to interact with humans based on information-theoretic measures. He will continue his research in the Science of Intelligence cluster in Berlin. Marcus contributed to the research community with his reviewing expertise, and he organized a workshop series for students and researchers working on autonomous humanoid robots. He was the co-chair of all previous iterations of SCRITA.

Anouk Van Maris is a research associate on Responsible Robotics for the RoboTIPS project (RoboTIPS project https://www.robotips.co.uk/home) at the Bristol Robotics Laboratory (UK). She focuses on designing an ethical black box to address the potential future ubiquity of social robots and concerns over the damage they might cause when they malfunction. She acquired her Ph.D. on Social Robot Ethics as an Early Stage Researcher of the MSCA-ITN project SOCRATES (https://www.robotips.co.uk/home).