Programming a 2 Link Robot to Draw a Rectangle

EGR 445/545: PA 3

Due: 06/06/19

Overview

Project Assignment 3 is the culmination of the first group project. Project Assignments 1 and 2 were stepping stones in this project. To complete the project, your team must program a two-link planar robot to draw a rectangle. Your code must ask the user for the coordinates of the lower left corner or the rectangle along with the width and height of the rectangle. The robot should then draw the rectangle on a white board using a dry erase marker.

You have already been working on assignments designed to help you complete this project. Here are the recommended steps to successfully completing this project:

1. collect data from the user (lower left coordinates, width, and height)
2. determine the coordinates of intermediate points along the edges of the rectangle
3. find the joint angles necessary to move the robot tip to the points determined in step 2
4. convert the joint angles to servo delay values (1000-2000 microseconds)
5. send the servo delays to the servos

Python + Arduino

This project will be done using Python in conjunction with an Arduino. Steps 1-4 above are done in Python and the servo delays are transmitted from Python to Arduino using serial communication. The Arduino then sends the delays it received via serial to the servos.