

Embedded Systems

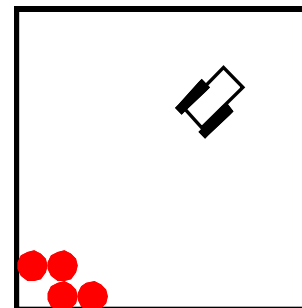
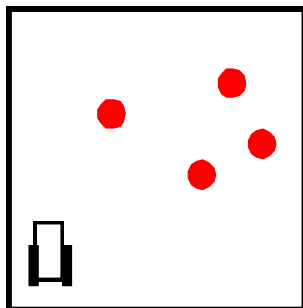
ELEC3020

Lab Assignment 10 – Robot Driving and Object Detection Points: 10

- TEAMS:** This lab will be conducted in teams of 2 students
Note: This lab is compulsory and cannot be dropped.
- EQUIPMENT:** Mobile Robot with Embedded Controller, sensors and motors
<https://robotics.ee.uwa.edu.au/eyebot/>
- PREPARATION:** Prepare this lab at home by using the *EyeSim* simulator:
<https://robotics.ee.uwa.edu.au/eyesim/>

EXPERIMENT 1 (10 points)

This Lab brings together all the experience from the previous lab sessions. Implement a robot program that starts in one corner of the driving area, then surveys the area for red cans in the environment and brings them back to the home area.



Tasks

- For driving, **only** use the command `VWSetSpeed(linSpeed, angSpeed)`
- Let the robot rotate on the spot to explore the whole area
- Search for red cans using the camera
- When a red can has been located, drive around it and push it back towards the robot's starting position ("home area")
- During driving, avoid bumping into walls or obstacles
 - Use PSDs to check left, right and front
 - Display cans and obstacles graphically on the LCD
- Continue to drive and look for more cans – no stopping.