BMD_ENG 467: Biomedical Robotics Assignment 4
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OVERVIEW

This assignment demonstrates the inverse dynamics of a 2D planar elbow manipulator to calculate the torque applied to its joints. The kinematic parameters of the robot were obtained from homework 1. To calculate the trajectory of the robot, the minimum jerk model was applied, and its result was converted to angle configuration, and its angular velocities and accelerations were estimated using finite differences. It was assumed that the centroid of each line of the robot is located in the middle of the link, and its shape is rectangular.

RESULTS

From the reference Spong, M.W., Hutchinson, S. and Vidyasagar. “Robot Motion and Control”. Wiley, 2006The function calculates torque applied on joints based on its configuration, velocity, acceleration, and physical parameters was written in MATLAB. The amount of torque applied on joints was calculated every 0.5 seconds for 5 seconds duration, and its result was plotted.