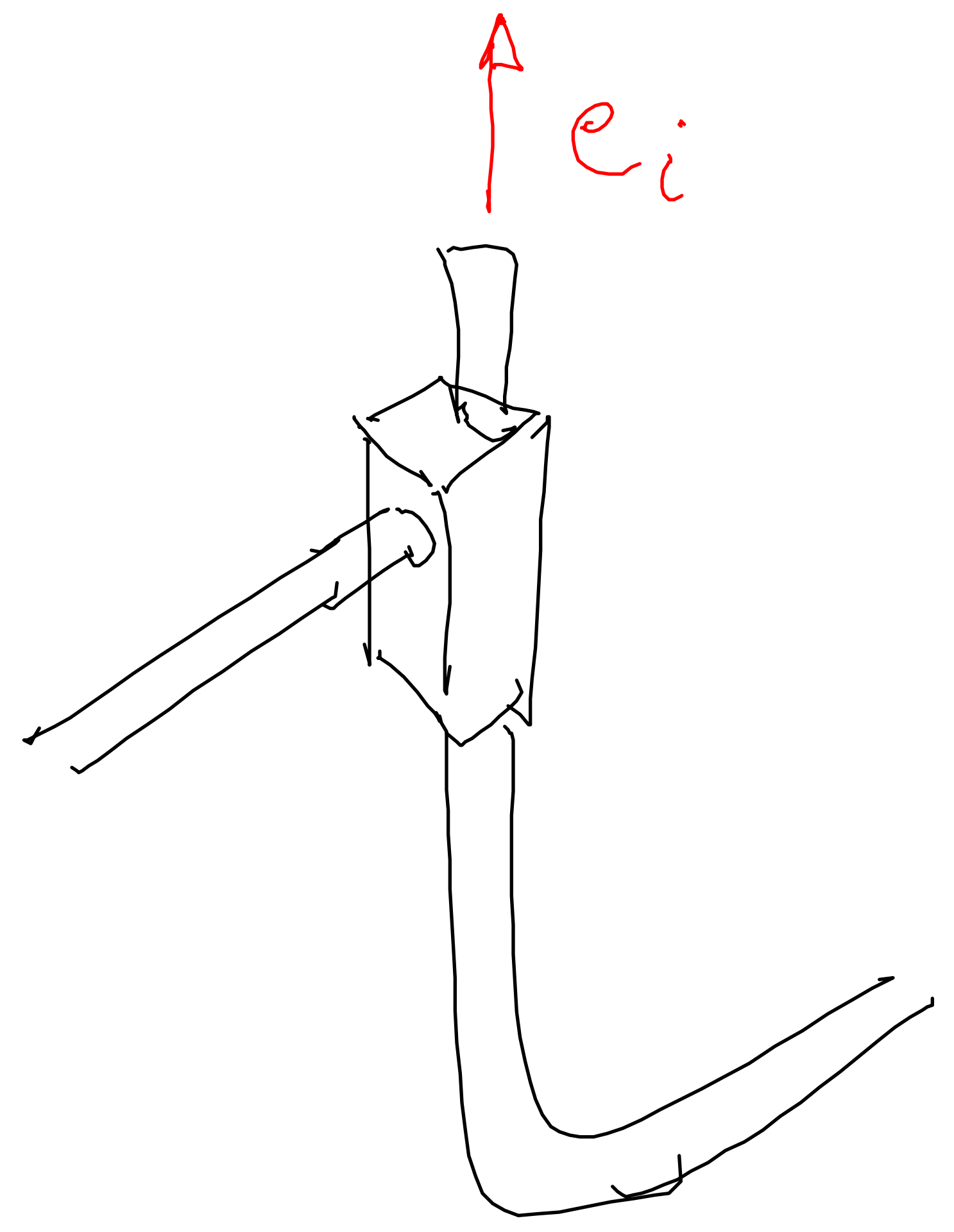
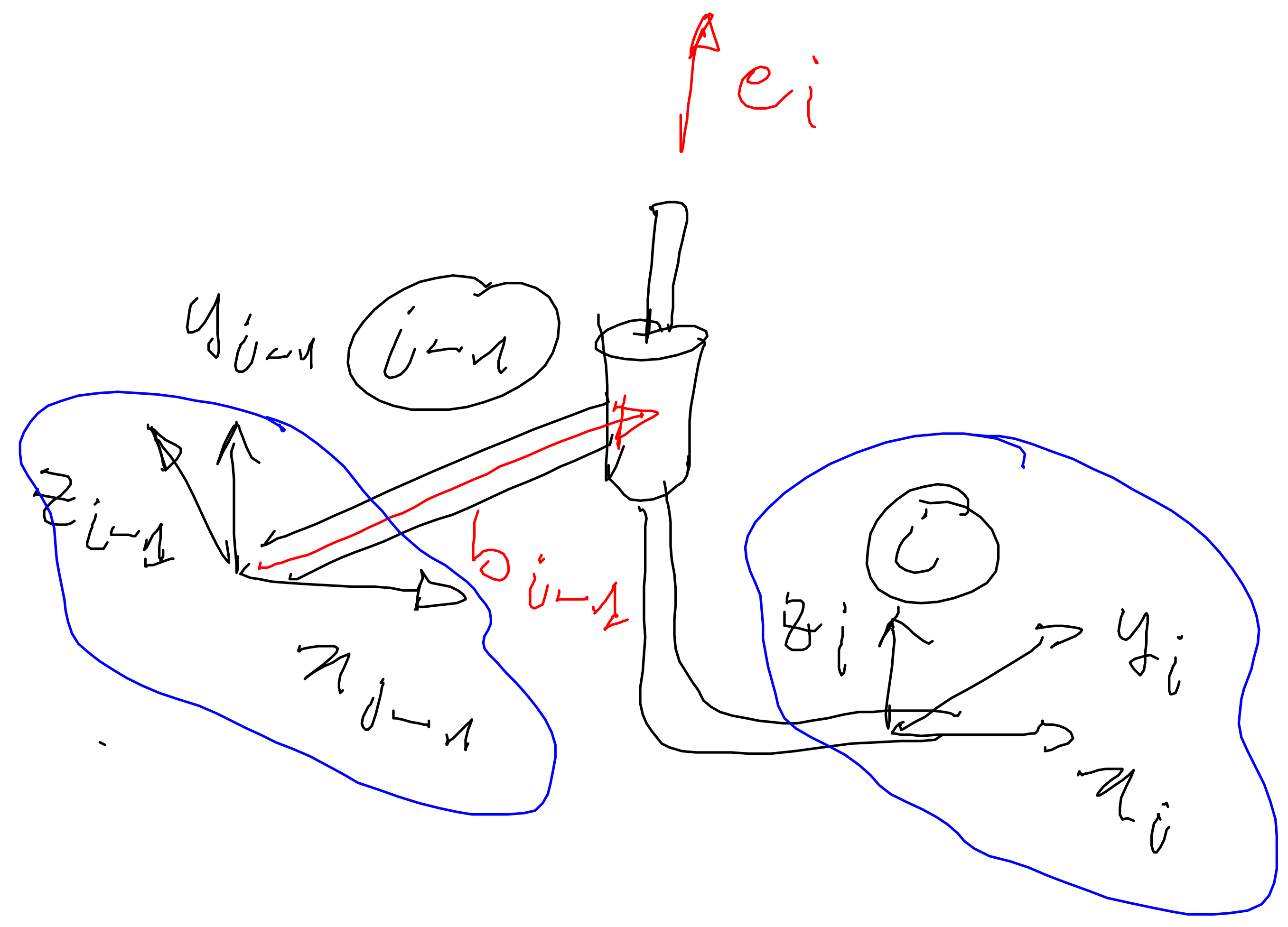


# Vector parameters



$$g_i = d_i \approx 0$$

HOMVE

$x_i$   $y_i$   $z_i$

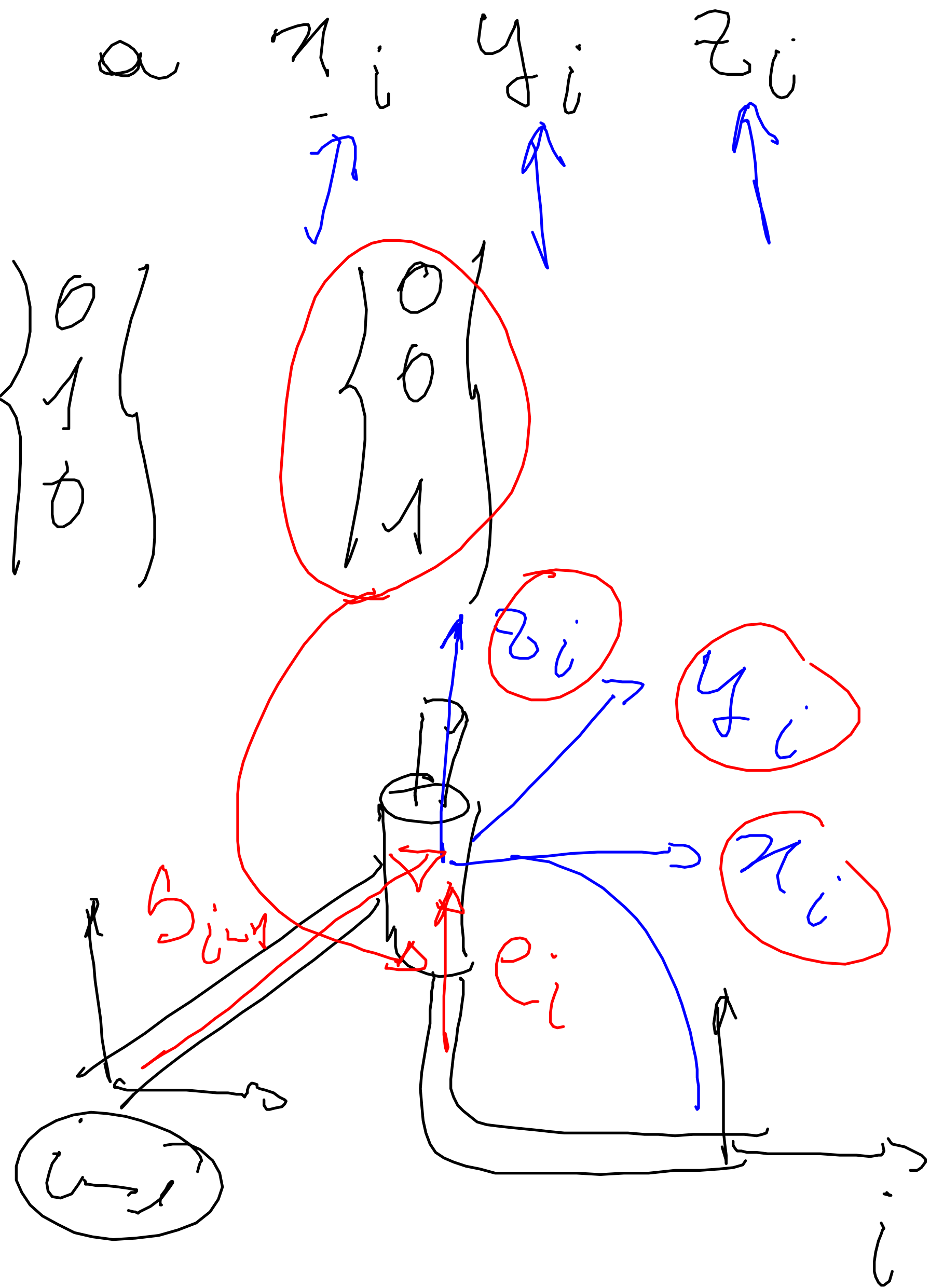
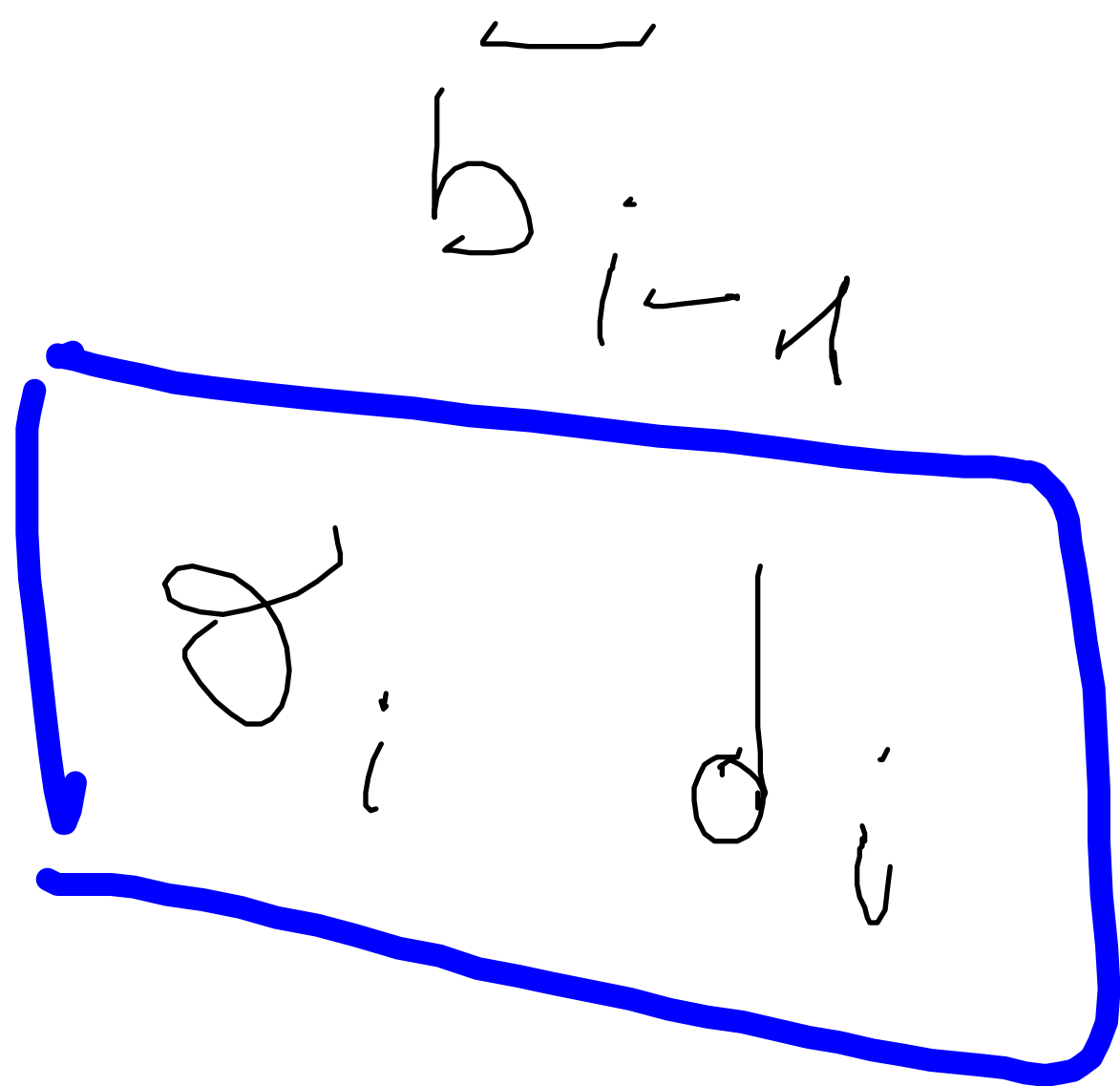
$x_0$   $y_0$   $z_0$

$\bar{e}_i$  rispetto a  $\pi_i, y_i, z_i$

$$e_i = \begin{pmatrix} 1 \\ 0 \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 0 \\ 1 \\ 0 \end{pmatrix}$$

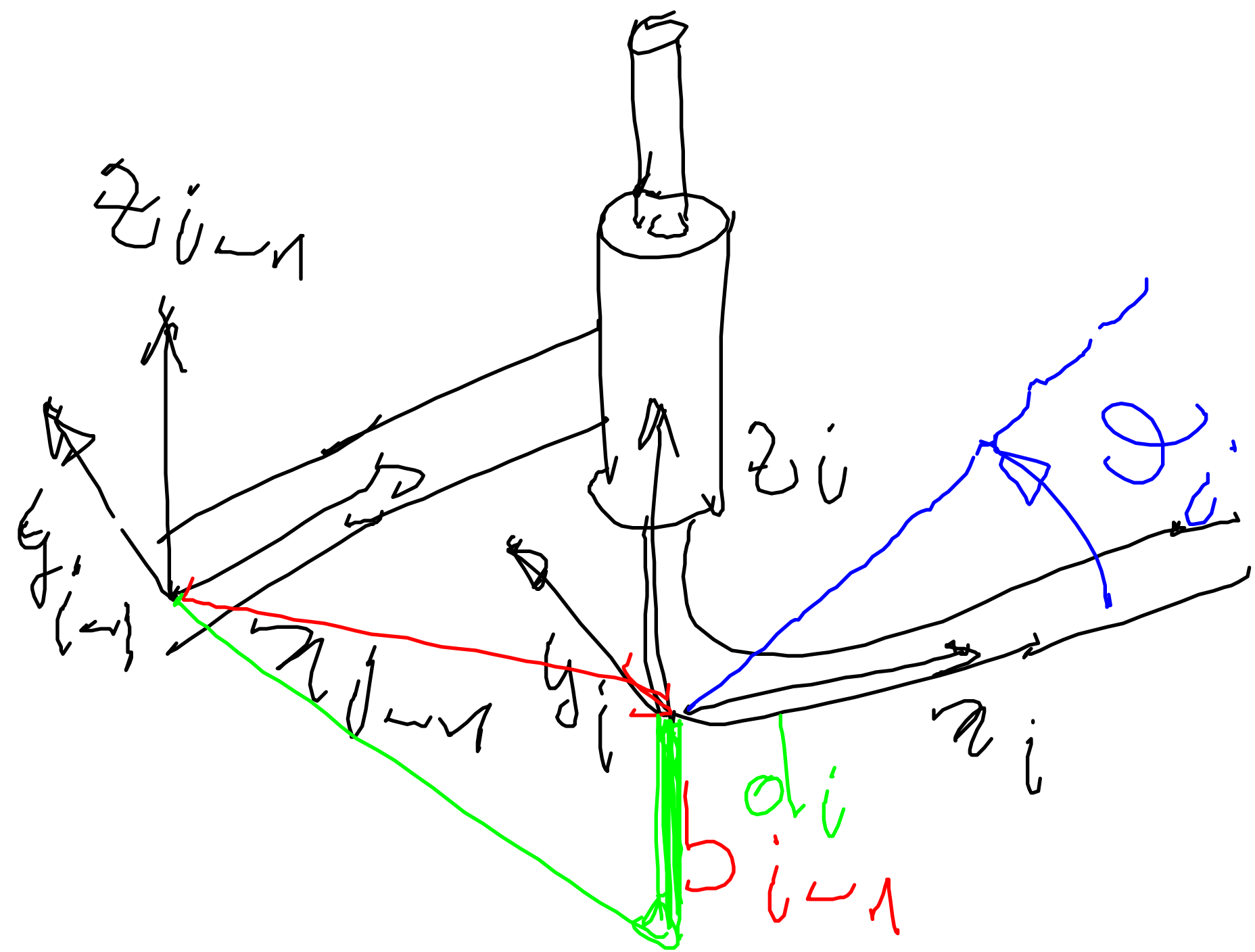
$$\begin{pmatrix} 0 \\ 0 \\ 1 \end{pmatrix}$$



$${}^{i-1}H_i = \begin{bmatrix} c\vartheta_i & -s\vartheta_i & 0 & b_{i-1,x} \\ s\vartheta_i & c\vartheta_i & 0 & b_{i-1,y} \\ 0 & 0 & 1 & b_{i-1,z} \\ 0 & 0 & 0 & 1 \end{bmatrix} \quad \vartheta_i \neq 0$$

$e_i$

$$e_i = \begin{Bmatrix} 0 \\ 0 \\ 1 \end{Bmatrix}$$



$$d_i \neq 0 \quad \vartheta_i = 0$$

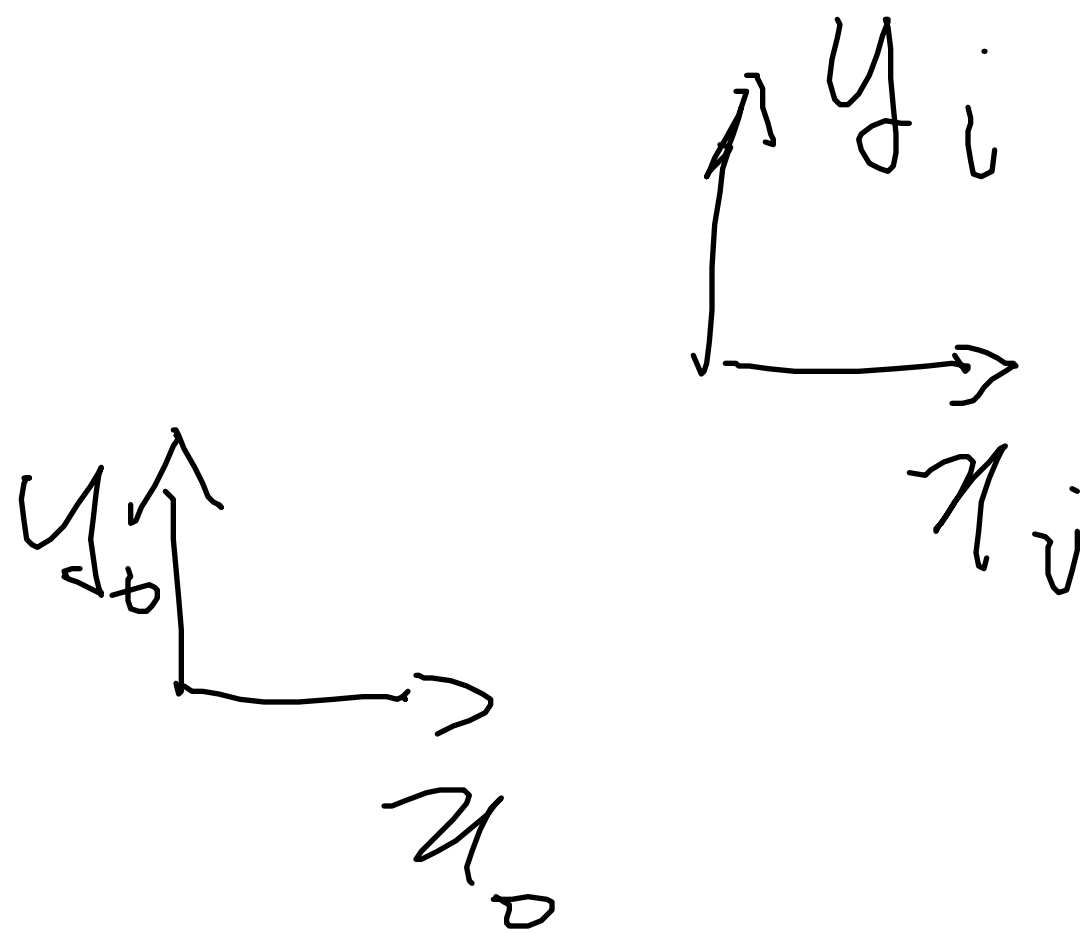
$${}^{i-1}H_i = \begin{bmatrix} 1 & 0 & 0 & b_{i-1,x} \\ 0 & 1 & 0 & b_{i-1,y} \\ 0 & 0 & 1 & b_{i-1,z} \\ 0 & 0 & 0 & d_i \end{bmatrix}$$

STEPS:

1) Home  $\Rightarrow \mathcal{G}_i = d_i = 0$   
 $i = 1, \dots, n$

2) identify JOINTS

$\pi_i, y_i, z_i$   
 $\pi_0, y_0, z_0$



3)  $\overline{e}_i \rightarrow \mathcal{G}_i$   
 $d_i$

4)  $b_{i-1}$

