Humanoid Robots as Assistants and Companions

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Human-Robot Interaction is a quickly growing research area with a number of applications in assistive technology and service robotics. The research team at University of Hertfordshire led by Prof. Dautenhahn is involved in several European projects relevant to this field, namely Roboskin (where we investigate the use of the KASPAR robot in tactile human-robot interaction scenarios with children with autism) and LIREC/ACCOMPANY (where we study robots as long-term companions e.g. in the homes of elderly people). A key research issue relevant to both projects concerns the adaptation of the robot’s behaviour e.g. to the individual needs and preferences of the person. A personalized robot companion needs to know its users, and be able to adapt in long-term interaction.

The PhD project will focus of the topic of social learning and adaptation, i.e. will develop the robot’s ability to be taught by its user, and to learn socially by observing and analyzing the interaction. Such research is strongly inspired by biology and psychology concerning the way how humans and other animals learn from each other by observation, interaction and communication. Another area of inspiration comes from developmental psychology since infants learn many new skills in interaction with their caretakers. The group has a strong track record in the area of imitation and social learning. Prof. Dautenhahn’s team is one of the internationally leading teams in human-robot interaction. The PhD student will develop new social learning and adaptation algorithms, as well as participate in the preparation, implementation and analysis of human-robot interaction studies. Depending on the student’s abilities and interests, the focus of the PhD research could be either on assistive technology (cf. our work on robot-assisted play for children with autism http://www.aurora-project.com) or on home companions (service robots, see e.g. http://lirec.eu/).

The PhD student will be part of a larger research team consisting of researchers working in the above mentioned European projects, as well as other research group members. The PhD student will have the opportunity to work with state of the art humanoid robots, including KASPAR (http://kaspar.feis.herts.ac.uk/) which was developed by our research group.

Applicants are required to have a strong first degree or Master’s degree in Computer Science, Robotics or a related area relevant to the project. An additional background in human-computer interaction, cognitive science or psychology is highly desirable. Excellent programming skills are essential (including C++), the ability to interface robot sensors and develop software on robots is a necessary requirement of this studentship, as well as a general interest in interdisciplinary research and willingness to collaborate with researchers from other disciplines. The ideal candidate will be self-motivated with good writing and communication skills. The PhD will be supervised by Prof. Kerstin Dautenhahn (K.Dautenhahn@herts.ac.uk), whom interested candidates are invited to contact via email in the first instance. Note, all applications must be made formally via our Research Office as specified in the advert.