

Assignment 2

Linear trajectories result in joint angles changing at a constant rate between the start and end configurations. While simple, this introduces sudden changes in velocity at the beginning and end of motion, causing mechanical stress and excitation of vibrations in robotic systems. In comparison, smoother polynomial trajectories ensure zero velocity at both the start and end points, resulting in continuous, and smooth motion and decreased level of mechanical stress. Smooth trajectories are more suitable for real robots as they reduce wear on actuators, improve tracking performance, and enhance safety. Therefore, polynomial-based joint-space trajectories are preferred in practical robotic motion planning.