Social norms and the credibility of interactive robots in safety-critical scenarios

Project description

This project aims to investigate the role played by social norms in interactions between humans and interactive robots which are performing a safety critical function. In doing so it further explores the extent to which the social credibility (compliance with social norms) of a robot's interactive behaviour affects human responses to the robot in a safety critical situation. A central aim of this project is to examine the relationship between the extent to which a user perceives an interactive robot to display deliberate social awareness, and the user's readiness to respond to that robot in a safety-critical scenario.

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, i.e. if these behaviours are perceived as predictable and appropriate social behaviours, albeit not immediately goal directed. This project aims to better understand such situations and the impacts of sociability on the quality of goal-directed interactions.

A specific focus of this project will be on the relation between social behaviours and safety-related functions, where 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].

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 deep knowledge of programming languages (C++, Java, Python). Experience with ROS is highly desirable.

Contact

Candidates are encouraged to contact the Dr Catherine Menon <c.menon@herts.ac.uk> prior to applying for this project. The supervisory team further consists of Dr Patrick Holthaus 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.

[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.