MSD

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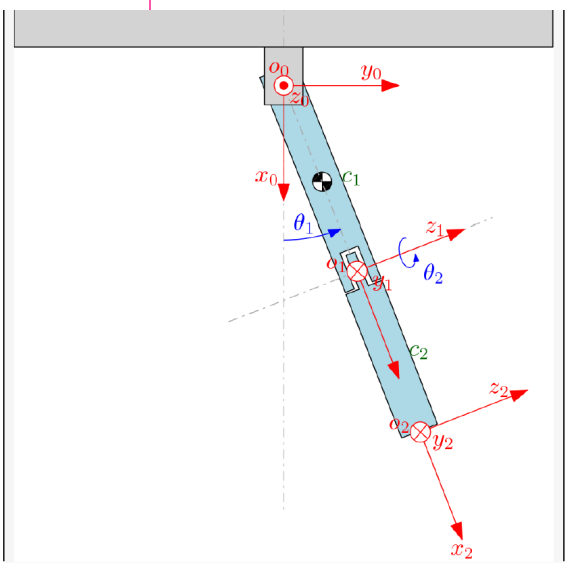
DÚ č. 4



- Rotační matice

$$R_1^0 = \begin{bmatrix} \cos(\theta_1) & 0 & -\sin(\theta_1) \\ \sin(\theta_1) & 0 & \cos(\theta_1) \\ 0 & -1 & 0 \end{bmatrix}$$

$$R_2^1 = \begin{bmatrix} \cos(\theta_2) & -\sin(\theta_2) & 0 \\ \sin(\theta_2) & \cos(\theta_2) & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

- Hmotnost a délka : 1. rameno : m_1 ; L_1

2. rameno : m_2 ; L_2

- Momenty setrvačnosti

1. rameno : $I_1 = \begin{bmatrix} I_{x1} & 0 & 0 \\ 0 & I_{y1} & 0 \\ 0 & 0 & I_{R2} \end{bmatrix}$ 2. rameno : $I_2 = \begin{bmatrix} I_{x2} & 0 & 0 \\ 0 & I_{y2} & 0 \\ 0 & 0 & I_{R2} \end{bmatrix}$

- Translační Jakobiány :

$$J_{C1,TR} = \begin{bmatrix} -\frac{L_1}{2}\sin\theta_1 & 0 \\ \frac{L_1}{2}\cos\theta_1 & 0 \\ 0 & 0 \end{bmatrix}$$

$$J_{C2,TR} = \begin{bmatrix} -\sin\theta_1 \cdot L_1 - \frac{1}{2}\cos\theta_2 \cdot \sin\theta_1 \cdot L_2 & -\frac{1}{2}\cos\theta_1 \cdot \sin\theta_2 \cdot L_2 \\ \cos\theta_1 L_1 + \frac{1}{2}\cos\theta_1 \cdot \cos\theta_2 \cdot L_2 & -\frac{1}{2}\sin\theta_1 \cdot \sin\theta_2 \cdot L_2 \\ 0 & \underbrace{-\frac{1}{2}\cos^2\theta_1 \cdot \cos\theta_2 \cdot L_2 - \frac{1}{2}\cos\theta_2 \cdot \sin^2\theta_1 \cdot L_2}_{= -\frac{1}{2}\cos\theta_2 L_2} \end{bmatrix}$$

- Rotační Jakobiány :

$$J_{1,ROT} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 1 & 0 \end{bmatrix} \qquad J_{2,ROT} = \begin{bmatrix} 0 & -\sin\theta_1 \\ 0 & \cos\theta_1 \\ 1 & 0 \end{bmatrix}$$