

# Forward Kinematics:

$$R_z(\theta_0) D_z(l_0) R_y(\theta_1) D_y(d_1) D_x(l_1) R_y(\theta_2) D_y(d_2) D_x(l_2) R_y(\theta_3) D_y(d_3) D_z(d_4) D_x(l_3)$$

$$\begin{bmatrix} \cos \theta_0 & -\sin \theta_0 & 0 & 0 \\ \sin \theta_0 & \cos \theta_0 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} R_z(\theta_0)$$

$$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & l_0 \\ 0 & 0 & 0 & 1 \end{bmatrix} D_z(l_0)$$

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

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