

Faculty of Engineering

Summer Research Program 2023-2024

Project Title: An outdoor walking-buddy robotic dog

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Objective

Implement and evaluate an autonomous quadruped robotic system that can walk alongside human users in diverse outdoor environments.

Project Details

Physical activity positively correlates with physical and mental health; however, globally, most people do not engage in the recommended levels of physical activity. Hence, programmes and interventions that help attain and maintain good physical activity are a public health priority. There are also instances in which individuals might require support when engaging in physical activity due to physical limitations (e.g. visual impairments).



This project will implement, deploy and evaluate an autonomous robotic system that can walk along human users in outdoor, unstructured environments and respond to and/or communicate with the user in a simple and social manner. This project will be completed incrementally, following the stages listed below:

1. Stage 1: Implementation of an autonomous navigation stack (i.e., the robot walks on a sidewalk/park path by itself)
2. Stage 2: Implementation and integration of person and/or gesture detection capabilities (i.e., the robot can walk along a person, detect whether the person is following, and stop/resume walking accordingly)
3. Stage 3: Development, implementation, and integration of a simple haptic sensor for user commands
4. Stage 4: Evaluation of the system via a user study

Prerequisites

Candidates in Year 3 or later are preferred. Experience with Python, ROS, machine learning, and sensor design and implementation are required.

Additional Information

Occasional travel to Deakin University Burwood campus may be needed for experiments. Applicants may be required to attend an interview.