Final Demo*

EENG350: Systems Exploration, Engineering, and Design Laboratory

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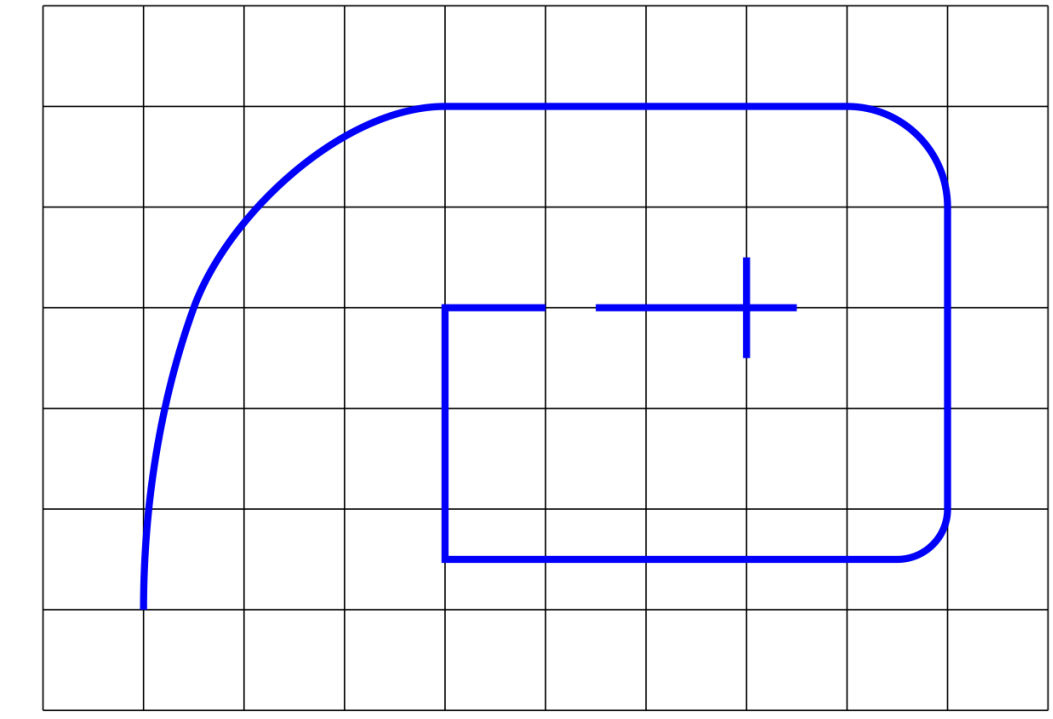
1 Final Demo

The the final demo demonstrates the full implementation of the robot. The robot must be able to keep its rotational center within 1 foot of the tape at all times. The path to be followed will be approximately as given by the image below. The spacing of the grid in this image is one foot. The robot will be placed at coordinate (0,0) facing away from the tape, so it will have to first rotate to locate it. The robot's success will be determined by how far it is able to make it down the path, and the speed at which it travels. Note that there is a break in the tape at (5,4). The robot will have to successfully pass over this break. The robot should stop when it reaches the crossed tape at (7,4).



$(0,0)$

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

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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 tape and following it for at least 10 feet. The remaining points (up to 100) are totaled from the following performance metrics:

- Number of attempts
- Distance along path
- Average speed over path (Distance divided by total time)

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 10 feet" 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 reflection logs are to be uploaded to Canvas individually.
- The weekly agenda/minutes should be uploaded to the Canvas "Final Demo Team Documentation" assignment link.

Upload the final code and design files for your final design to a well organized github repository. Your github should also have a project board that describes what tasks were assigned and who was responsible.

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.