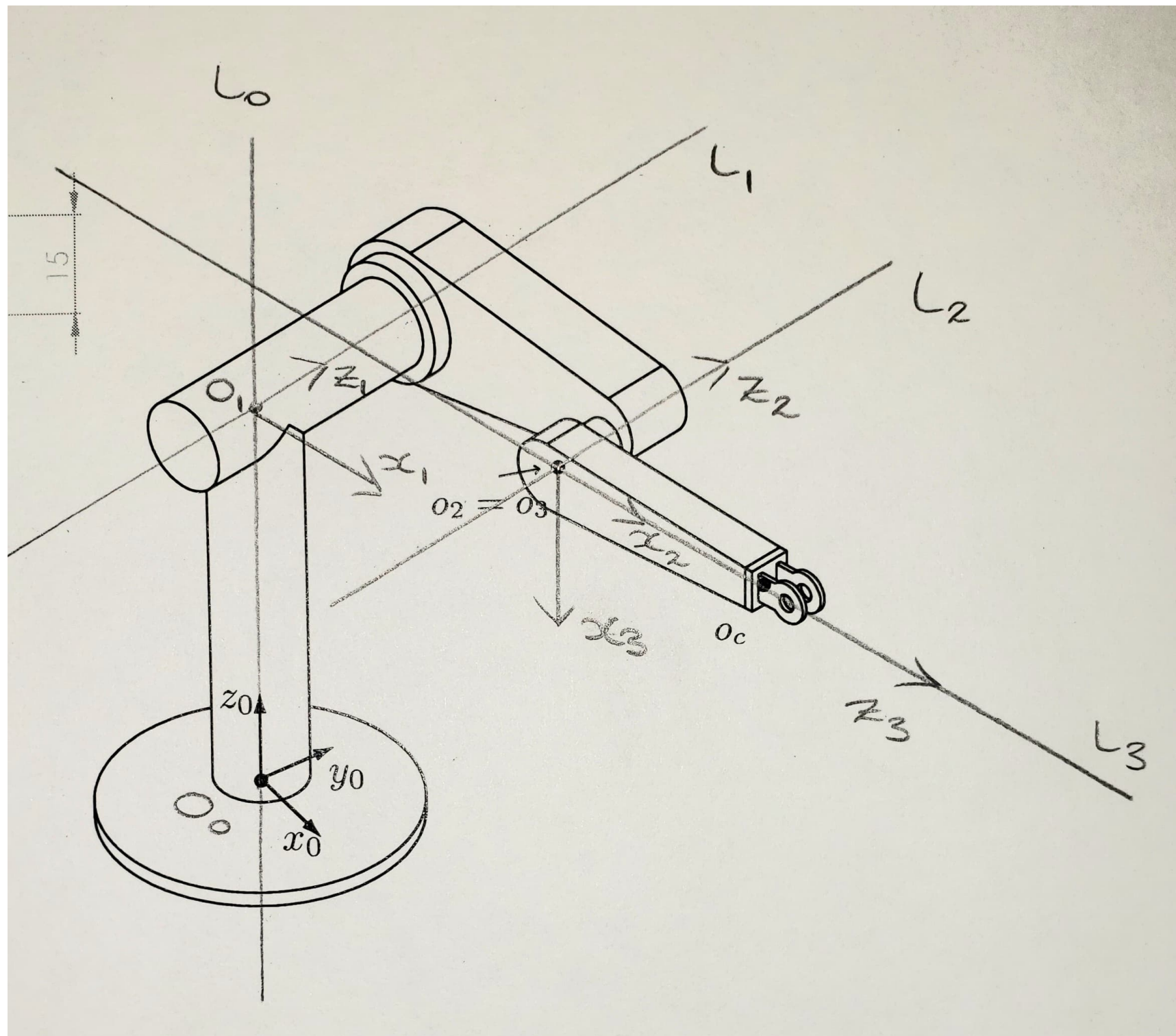


6x4 DH Table

Link	a_i (cm)	α_i (radians)	d_i (cm)	θ (radians)
1	0	$-\pi/2$	76	θ_1
2	43.18	0	23.65	θ_2
3	0	$\pi/2$	0	θ_3
4	0	$-\pi/2$	43.18	θ_4
5	0	$\pi/2$	0	θ_5
6	0	0	20	θ_6



compute $v_d^0 = R_d \begin{bmatrix} 0 \\ 0 \\ d_6 \end{bmatrix}$, and denote the resulting vector $\begin{bmatrix} x_c \\ y_c \\ z_c \end{bmatrix}$

$$\theta_1 = \text{atan2}(y_c, x_c) - \text{atan2}(d_2, x^2 + y^2 - d_2^2)$$

$$\theta_2 = \text{atan2}(z_c - d_1, \sqrt{x_c^2 + y_c^2 - d_2^2}) - \left(\frac{\pi - \Phi}{2}\right) ~~\frac{\pi}{2}~~$$

$$\theta_3 = \text{atan2}(\sin \phi_i, \cos \phi_i)$$

$$\sin \phi_i = \frac{-\left(\sqrt{a_2^2 + 2.03^2} - d_4^2 + (z_c - d_1)^2 + y_c^2 + x_c^2 - d_2^2\right)}{-2 * \sqrt{a_2^2 + 2.03^2} * d_4}$$

$$\cos \phi_i = \sqrt{1 - \sin^2 \phi_i}$$

$$\Phi = \frac{3\pi}{2} - \text{atan2}(\sin \phi_i, \cos \phi_i)$$

Then, compute $R_3^0(\theta_1, \theta_2, \theta_3)$ and compute $R_6^3(\theta_4, \theta_5, \theta_6) \left((R_3^0)^T R_d \right)$

Use the Euler angle formula, \downarrow
denote C

$$\theta_4 = \phi = \text{atan2}(C_{23}, C_{13}) \text{ or } \text{atan2}(-C_{23}, -C_{13})$$

$$\theta_5 = \theta = \text{atan2}(\sqrt{1 - C_{33}^2}, C_{33}) \text{ or } \text{atan2}(-\sqrt{1 - C_{33}^2}, C_{33})$$

$$\theta_6 = \psi = \text{atan2}(C_{32}, -C_{31}) \text{ or } \text{atan2}(-C_{32}, C_{31})$$

Handwritten mathematical notes and diagrams on multiple sheets of paper, likely related to trigonometry or geometry. The notes include various equations, derivations, and geometric diagrams.

Top Sheet (Left):

- Diagram of a right triangle with angles θ_1 and θ_2 .
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.
- Equation: $\theta_2 = \arcsin(\sin(\theta_2))$.
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.

Top Sheet (Right):

- Diagram of a right triangle with angles θ_1 and θ_2 .
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.
- Equation: $\theta_2 = \arcsin(\sin(\theta_2))$.
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.

Middle Sheet (Left):

- Diagram of a right triangle with angles θ_1 and θ_2 .
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.
- Equation: $\theta_2 = \arcsin(\sin(\theta_2))$.
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.

Middle Sheet (Right):

- Diagram of a right triangle with angles θ_1 and θ_2 .
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.
- Equation: $\theta_2 = \arcsin(\sin(\theta_2))$.
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.

Bottom Sheet (Left):

- Diagram of a right triangle with angles θ_1 and θ_2 .
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.
- Equation: $\theta_2 = \arcsin(\sin(\theta_2))$.
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.

Bottom Sheet (Right):

- Diagram of a right triangle with angles θ_1 and θ_2 .
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.
- Equation: $\theta_2 = \arcsin(\sin(\theta_2))$.
- Equation: $\theta_1 = \arcsin(\sin(\theta_1))$.