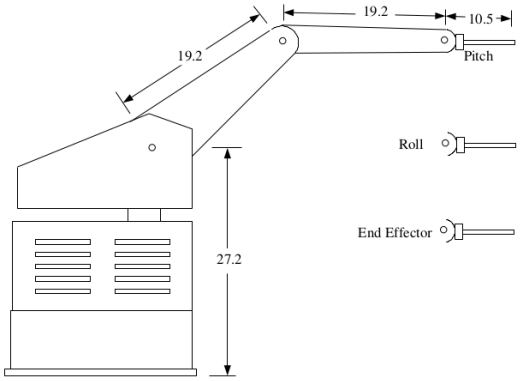
ECE 417/598: Homework 1

Max marks: 120

Due on Jan 28, 2021, before class.

1 Jan 24 Lecture

Problem 1 *For the given robot write down the axis-angle rotation from joint to joint assuming the joint angles to be θ_1, θ_2, θ_3 respectively.*



2 Jan 26 Lecture

Problem 2 *The following is known about a smooth trajectory: p(0) = 0, v(0) = 0, p(3) = 2, p(7) = 0, v(7) = 0 and velocity and acceleration are continuous everywhere.*

1. *What is the lowest degree single polynomial which could be used?*
2. *Give two advantages to using a spline curve instead.*
3. *What degree polynomials would you suggest for the splines?*
4. *Write the polynomials.*
5. *Write the set of equations which would be used to solve for the coefficients. Do not use normalized time.*
6. *Solve for the coefficients.*
7. *Write the set of equations which would be used to solve for the coefficients. Use normalized time.*
8. *Solve for the coefficients.*