School of Computer Science

CPS 607 – Autonomous Mobile Robotics
Lab 3 – "Lining" world – acquiring and tracking targets
(Fall 2018-last updated 15 Oct 18)

The Environment and Concepts:
There exists a flat world of irregular shape called "Lining". Lining, like our previous worlds, is surrounded by a void. Contrasting lines exist on the surface that are good to follow. Obstacles also exist on the surface that are good to avoid. There is also a new moving obstacle on the surface called a "squid". The squid moves in circles and is festooned with hooks design to attach to wandering AMRs.

Required:
- Working in groups of 2 or 3, students are to create AMRs that are capable of surviving on Lining for a period of no less than 2 minutes while in near-continuous movement.
- 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. Marking will cease once 10 marks are achieved.
Marks will be allocated as follows:
- 0.5 marks: 8.5" in x 11" printed sheet with the title "CPS607 Fall 2018 Lab 3" and all the additional information requested in the "Required" section of this document.
- 0.5 marks: Submit an edited video file named "`CPS607Lab3<robotname>.mov`" no longer than 1 minute showing the performance of their AMR.
- 0.5 marks: per instance of following a line—TA to judge valid line following
- -2 marks: squid successfully attaches to AMR
- -1 mark: non-sensor collision (note: this is added to collision deduction for squid)
- -4 marks: AMR splashes

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