

Midterm Assignment

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OVERVIEW

The first part of this project investigates torque applied to joints for a two joint planar robot using. The robot moves along a given trajectory, and their joints configurations were calculated using inverse kinematic functions and finite differences. Utilizing that information, the $q2tau$ function performed torque calculations on the robot's joints. By varying the condition of desired time and applying an external force, their effects on torque were investigated for part 1.

The second part plots the trajectory of the end effector and elbow of the robot using the provided PD controller and inverse dynamics equation. For comparison purposes, the first trajectory was plotted without using inverse dynamics function and PD controller adjustment. As a result, its trajectory was deviated from the desired trajectory. Secondly, the PD controller was turned to produce the best-fit trajectory. Lastly, the parameters of the robot were adjusted to investigate their effectiveness in the trajectory plot. For my case, I adjusted the mass matrix and Kd & Kp gain by 3 % and 5 % increasing/decreasing to plot 4 trajectories each. However, they did not demonstrate a significant change. Therefore I included only one plot for each option.

RESULTS: PART 1







