Social Robots - Robotics and Toy Computing Minitrack

Patrick C. K. Hung
Faculty of Business and Information Technology, Ontario Tech University, Canada
patrick.hung@ontariotechu.ca

Shih-Chia Huang
Department of Electronic Engineering, National Taipei University of Technology, Taiwan
schuang@ntut.edu.tw

Sarajane Marques Peres
School of Arts, Sciences and Humanities, University of Sao Paulo, Brazil
sarajane@usp.br

Abstract

This HICSS-55 mini-track aims to present novel and industrial solutions to challenging technical issues and compelling social robot use cases. In addition, this mini-track will share related practical experiences to benefit the reader and provide clear proof that social robots play an ever-increasing essential and critical role in supporting robotic and toy computing applications - a new cross-discipline research topic in computer science, decision science, management sciences, and information systems.

1. Introduction

A social (companion) robot, such as Amazon Astro and ASUS Zenbo, consists of a physical humanoid robot component that connects through a network infrastructure to online services that enhance traditional robot functionality. Humanoid robots usually behave like natural social interaction partners for human users, with features such as speech, gestures, and eye-gaze, referring to the users' data and social background. The usage behavior of users of anthropomorphic robots indicates that users are more open to robots. For example, some prior research shows that it is much easier for an embodied humanoid robot to trust users to release their personal information than a disembodied interactive kiosk. Human-Robot Interaction (HRI) is a research area of understanding, designing, and evaluating robots for use by or with humans from the social-technical perspectives.

Recently Artificial Intelligence (AI) technologies have been applied to robotic and toy computing. Robotic computing is one branch of AI technologies, and their synergistic interactions enable and are enabled by robots. Social robots can now easily capture a user's physical activity state (e.g., walking, standing, running, etc.) and store personalized information (e.g., face, voice, location, activity pattern, etc.) through the camera, microphone, and sensors AI technologies. Toy computing is a recently developing concept that transcends the traditional toy into a new computer research area using AI technologies. A toy in this context can be effectively considered a computing device or peripheral called Smart Toys. We invite research and industry papers related to these specific challenges and others driving innovation in robotics and toy computing for social robots.

There are five research papers presented in this mini-track. The first paper is "Attachment Theory as a Framework to Understand Relationships with Social Chatbots: A Case Study of Replika" by Xie and Pentina. The second paper is "Communicating with Humans and Robots: A Motion Tracking Data Glove for Enhanced Support of Deafblind" by Gelsomini et al. The third paper is "Responsible Human-Robot Interaction with Anthropomorphic Service Robots: State of the Art of an Interdisciplinary Research Challenge" by Stock-Homburg et al. The fourth paper is "Assisting People of Determination and the Elderly Using Social Robot: A Case Study" by Shah and Iqbal. The fifth paper is "An Exploratory Study to Determine the Effects Conversational Repetition Has on Perceived Workload and User Experience Quality in an Online Human-Robot Interaction" by Gittens and Garnes.

URI: https://hdl.handle.net/10125/79587
978-0-9981331-5-7