TD ROBOTIQUE

1A SRI

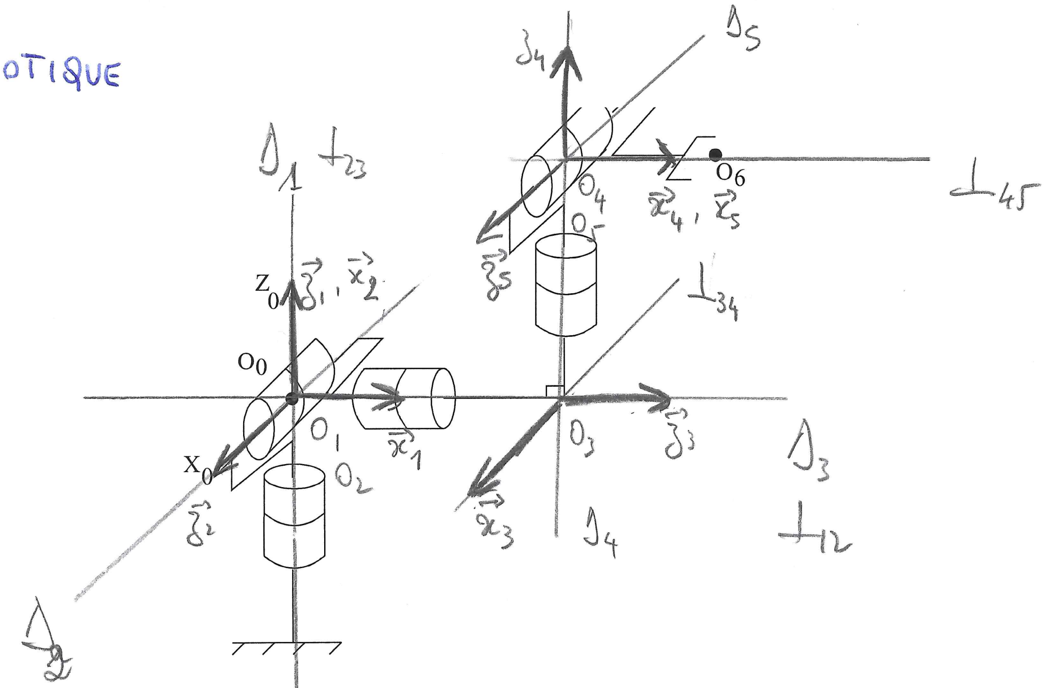

FIG. 1 – *Robot manipulateur RRRRR*

Paramètres de Denavit-Hartenberg:

	1	2	3	4	5	
σ_i	0	0	0	0	0	
α_{i-1}	0	$\pi/2$	$\pi/2$	$\pi/2$	$\pi/2$	
a_{i-1}	0	0	0	0	0	
θ_i	q_1	q_2	q_3	q_4	q_5	
r_i	0	0	O_2O_3	O_3O_4	0	
$q_i(figure)$	$\pi/2$	$\pi/2$	$\pi/2$	$\pi/2$	0	

$$T_{01} = \left(\begin{array}{ccc|c} c_1 & -s_1 & 0 & 0 \\ s_1 & c_1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right) \qquad T_{12} = \left(\begin{array}{ccc|c} c_2 & -s_2 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ s_2 & c_2 & 0 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right)$$

$$T_{23} = \left(\begin{array}{ccc|c} c_3 & -s_3 & 0 & 0 \\ 0 & 0 & -1 & -O_2O_3 \\ s_3 & c_3 & 0 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right) \qquad T_{34} = \left(\begin{array}{ccc|c} c_4 & -s_4 & 0 & 0 \\ 0 & 0 & -1 & -O_3O_4 \\ s_4 & c_4 & 0 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right)$$

$$T_{45} = \left(\begin{array}{ccc|c} c_5 & -s_5 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ s_5 & c_5 & 0 & 0 \\ \hline 0 & 0 & 0 & 1 \end{array}\right)$$

Validation de T_{01} pour la config. figurée, ie en prenant $q_i = q_{iFIG} = \pi/2$

$$\begin{cases} \vec{x}_{1(0)} = \begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix} = \vec{y}_{0(0)} & \text{OK} \\ \vec{y}_{1(0)} = \begin{pmatrix} -1 \\ 0 \\ 0 \end{pmatrix} = -\vec{x}_{0(0)} & \text{OK} \\ \vec{z}_{1(0)} = \begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix} = \vec{z}_{0(0)} & \text{OK} \end{cases}$$

et $\overrightarrow{O_0O_1}_{(0)} = \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix} \Rightarrow O_0 = O_1$ ok

On peut ainsi valider chaque $T_{i-1,i}$ séparément.