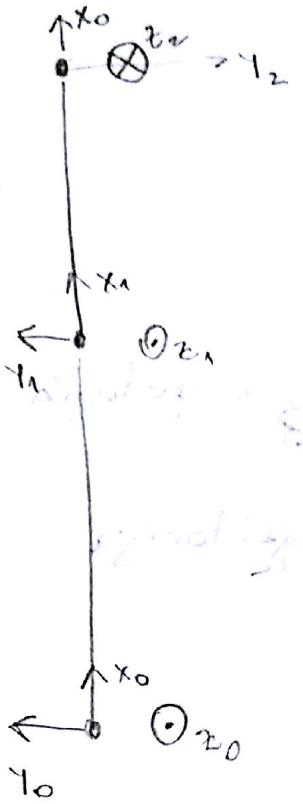
Auditorne



DH

	Θ	d	α	a
1	q_1 (v)	0	0	ℓ
2	q_2	0	π	ℓ

$$T_0^2 = T_0^1 \, T_1^2$$

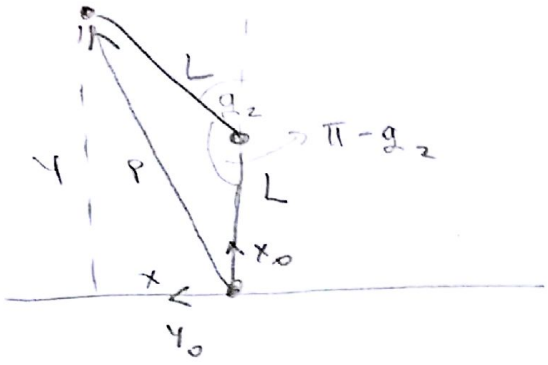
$$= \begin{bmatrix} C_{12} & S_{12} & 0 & L(C_1 + C_{12}) \\ S_{12} & -C_{12} & 0 & L(S_1 + S_{12}) \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

(z)

$$W = \begin{bmatrix} L(C_1 + C_{12}) \\ L(S_1 + S_{12}) \\ 0 \\ 0 \\ 0 \\ -1 \end{bmatrix} \begin{matrix} \rightarrow x \\ \rightarrow y \\ \rightarrow z \\ \\ \\ e^{q_2} \end{matrix}$$

bitno kad je zadnja os rotacija (informacija o rotaciji sadržana u z)

$q_2 \rightarrow x^2 + y^2 \therefore C_2$



$$c^2 = a^2 + b^2 - 2ab\cos\theta$$

$$x^2 + y^2 = 2L^2 - 2L^2\cos(\pi - q_2)$$

$$q_2 = \pm \arccos\left(\frac{x^2+y^2}{2L^2} - 1\right)$$

$\sin q_2$

$\cos q_2$

$$\frac{x}{L} = x^* \quad , \quad \frac{y}{L} = y^*$$

$$x^* = C_1 + C_1C_2 - S_1S_2$$

$$\boxed{x^* = C_1(1+C_2) - S_1S_2}$$

$$y^* = S_1 + S_1C_2 + C_1S_2$$

$$\boxed{y^* = S_1(1+C_2) + C_1S_2}$$

$x^*(1+C_2) + y^*S_2$

$$C_1 = \frac{x^*(1+C_2) + y^*S_2}{2(1+C_2)}$$

$$S_1 \longrightarrow y^*(1+C_2) - x^*S_2$$

$$q_2 = \pm \arccos\left(\frac{x^2+y^2}{2L^2} - 1\right)$$

$$q_1 = \operatorname{atan2}\left(\frac{y(1+C_2) - xS_2}{x(1+C_2) + yS_2}\right)$$

$$W_1 = \begin{bmatrix} L \\ L \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix} \qquad W_2 = \begin{bmatrix} L \\ -L \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

$$Q^1 = \begin{bmatrix} 0 \\ \frac{\pi}{2} \end{bmatrix} \begin{matrix} q_1 \\ q_2 \end{matrix}$$

$$Q^2 = \begin{bmatrix} 0 \\ -\frac{\pi}{2} \end{bmatrix} \begin{matrix} q_1 \\ q_2 \end{matrix}$$

$$w_M = \frac{1}{2}(w_1 + w_2) = \begin{bmatrix} L \\ 0 \\ 0 \\ 0 \\ 0 \\ -1 \end{bmatrix}$$

olir $\left[\frac{1}{2}(q_1 + q_2)\right] = \begin{bmatrix} 0 \\ 0 \end{bmatrix} = q_m$

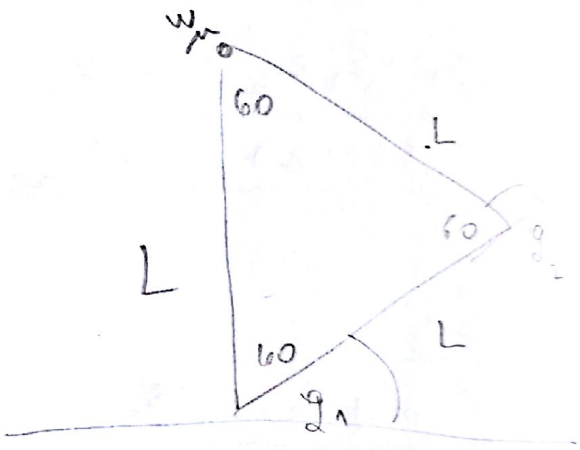
$$w_m = \begin{bmatrix} 2L \\ 0 \\ 0 \\ 0 \\ 0 \\ -1 \end{bmatrix}$$

$\|w_M - w_m\| = L$

$$w_\mu = \begin{bmatrix} L \\ 0 \\ 0 \\ 0 \\ 0 \\ -1 \end{bmatrix}$$

Araştırma

q_1	q_μ	q_2
0	$-\frac{\pi}{3}$	0
$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$-\frac{\pi}{2}$



A) 1 polinom

$$q(t) = a_n t^n + \dots + a_1 t + a_0$$

↑ broj uvjeta

$$q(0) = Q_1$$
$$q(\mu T) = Q_\mu$$
$$q(T) = Q_2$$

$$q(t) = a_2 t^2 + a_1 t + a_0$$

$\mu = \langle 0, 1 \rangle$

$$q(0) = a_0 = Q_1$$
$$q(\mu T) = a_2 \mu^2 T^2 + a_1 \mu t + a_0 = Q_\mu$$
$$q(T) = a_2 T^2 + a_1 T + a_0 = Q_2$$

$$\begin{bmatrix} 0 & 0 & 1 \\ \mu^2 T^2 & \mu T & 1 \\ T^2 & T & 1 \end{bmatrix} \begin{bmatrix} a_2 \\ a_1 \\ a_0 \end{bmatrix} = \begin{bmatrix} Q_1 \\ Q_\mu \\ Q_2 \end{bmatrix}$$

$$[A]$$

$$a = A^{-1} \begin{bmatrix} Q_1 \\ Q_\mu \\ Q_2 \end{bmatrix}$$

$\dot{q}(t) < MAX$?

$\ddot{q}(t)$

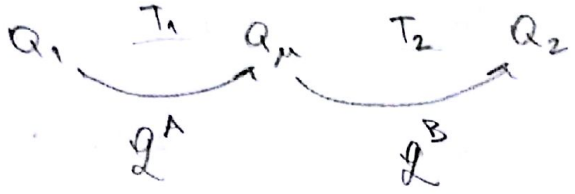
$\dot{q}(0) = 0$ → svojta

$\dot{q}(T) = 0$ → svojta

$$q(t) = a_4 t^4 + a_3 t^3 + a_2 t^2 + a_1 t + a_0$$
$$\dot{q}(t) = 4a_4 t^3 + 3a_3 t^2 + 2a_2 t + a_1$$

$$A = (n \times n) = (5 \times 5)$$

(B) Interpolirana po segmentima



q_A $\begin{cases} q^A(0) = Q_1 \\ \dot{q}^A(0) = 0 \\ q^A(T_1) = Q_M \end{cases}$ $\begin{cases} q_B(0) = Q_M \\ \dot{q}_B(T_2) = Q_2 \\ \dot{q}_B(T_2) = 0 \end{cases}$ q_B

$\dot{q}_A(T_1) = \dot{q}_B(0)$

$q^A = a_2 t^2 + a_1 t + a_0$

$q^B = b_3 t^3 + b_2 t^2 + b_1 t + b_0$