CE801 – Intelligent Systems and Robotics Assignment

Autumn 2021

1. Objectives

- To translate the theoretical knowledge gained throughout the course into practice by designing and implementing systems for real mobile robots.

2. Deadline and Submission Requirements

Demonstration of the project:

Your project will be demonstrated to and assessed by a GLA in a one-on-one scenario during your lab session scheduled in Week 11. These demonstrations will involve your code **(which you will send to us prior to the demonstration) as well as slides summarising your solution**.

The demonstrations will last ~15 minutes, during which time students will be required to present their code in its finished state, explain its main features, answer questions relating to their work and the project, and discuss the performance of the robot.

3. Assessment Criteria

Performance (100%):

The quality of the robot's performance/code and theoretical understanding of the implementation of the controller will be assessed.

4. Important Information

- You must work **independently**.
- Any late submission will receive a **Zero** mark unless extenuating circumstances apply.
- Your work must be completed on the robot and sent to a GLA prior to your demonstration**.**

5. The Task

The ROSbot robot is placed in an **unstructured environment**. You are asked to do the following **(100%)**:

1) Implement a PID Controller that enacts a right edge following behaviour **(20%).**

2) Implement a fuzzy logic controller that can enact **(50%):**

- **i.** Right edge following behaviour **(25%).**
- **ii.** Obstacle avoidance behaviour **(25%).**

3) Integrate the aforementioned behaviours into a single fuzzy logic control architecture **(10%).**

The remaining **20%** of the marks will be awarded for the quality of your code.