MONASH
ENGINEERING

MONASH University

Faculty of Engineering

Summer Research Program 2024-2025

Project Title: The corridor dilemma: Social robot navigation through implicit communication

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Objective

This project will investigate implicit communication in social navigation settings for robots.

Project Details

Humans are naturally able to navigate through spaces, relying on explicit and implicit social cues to mediate behaviour. For example, two people approaching each other in a corridor may naturally move to different sides to negotiate and facilitate passing.

We have recently developed approaches to allow robots to implicitly communicate their intent through the actions they take, and shown the benefit of this communication in collaborative and competitive scenarios like these. At present, our results show that we can obtain similar effects in simulated game environments. In this project we would like to extend our findings and approaches to the real robot case, and investigate if these findings hold in the physical world.

Additional information can be found in the paper:

Jiang et al. Model-free Legibility: Enhancing Human-Robot Interactions through Implicit Communication and Influence Modulation, 2024 https://arxiv.org/abs/2406.12253

This project will expose you to a range of practical real-world robotics problems, dealing with complex sensor data, along with robot learning strategies (reinforcement learning) for multi-agent settings.

Prerequisites

Excellent programming skills, background in robotics desirable. Experience with ROS/ Machine learning would also be beneficial.

Additional Information

Applicants may be required to attend an interview.