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ENGINEERING

MONASH University

Faculty of Engineering
Summer Research Program 2023-2024

Project Title: Is this for me?: Predictable human-robot handovers

Supervisor(s): Prof. Dana Kulic, Dr. Akansel Cosgun

Department: Electrical and Computer Systems Engineering (ECSE)

Email: akansel.cosgun@monash.edu

Website profile of project supervisor:

https://www.monash.edu/engineering/danakulic

https://www.linkedin.com/in/akan-cosgun-02608847/

Objective

Our review paper on this topic found that robots lack basic communication of when and where the handover would take place. This project's objective is to enable natural human-robot handovers in a single robot, multiple people scenario. The robot's path and behaviors should be predictable to people around. For example, consider a scenario in which the robot delivers food to a table. Robot's path and gestures should be predictable so that people in the environment can correctly guess if they are the intended target or not.

Project Details

Fetch robot, a mobile manipulation platform, will be used for this project. The project will study the best ways to convey the intent of the robot using path, speed and gaze. For instance, robot should face and look at the target as much as possible, otherwise other people can be deceived into believing that they are the intended handover target. A data collection study will be conducted in a scenario where the robot delivers objects to people. We will record videos from head-mounted cameras from people's perspective, and a pilot survey will conducted to understand if people can guess the handover target correctly. Using the observations from this pilot study, a predictable motion model for the robot will be developed.

Prerequisites

- Strong programming skills in Python or C++
- Willingness to conduct usability experiments with participants
- Interest in publishing the results of research in a scientific journal
- Experience with Linux and Robot Operating System (ROS) is a plus
- Hands-on experience with robots is a plus