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1 Step by step

- 1. Choose axis z_i along the axis of joint i+1 starting from the base with z_0
 - For z_n as there is no joint n+1, if joint n is revolute, align z_n with z_{n-1} , if joint is prismatic chose z_n arbitrarily
- 2. Choose axis x_i along the common normal to axes z_{i-1} and z_i with direction from joint i to joint i+1
 - If z_{i-1} and z_i are parallel, then the direction of x_i is from z_{i-1} to z_i
 - If z_{i-1} and z_i are collinear, x_i can be chosen arbitrarily
- 3. Assign angles for the revolute joints, starting with q_1 in z_0 until z_{n-1}
- 4. Assign variables for prismatic joints

Obs: If the joint is twisting or prismatic, put the frame O_i with the frame O_{i-1}

2 Construct table of parameters

- α_i angle between z_{i-1} and z_i around x_i axis
- a_i distance between O_{i-1} and O_i about x_i axis
- d_i distance between O_{i-1} and O_i about z_{i-1} axis (variable if joint is PRISMATIC)
- θ_i angle between x_{i-1} and x_i around z_{i-1} axis (variable if joint is REVOLUTE)

3 Denavit-Hartenberg matrix

$$^{\text{i--}1}A_i(q_1) = \begin{bmatrix} c\theta_i & -c\alpha_is\theta_i & s\alpha_is\theta_i & a_ic\theta_i \\ s\theta_i & c\alpha_ic\theta_i & -s\alpha_ic\theta_i & a_is\theta_i \\ 0 & s\alpha_i & c\alpha_i & d_i \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

4 Sin and Cos graphs



