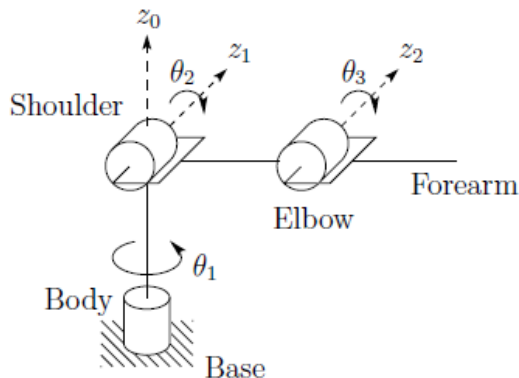


Homework 4

RRR arm or robot from H



$$L_1 = L_2 = L_3 = 1 \text{ m};$$

Tasks:

1. Calculate Jacobian (skew theory or numeric method)
2. Joint trajectory $q(t)$ from $q(0) = (0, 0, 0)$ to $q(2) = (2, 3, 4)$ with null initial and final velocities and accelerations. (polynomial)
3. Joint trajectory for the following commands: PTP – $q_1 = (0, 0, 0)$ to $q_2 = (2, 3, 4)$ (trapezoidal)
 - Controller command interpretation frequency – $f = 100 \text{ Hz}$
 - Maximum joint velocity – 1 rad/s
 - Maximum joint acceleration – 10 rad/s^2
4. Joint trajectory for the following commands: LIN – $p_1 = (1, 0, 1)$ to $p_2 = (\sqrt{2}/2, \sqrt{2}/2, 1.2)$ (trapezoidal)
 - Controller command interpretation frequency – $f = 100 \text{ Hz}$
 - Maximum linear velocity – 1 m/s
 - Maximum linear acceleration – 10 m/s^2
5. Visualization (optional)

Requirements:

1. Matlab / Python code [1], [2]
2. Report:
 - Explanation of the solution
 - Position, Velocity, and Acceleration plots
 - Link to the project on github.com

Submit only report to moodle.

[1] No allowed to use robotics libraries and toolboxes

[2] Cheat penalty: 0 for Homework.