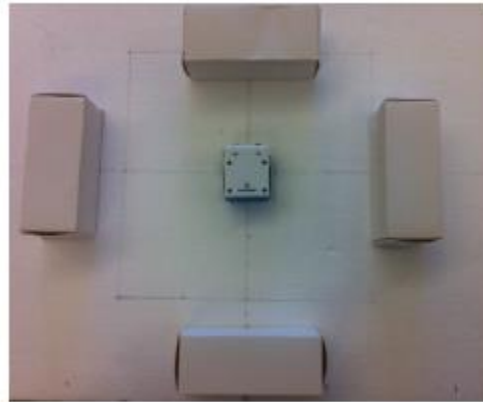
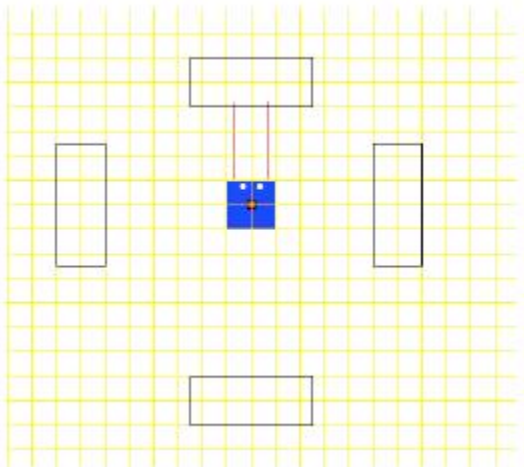


Assignment#3-1: Localization and Navigation

Due: 10/27/2015

Goal: Model the robot motion within reasonable accuracy and localize robot location using known map of surrounding obstacles. There will be 4 white boxes as seen below.



Requirements:

- Model your robot motion accurately
 - When moved using the joystick code after moving 100mm, your model should be $< 20\text{mm}$ away from the physical location (from center of robot)
 - After moving forward, the robot will be rotated by 90 deg. Your model should be $< 20\text{deg}$ from the physical robot
- Localize your robot's absolute location in the world based on the boxes it senses
 - When your robot is controlled, each time you adequately detect a face, localize yourself to that object
 - Your modelled robot should adequately represent the physical robot location and orientation
 - Location within 10mm (X, Y of center)
 - Orientation within 10 degrees

Starting Conditions:

Your physical robot will start slightly offset in location and orientation from the starting point in the physical world (aimed at the top box). The X and Y coordinates will be no more than 40mm off (and still able to see the obstacle) and the orientation no more than 45 degrees (example shown in Figure A).

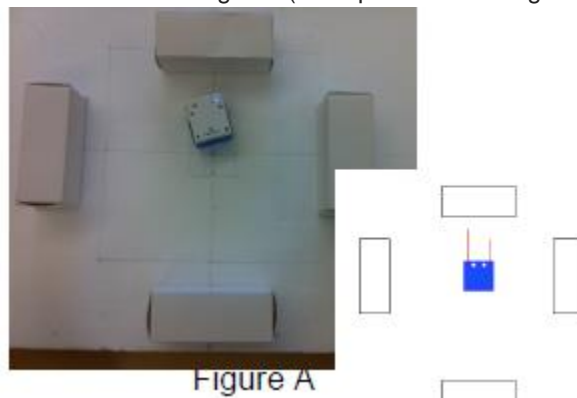


Figure A

Setup:

The GUI that draws the robot can be downloaded from the course website under Hamster GUI library for Assignment #3.

Joystick example code is also provided for you to control your robot. Modify either as needed.

Submission:

Simply zip all your files and name your zip following the previous naming convention:

sunetid_hw#_part#.zip