CPE 470/670 – Autonomous Mobile Robots

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Lab 4 – Handout

Harvesting Contest

In this lab you will start preparing your robot for the Harvesting Contest. This contest has two parts. The first part is the Food Collecting. Your robot will wander in the field and count "foods" attached to the table in a certain amount of time. The "food" pieces will be: 1) RF transponders (which can be detected using the RF ID sensor) and 2) colored pieces of paper (which can be detected using the color sensor). In the second part, Home Searching, your robot should look for its home defined by a colored corner on the floor.

Contest Rules:

a) The two parts will be held together. For the first part, you will count the foods on the table. After this stage is finished, your robot should start looking for home and go there.

b) For the first part of the contest (Food Collecting) there are total 20 foods on the table: 10 small transponders (worth 10 points each), 5 card transponders (worth 5 points each) and 5 color paper (worth 5 points each). You have 60 seconds to count them. After the 60 seconds have elapsed your robot should start searching for its home. It is against the contest rules to go home before the 60 seconds are over. We might enforce this by adding the "home location" only after the 60 seconds have passed.

c) You should use the ultrasonic sensor to avoid falling off the edge of the arena.

d) Double counting is not valid. If your robot counts one particular food more than once, it will be considered only one counting. We might enforce this by simply removing the counted foods from the table. Your robot should announce whenever it counts a food (by beeping and printing a message on the LCD screen).

e) You will be judged on the number of the foods collected in the first part and the time spent to get to the home place in the second part. Your total score will be calculated as follows:

The maximum score is 300 (150 for each part). For the second part, the robot with the best time (least time) will get 150 and the robot with the worst time will get 50. The others will get interpolated scores. The overall score will be the sum of the scores for each part.

k) The contest will be held on September 30, at the end of the lab.