Electrical and Computer Engineering Department

COE 521 Embedded Systems

Project

Tennis Ball Collector

The aim of this project is to create a robot that is able to locate tennis balls in a predefined "arena." The six balls in the arena are either black (3) or the original green (3). The robot should move the three balls belonging to a specific group into a predefined "collection area."

The "arena" is defined as an area spanning 4 tiles in the ELRC 4105. The area will have a black border.

The rover will start at a "starting point" close to the "arena" and the students have the right to orient the rover as they wish.

The "collection area" is one tile, on the opposite end of the "arena" (as opposed to the "starting point") and will have a red border.

The rover should start at the "starting point", it should move the green or black balls to the "collection area." The specific ball group will be defined at the beginning of the demo, the other group of balls should not be disturbed.

Grading:

a- Rover can move in a controlled fashion. (40 points)
b- Rover can locate and reach "collection area." (20 points)
c- Each correct ball out and deposited in the "collection area" (10 points)
d- Each wrong ball hit is a deduction of (5 points). The deductions can reach a total of (20 points). [A hit is a touch and it can be a multiple for a single ball (incremented every second)]
e- Timing run (5 to 20 points)

Groups that correctly finish (three correct balls in the "collection area" and three balls in the "Arena") compete in the timing run. The grades are divided based on the finishing timing. Grades are from 5 to 20 [linear division on the number of eligible groups].

Beauty contest (5 points) votes by groups; a group cannot vote for itself.

The demo is to be presented live. Report is 20% of the project.

Please provide in a printed report:

- A cover page that lists:
- The names of the students in the group
- Group #
- A short discussion of your work to deliver the demo
- Images of your board(s) and Rover 5.
- A code listing (show only the important components)
- All material that is not your direct work should be referenced.

Due date of demo: 10th December