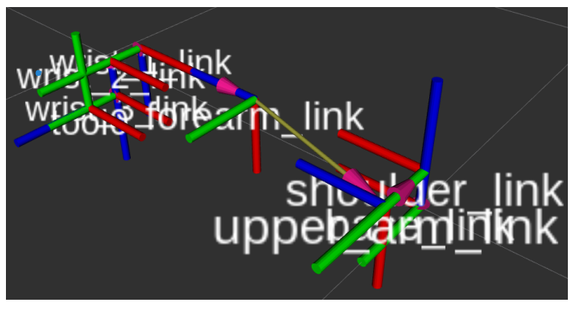
Matriz TH 2

quinta-feira, 11 de julho de 2019 10:06

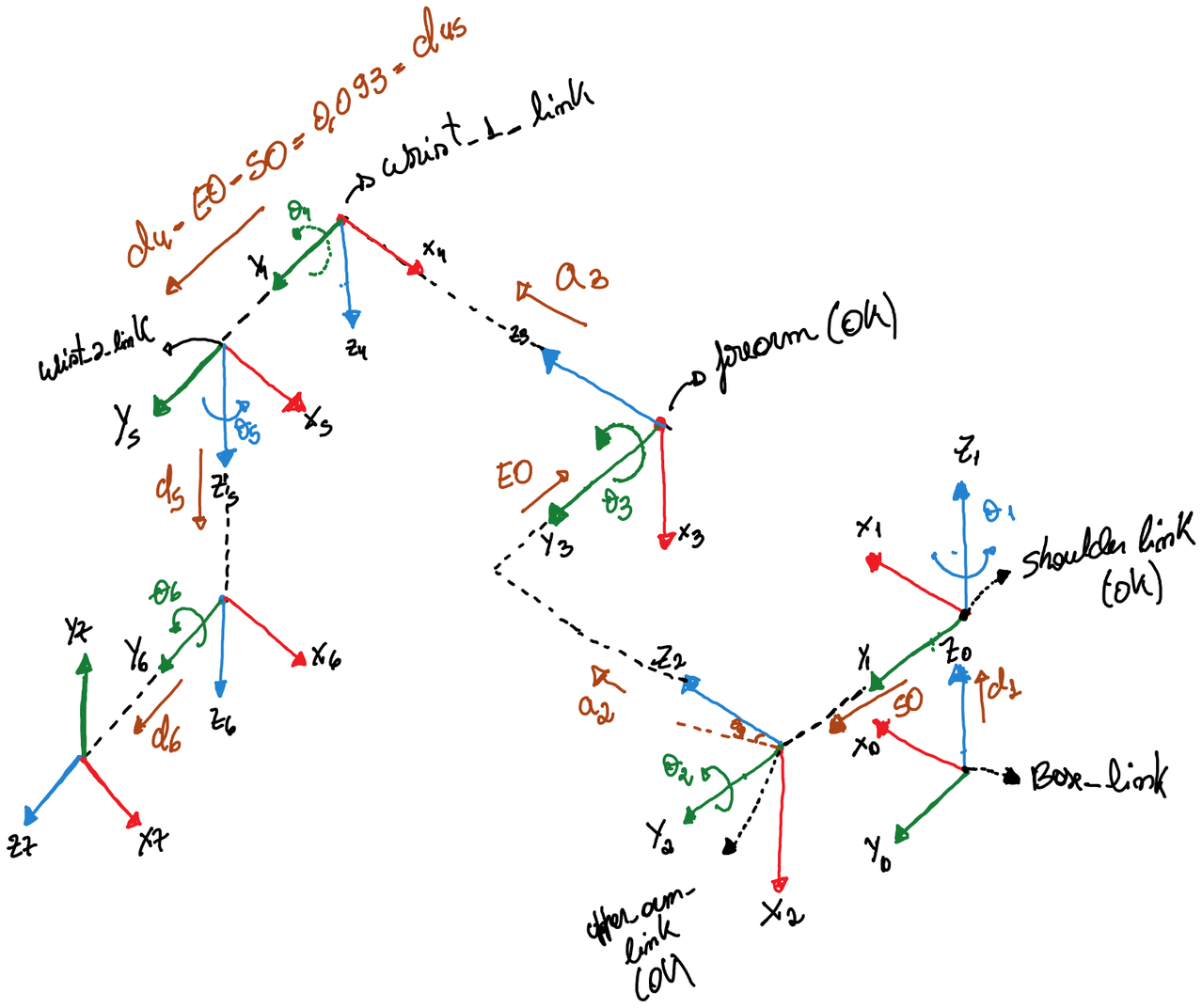


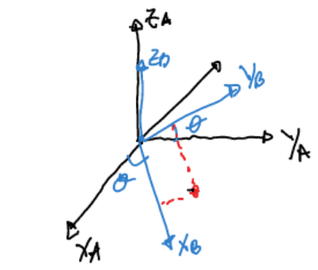
UR5				
Kinematics	theta [rad]	a [m]	d [m]	alpha [rad]
Joint 1	0	0	0.089159	π/2
Joint 2	0	-0.425	0	0
Joint 3	0	-0.39225	0	0
Joint 4	0	0	0.10915	π/2
Joint 5	0	0	0.09465	-π/2
Joint 6	0	0	0.0823	0

SO = Shoulder - offset = 0.13585

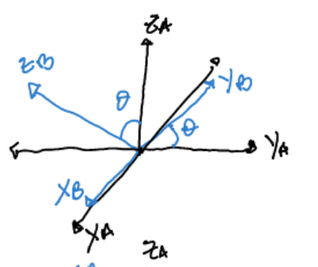
EO = Elbow - offset = -0.1197

Os pontos de controle tem que ser fixo

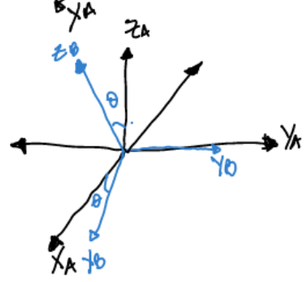




$$R_Z(\theta) = \begin{matrix} & X_B & Y_B & Z_B \\ X_A & C_\theta & -S_\theta & 0 \\ Y_A & S_\theta & C_\theta & 0 \\ Z_A & 0 & 0 & 1 \end{matrix}$$



$$R_X(\theta) = \begin{bmatrix} 1 & 0 & 0 \\ 0 & C_\theta & -S_\theta \\ 0 & S_\theta & C_\theta \end{bmatrix}$$



$$R_Y(\theta) = \begin{bmatrix} C_\theta & 0 & S_\theta \\ 0 & 1 & 0 \\ -S_\theta & 0 & C_\theta \end{bmatrix}$$

$$^0T_1 = \begin{bmatrix} ^0R_1 & ^0d_1 \\ 000 & 1 \end{bmatrix} \quad ^0R_1 = \begin{bmatrix} C_1 & -S_1 & 0 \\ S_1 & C_1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad ^0d_1 = \begin{bmatrix} 0 \\ 0 \\ d_1 \end{bmatrix}$$

$$^1R_2 = \begin{bmatrix} C_2 & 0 & S_2 \\ 0 & 1 & 0 \\ -S_2 & 0 & C_2 \end{bmatrix} \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ -1 & 0 & 0 \end{bmatrix} = \begin{bmatrix} -S_2 & 0 & C_2 \\ 0 & 1 & 0 \\ -C_2 & 0 & -S_2 \end{bmatrix} \quad ^1d_2 = \begin{bmatrix} 0 \\ SO \\ 0 \end{bmatrix}$$

$$^2R_3 = \begin{bmatrix} C_3 & 0 & S_3 \\ 0 & 1 & 0 \\ -S_3 & 0 & C_3 \end{bmatrix} \quad ^2d_3 = \begin{bmatrix} 0 \\ -EO \\ a_2 \end{bmatrix} \text{ ou } \begin{bmatrix} 0 \\ EO \\ -a_2 \end{bmatrix} + d(f)$$

$$^3R_4 = \begin{bmatrix} C_4 & 0 & S_4 \\ 0 & 1 & 0 \\ -S_4 & 0 & C_4 \end{bmatrix} \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ -1 & 0 & 0 \end{bmatrix} = \begin{bmatrix} -S_4 & 0 & C_4 \\ 0 & 1 & 0 \\ -C_4 & 0 & -S_4 \end{bmatrix} \quad ^3d_4 = \begin{bmatrix} 0 \\ 0 \\ a_3 \end{bmatrix}$$

$$^4R_5 = \begin{bmatrix} C_5 & -S_5 & 0 \\ S_5 & C_5 & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad ^4d_5 = \begin{bmatrix} 0 \\ d_{45} \\ 0 \end{bmatrix}$$

$$^5R_6 = \begin{bmatrix} C_6 & 0 & S_6 \\ 0 & 1 & 0 \\ -S_6 & 0 & C_6 \end{bmatrix} \quad ^5d_6 = \begin{bmatrix} 0 \\ 0 \\ d_5 \end{bmatrix}$$

$$^6R_7 = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & -1 & 0 \end{bmatrix} \quad ^6d_7 = \begin{bmatrix} 0 \\ d_6 \\ 0 \end{bmatrix}$$