

ECE 1000 Final Report: Robot Arm

line 1: name of project lead, team names
line 2: dept. name of organization (of Affiliation)
line 3: name of organization (of Affiliation)
line 4: location (town)
line 5: emails of team members

Abstract—This section is a short summary of the project report or research article that you are writing. In the abstract, you want to say the name of the project, why you are doing it, and summarize the results. Also, we put keywords below to help researchers easily look up academic articles and papers that are relevant to their research. The following are examples of what could be used for the Wireless Power Transfer circuit from class.

Keywords—Robotics, Servos, Raspberry Pi Pico, Center-Tapped

I. INTRODUCTION

This section is a short introduction to the final project that your team is working on. In the introduction, state the project's motivation (why you chose this project and why is it important?) and the names and majors of the team members. Finally, set up a transition to the next section, which will be the background information of the project.

Steven Crocker is a Computer Engineer and Cole Wilson is a Electrical Engineer. We chose to construct a robotic arm because we both find robotics interesting.

II. BACKGROUND

First, we normally begin a report by talking about what sources and literature we used to develop the project. For example, in this section you would state what articles, journals, forums, YouTube videos, or people you used to help formulate your code and overall process for the project. Please cite all your sources; plagiarism is a serious concern, and as engineers, we must always give credit where credit is due! Also, these sources might be useful for you in the future, so please make sure to note where your team drew information.

Cole found a design for a 3D-printed arm on Thingiverse [1] that we used as a chassis for our servos to move, and we had the design approved by our professor Dr. Bhattacharya. Steven found a YouTube video by Paul McWhorter [2] describing how to code the Raspberry Pi Pico using a joystick. We also talked with our Teaching Assistant John Caleb Williams who suggested using the 3.3 V pin on the Pi instead of the 5V.

III. PROJECT DESCRIPTION AND FORMULATION

In this section, we talk readers through how the project works. Explain all wiring for the project (i.e. what pins are you

using on the Raspberry Pi Pico and how do they connect to your sensors?) Also, attach a simple circuit diagram for your project (this can be made in LTSpice, TinkerCAD, or a block diagram software). Also, explain how your code works and why you decided to use certain methodologies. Finally, insert a picture of your full system (for the robot arm ... show the arm, the Raspberry Pi Pico, joystick, and any other materials).

We assembled the servos to the 3D printed chassis that whenever the servo horns moved a part of the arm would move. There were 3 servos total, with 1 rotating the base and another 2 moving the 2 sections of the arm. We chose not to use a 4th servo on the clamp due to time and sensor (joystick) constraints.

IV. DISCUSSION AND RESULTS

In this section, we discuss the results of the project. Also, discuss things that your team would change if they were to continue working on the project (future improvements). Also, state what your team enjoyed about the project. Finally, state the tasks completed by each team member (who did what?).

V. CONCLUSION

In this section, we conclude the report by restating the purpose of the project, the skills acquired, and the results.

REFERENCES

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