

## IEOR 140 Final Project Milestone 6 - 11/29/2012

Team 4: Nate Bailey and Raymond Ma

### Responsibilities

In this project, Nate was in charge of program design and coding. Raymond was in charge of hardware design, experimental work, and project writing.

### Hours Spent

Approximately 8 hours were spent on this milestone.

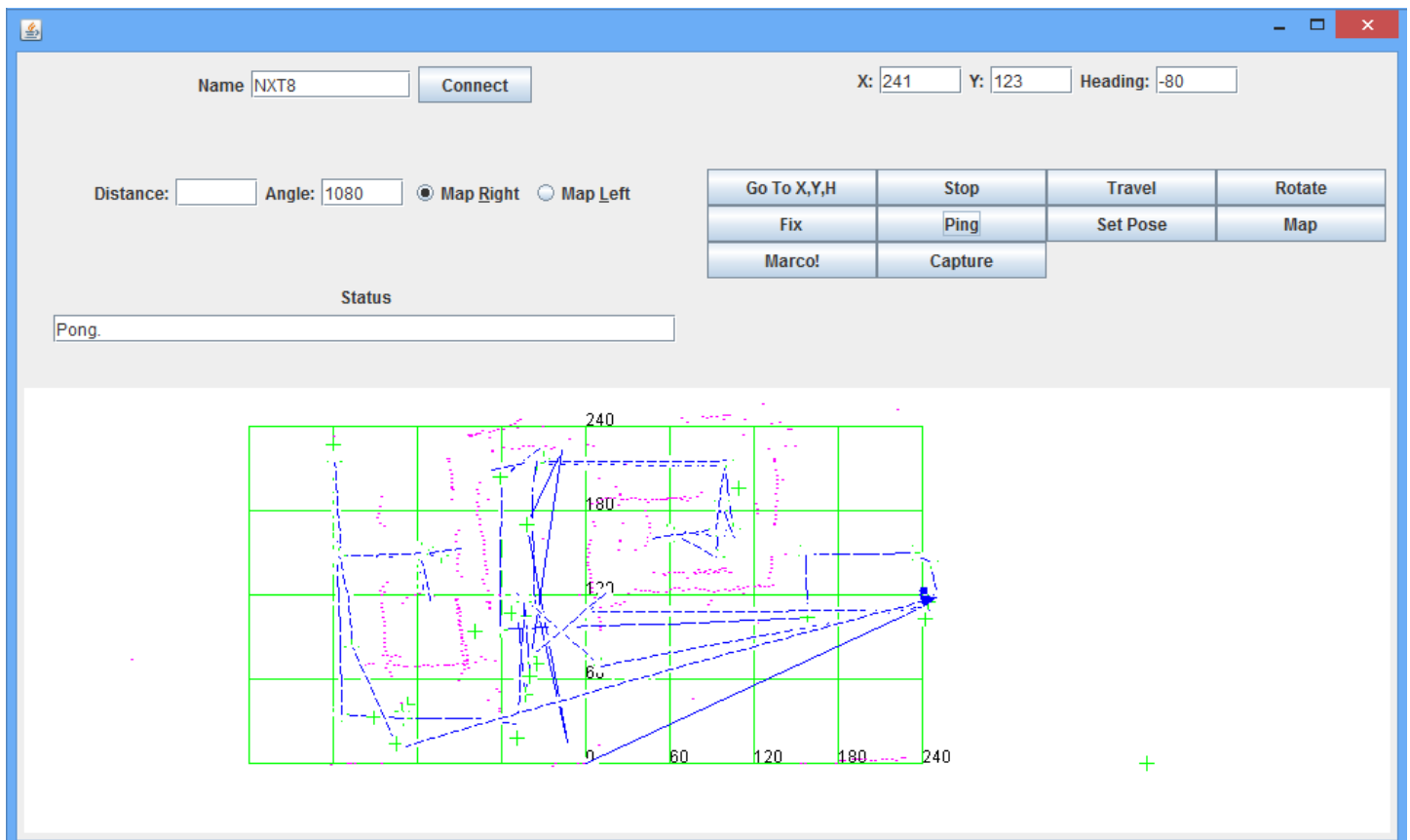
### Project Code

<https://github.com/ieor140-team4/FinalProject>

### Performance Specifications

Our robot met all of the performance specifications (there were no bonus specifications to meet).

### Screenshot of Controller



## Strategy for Milestone

For this milestone, we designed an algorithm that would first scan for the can, then rotate so the back of the robot faced the can, and then back up until the can connected to the magnet on the robot. After the first rotate, the robot will scan for the can again to make sure it is aligned, and if it doesn't detect anything, it will rotate to the can again to align itself.

In terms of hardware, we added a new connector to the back with a magnet taped on to be able to magnetically attract the can so it can be moved with the robot.

## Task Analysis

- Detect distance to can
- Turning so the back of robot is facing can
- Backing up until can connects with robot

## Class Responsibilities

A new case was added in RobotController called CAPTURE. CAPTURE first scans for the can's location by using scanForCan in Scanner in Locator. The angle is passed the DifferentialPilot to rotate the robot so the back faces the can. Now, the robot scans again for the can to make sure it is aligned by using scanForCan in Scanner in Locator. Then, the distance is passed to the Navigator to travel the backwards distance to connect to the can.

## Interesting/Challenging/Difficult

The most interesting, challenging, and difficult part of this milestone was writing the algorithm to scan for the can, rotate so the back faces the can, scan again (and again if needed) to align with the can, and then back up to connect the magnet to the can. We spent some time calibrating the distance to back up to make sure we didn't back up any more than needed and also made some hardware changes to make sure that the robot could not connect to the can.

## Appendix

[Source Code](#) | [Java Docs](#)