Social credibility of interactive robots

Project description

This project aims to deeply explore and refine the concept of social credibility in interactive robots, which has been established only recently. We propose the term “social credibility” to refer to the extent to which a user perceives an interactive robot to display deliberate social awareness and thereby engages in predictable social behaviours.

As a consequence, looking at credibility adds a layer on top of the usual approach in social robotics research. Besides making sure that a human subconsciously recognizes a robot’s social awareness, a robot can only be credible if the human actively acknowledges the robot to deliberately engage in social behaviour.

A robot’s social behaviours might in some cases introduce a distraction from the current task and reduce the robot’s overall performance. Such behaviours might still have a positive influence on the interaction if the human can acknowledge them as social even if they are not immediately goal directed. The concept of credibility allows us to better understand such situations and impacts of sociability on the quality of interaction. Making this distinction also allows for further exploration and insights into related phenomena such as trust in the robot.

The project aspires to define how exactly a robot’s social credibility can be defined with regard to social awareness and how it can be measured in an interaction between human and robot. Further, the relation between robot usability and user trust should be discussed against this background.

Within the project, the relation between credibility of behaviours and other functions, e.g., safety-related interruptions should be researched experimentally making use of the robot house facility. In related previous work, we have initiated the discussion about a link between a robot’s social credibility and its effective performance of safety-related functions [1]. A subsequent trial study indicated that an assistive robot’s lack of social credibility can lead to less effective safety performance, which may in some cases be ascribed to user disengagement with the robot [2].

To mitigate disengagement, the project further aims to find computational methods that measure the robot’s credibility in an interaction with a human and allow for predicting effects of future actions on the current value. Such an approach might also enable a robot to establish a way of knowing what actions are contributing to a long-term social relation as opposed to actions that are not tolerable and ultimately result in people not using the robot.

Requirements

Applicants should have a very strong first degree or (preferably) a Master’s degree in Computer Science or other relevant areas and are expected to have interdisciplinary interests (e.g., in robotics, social sciences, psychology). They are also expected to have very good analytical skills and knowledge of programming languages (C++, Java, Python). Experience with ROS is desireable.

Contact

Candidates are encouraged to contact the Dr Patrick Holthaus <p.holthaus@herts.ac.uk> prior to applying for this project. The supervisory team further consists of Dr Catherine Menon and Prof Farshid Amirabdollahian.

References

[1] Catherine Menon and Patrick Holthaus. Does a Loss of Social Credibility Impact Robot Safety? Balancing social and safety behaviours of assistive robots. In International Conference on Performance, Safety and Robustness in Complex Systems and Applications (PESARO 2019), 18–24. Valencia, Spain, 2019. IARIA. https://www.thinkmind.org/index.php?view=article&articleid=pesaro_2019_2_10_60021.

[2] Patrick Holthaus, Catherine Menon, and Farshid Amirabdollahian. How a Robot's Social Credibility Affects Safety Performance. In Miguel A. Salichs, Shuzhi Sam Ge, Emilia Ivanova Barakova, John-John Cabibihan, Alan R. Wagner, Álvaro Castro-González, and Hongsheng He, editors, International Conference on Social Robotics (ICSR 2019), volume 11876 of Lecture Notes in Computer Science, pages 740–749. Springer Cham, Madrid, Spain, 2019. https://link.springer.com/chapter/10.1007%2F978-3-030-35888-4_69