

CPS 607 – Autonomous Mobile Robotics

Lab 2 – “Magic” world – stay on the surface, harvest mushrooms

(Fall 2017-last updated 3 Oct 17)

The Environment and Concepts:

There exists a flat world of irregular shape called “Magic”. Magic, like our previous world, is surrounded by a void where merchants wait for mushrooms to fall from the sky. Merchants pay in “marks” for ripe mushrooms. Mushrooms grow only on Magic, are extremely toxic when maturing but are extremely valuable when ripe. A maturing mushroom grows from a stem that has a cap on top. When a mushroom flips upside down, it is ripe and can be harvested. As these mushrooms are so rare, harvesters are restricted to 5 mushrooms each.



Mushrooms are harvested by pushing them into the void where merchants wait to pay for them in marks.

Required:

- Working in groups of 2 or 3, students are to create AMRs that are capable of surviving on Magic for a period of no less than 2 minutes while harvesting mushrooms.
- Each AMR must harvest as many ripe mushrooms as it can.
- Prior to the commencement of the lab, each group must present the TA with a printed, 1 page description of their robot, a description of their strategy for successfully completing the lab and the names and student numbers of the group members and the name of their AMR. (Diagrams and photos welcome).

Restrictions:

Group members should not touch their robot while it is being tested in the world. AMRs cannot exceed the dimensions of a cube with 12” sides. Groups can attempt the test a maximum of 3 times.

Scoring:

The lab will be marked out of 10 marks

Marks will be allocated as follows:

- 0.5 marks: 8.5” in x 11” printed sheet with the title “CPS697 Fall 2017 Lab 1” and all the additional information requested in the “Required” section of this document.
- 0.5 marks: Submit an edited video file named “CPS607Lab2<robotname>.mov” no longer than 1 minute showing the performance of their AMR.
- +2 marks: harvest a ripe mushroom (to a maximum of 5 mushrooms)
- -2 marks: non-sensor contact with a maturing mushroom (per incident)
- -2 marks: moving a maturing mushroom
- -4 marks: AMR splashes

There will be a 2 mark deduction for each time a student touches their AMR once it begins a run.