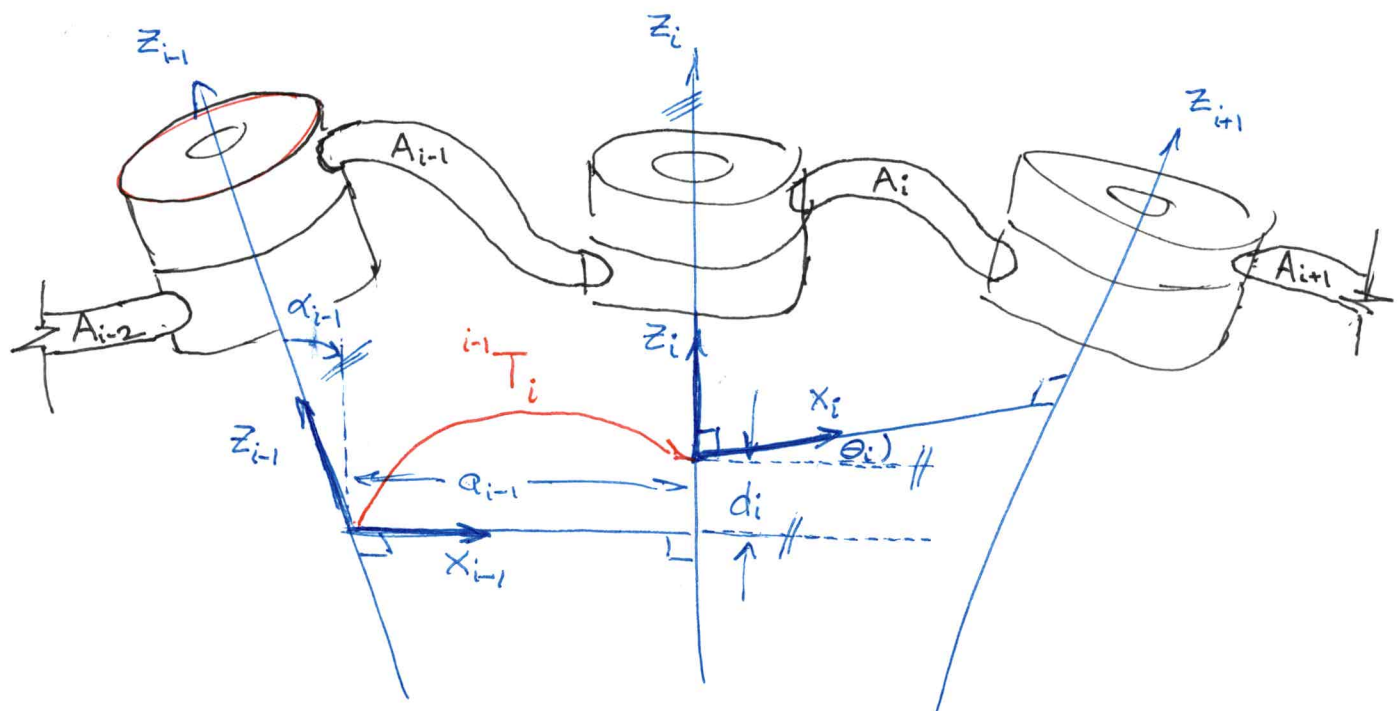


Spatial Chains

1/31/18

(10)

Systematic, minimal frame assignment by Denavit-Hartenberg method



can reverse order can reverse order

$${}^{i-1}T_i = \underbrace{\text{Transl}_{x_{i-1}}(a_{i-1}) R_{x_{i-1}}(\alpha_{i-1})}_{Q_{i-1}} \underbrace{\text{Transl}_{z_i}(d_i) R_{z_i}(\theta_i)}_{R_i}$$

LaValle's notation \rightarrow

$${}^{i-1}T_i = \begin{bmatrix} \cos(\theta_i) & -\sin(\theta_i) & 0 & a_{i-1} \\ \sin(\theta_i) \cos(\alpha_{i-1}) & \cos(\theta_i) \cos(\alpha_{i-1}) & -\sin(\alpha_{i-1}) & -\sin(\alpha_{i-1}) d_i \\ \sin(\theta_i) \sin(\alpha_{i-1}) & \cos(\theta_i) \sin(\alpha_{i-1}) & \cos(\alpha_{i-1}) & \cos(\alpha_{i-1}) d_i \\ 0 & 0 & 0 & 1 \end{bmatrix}$$