

CECS 311 – Final Project

Line Following Robot

OBJECTIVE:

- To create a Line Following Robot entirely out of analog components.

OPERATION:

The Line Following Robot must only use analog components. No microcontrollers/fpgas or other programmable devices may be used, the project must be constructed entirely from discrete analog components.). It will follow a black line (created out of standard 3M Black Electrical Tape) on white paper (Poster Board) and must be battery powered. The project may be completed in a team of 2 max, this is does not need to be the same team you have been working with during lab.

No product evaluation/demo/dev boards may be used (this would be devices and components that come on a premade circuit board), some premade sensors/motor drivers etc... would fall into this category.

REPORT GUIDELINES:

A write up will have to be submitted. The best way to approach the report is to write it in a way that anyone should be able to fully reconstruct your robot from only the report.

- Approximately 4 to 7 pages should be sufficient to describe your project.
- Introduction: Description of the objective/goal.
- Description of operation, Include any calculations necessary to understand the circuit, and any LTSpice models that demonstrate theoretical functionality of the project. ALL aspects of the design must be demonstrated to be understood in the report. If certain components or design elements are used but not understood it would be considered cheating (copying an online design).
- An original complete schematic must be provided, created in a proper PCB creation tool, i.e. Altium, Circuit Maker, Orcad, KiCad (LTSpice would not count). Do not submit a schematic from an online source, (this would be considered plagiarism, although you are more than welcomed and encouraged to look at other designs and research them for “inspiration” but make sure that an understanding of the underlying concepts and principles is demonstrated in the report).
- Description of construction.
- Picture of completed robot, please feel free to include any other pictures of testing, oscilloscope waveforms etc... these extra inclusions are what separate the A and B projects.
- Conclusion: How did the robot perform, what changes would you like to make if given more time, etc...