Exercise 1: Exploration and Mapping
Intelligent Robotics
Intelligent Robotics (Extended)

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Objective

The objective of this exercise is to develop your ability to program the P3DX robot using ROS (and any other programming language of your choice). You will also learn to using existing ROS modules and develop components to be used in subsequent exercises.

Task

Design and program your robot to explore the lower ground floor of the School of Computer Science. The robot should explore as much of the floor area as possible without getting stuck, and build a map of this area. You may use any techniques of your choice. The desired outcome of this task is a map of the area explored. *Please remember that you will use your map of this area for the next exercise (on localization).* You will also submit a two-page report on Canvas (11-point font, single-space) describing the techniques used to complete this task, along with a description of lessons learned or challenges faced while completing this task. Demos will be due in your assigned lab session on October 24 or 25.

Marking Scheme

The following marking scheme will be used for this exercise[1]:

1. Task performance (**5 marks**): what part of the floor area has been included in the map? Is the map of sufficiently good quality?
2. Report (**5 marks**): does the report clearly describe the approach(es) used to generate the desired map?

[1] These marks will be scaled suitably for the students in the "extended" section of the module.