Final Demo*

EENG350: Systems Exploration, Engineering, and Design Laboratory

Tyrone Vincent

Department of Electrical Engineering
Colorado School of Mines

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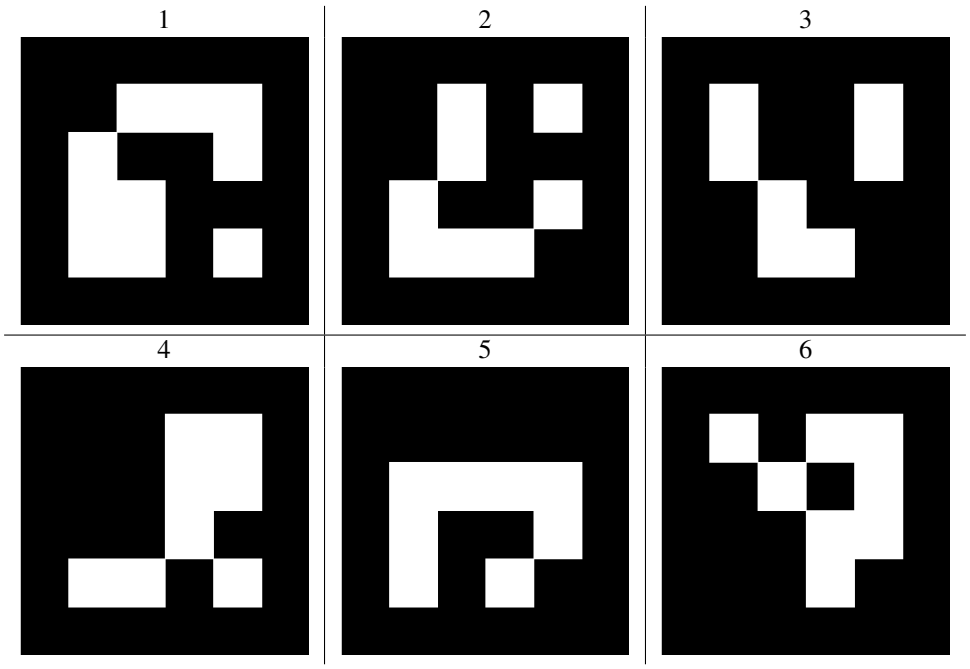
1 Final Demo

The the final demo demonstrates the full implementation of the robot. Your robot should traverse a specific path that will be defined by Aruco. Six markers will be placed on the floor, in a space approximately 7 feet by 10 feet. The Aruco marker order is as follows:



Your robot will traverse the path from 1 to 6 in the correct order, coming to a stop directly over each marker (such that the marker lies on a line between the points where the robot wheels contact the floor) for at least 5 seconds before going on to the next marker. If the robot does not stop on a marker correctly or goes to a marker out of order, the trial ends, and the number of correct markers that were reached is tallied. If the robot fails to reach the first marker, a failure is recorded, and the team can attempt again. If the robot fails to reach all 6 markers correctly, the team has the option to declare a failure, and try another attempt (the performance for the failed attempt is discarded). The performance will be judged on the number to trials the team takes, the number of targets correctly reached, and the speed at which the robot completes the path.

If teams are unable to achieve a full implementation, they have the option of repeating the tests for Demo 2. However,

since there are only 4 categories, teams would need to achieve 100% in each category in order to receive the full 200 performance points.

2 Performance Scoring

Team will receive 100 points for successfully finding the first marker. The remaining points (up to 100) are totaled from the following performance metrics:

- Number of attempts
- Number of markers traversed
- Average speed over path (distance divided by total time, with distance as measured between markers)

The score for each category is determined as follows:

- Let B be the target metric, which is the third best score over all sections (e.g: distance of 10 feet, and 1 failure)
- Let S be your teams achieved performance metric (e.g. distance of 5 feet, with 2 failures).
- Your category scores are calculated as:
  - Distance and average speed along path (larger is better): $\frac{S}{B} \times 50$ (e.g. $\frac{5}{10} \times 50 = 25$)
  - Failures: $50 - (S - B) \times 10$ (e.g. $50 - (2 - 1) \times 10 = 40$)

The best score is determined on the first day that a team successfully completes a demo. The max in each category is 50 points. Teams earn the sum over all available categories, plus the 100 point "at least 1 marker" bonus, up to a max of 200 points. The final score is then multiplied by the relevant percentage for the day that the team completes the demo.

If teams choose to repeat demo 2, the performance metrics are as discussed in the Demo 2 handout, which are summed up to a max of 200 points.

3 Documentation

- The weekly agenda/minutes should be uploaded to the Canvas "Final Demo Team Documentation" assignment link.

4 Final Presentation

The final presentation consists of a 5 minute video. There are many possible formats to the video; for example, you can use software capture your team talking over a power-point presentation, film each other presenting as if at a presentation or Ted Talk, you can have off-camera speakers explaining something that is being written on a page being filmed, you may include clips with animations or example runs related to your design, and you may be more creative than your professors can imagine. If you use any clips or images from other sources, be sure to cite your source.

This video should be for an audience of electrical engineers who are unfamiliar with the project and the challenges that you overcame to create your design. One use for this movie would be showing a prospective employer and example of a time when you had to design a component, work with a team, debug a real device, design a system using simulation tools, or other skills that employers desire that you developed in this lab. Click on the assignment link to see the rubric that shows what we are expecting to see in this video.

Do not assume that the view knows **anything** about this project.