No
Date

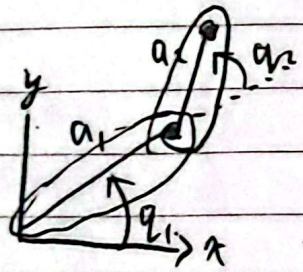
Mayang GMRT Day 2

Rumus Forward kinematics Homogenous Transform Matrix Rotasi:

$$R_\theta = \begin{bmatrix} \cos\theta & -\sin\theta & 0 \\ \sin\theta & \cos\theta & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Tranformasi

$$T_{x,y} = \begin{bmatrix} 1 & 0 & t_x \\ 0 & 1 & t_y \\ 0 & 0 & 1 \end{bmatrix}$$



$$H_1^0 = \begin{bmatrix} \cos\theta_1 & -\sin\theta_1 & 0 \\ \sin\theta_1 & \cos\theta_1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$H_2^1 = \begin{bmatrix} 1 & 0 & l_1 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$H_3^2 = \begin{bmatrix} \cos\theta_2 & -\sin\theta_2 & 0 \\ \sin\theta_2 & \cos\theta_2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$H_4^3 = \begin{bmatrix} 1 & 0 & l_2 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

$$H_4^0 = H_1^0 H_2^1 H_3^2 H_4^3 = \begin{bmatrix} \cos(\theta_1+\theta_2) & -\sin(\theta_1+\theta_2) & l_1\cos\theta_1 + l_2\cos(\theta_1+\theta_2) \\ \sin(\theta_1+\theta_2) & \cos(\theta_1+\theta_2) & l_1\sin\theta_1 + l_2\sin(\theta_1+\theta_2) \\ 0 & 0 & 1 \end{bmatrix}$$

Diket servo 1 diputar 40°, servo 2 30°. Panjang femur (l_1) = 5b, Panjang tibia (l_2) = 6b, koordinat titik akhir jika titik pusat (0,0)

No
Date

$$H_4^0 = \begin{bmatrix} \cos(40°+30°) & -\sin(40°+30°) & 56\cos 40° + 65\cos(40°+30°) \\ \sin(40°+30°) & \cos(40°+30°) & 56\sin 40° + 65\sin(40°+30°) \\ 0 & 0 & 1 \end{bmatrix}$$

$$= \begin{bmatrix} 0,342 & -0,939 & 65,12 \\ 0,939 & 0,342 & 97,07 \\ 0 & 0 & 1 \end{bmatrix}$$

$t_x = 65,12$

$t_y = 97,07$

Koordinat titik akhir : $(65,12; 97,07)$