31388 Advanced Autonomous Robots

Final Assignment

(rev 1)

Objective

The objective of this assignment is to give a larger mobile robot project that is solvable using using the methods taught trough the course

Evaluation

The solution of the assignment must be presented on a poster and the robot must participate in the competition (probably simulation this year)

Assignment

Drawing 2 shows a map of the competition course for the final assignment.

G01 to G14 marks the position of guidemark stations. Blue and red lines are walls.

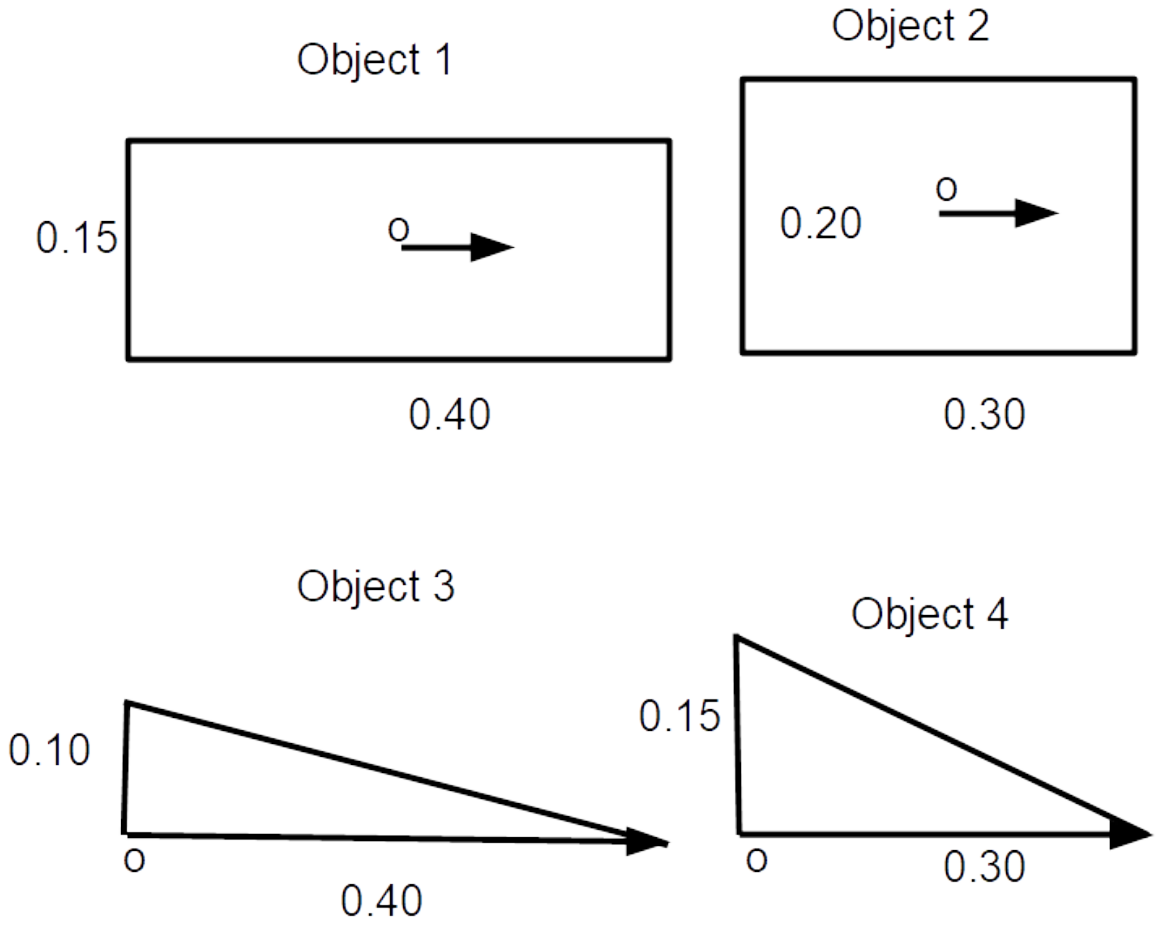
The robot starts in the yellow box in the lower left corner, and drives to a guidemark given in advance. E.g. guidemark station 1. The guidemark in this position tells which guidemark position to drive to next, and so forth until all guidemarks have been visited. The route will contain 6-8 guidemark stations to visit. The end of the route will be marked with a guidemark with number 98. One point is given for each leg of the route that is going from one guidemark station to the next (the one given by the guidemark)

In addition to running the guidemark route the robot should find the object with unknown pose which is located somewhere within the marked green square in the middle. The possible figures are shown seen from above in Drawing 1 The object must be identified and the coordinates of point o and the orientation of the object must be given. The hight of the objects will make the them visible in the laser scans

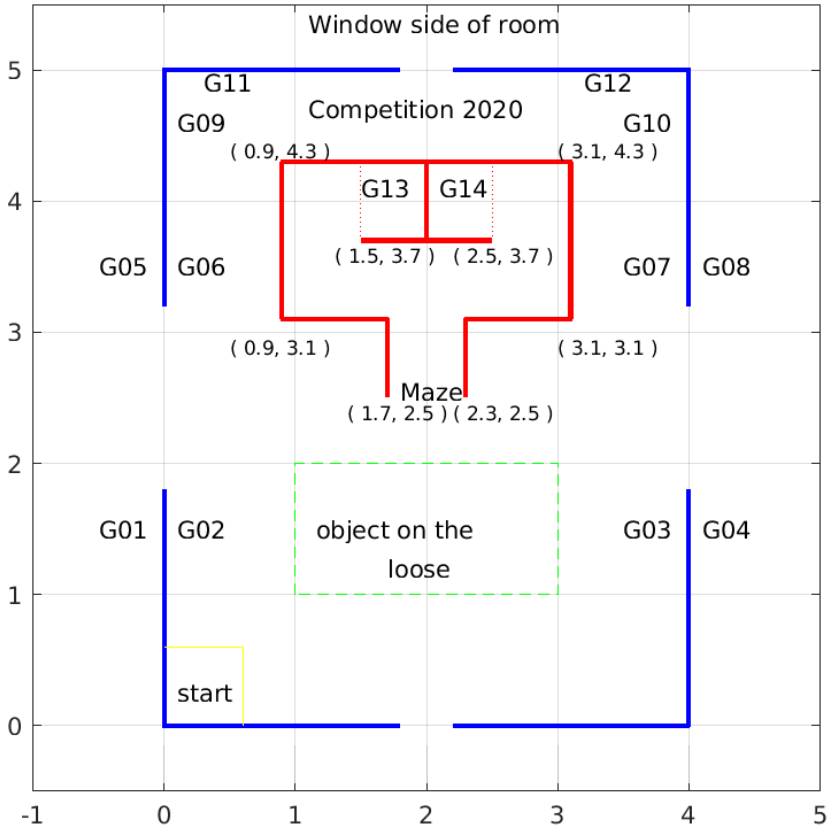
Two points are given for correct object one if only type is correct (triangle or rectangle).Two points are given if the coordinate is within a tolerance of +/- 10 cm, one point if the tolerance is within +/- 20 cm. Points are given for both coordinates. The orientation will give two points if the tolerance is within +/- 0.1 rad and one if the tolerance is within +/- 0.2 rad .

When all tasks are solved the robot must return to start. Two points are given for the return (The robot must be inside a 60 X 60 square in the start corner.

The file guidemarks.cl contains the poses of all the known guidemark stations.



Drawing 1: Objects



Drawing 2: Final course