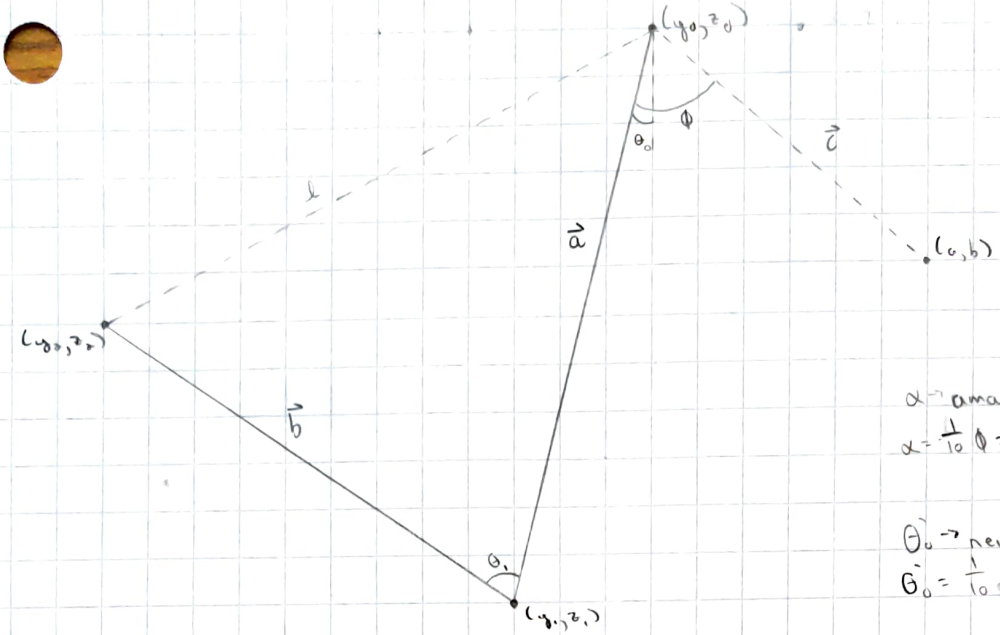
$l \rightarrow$ distance to ankle



$$\phi = \arccos\left(\frac{\vec{a}\cdot\vec{c}}{\|\vec{a}\|\cdot\|\vec{c}\|}\right)$$

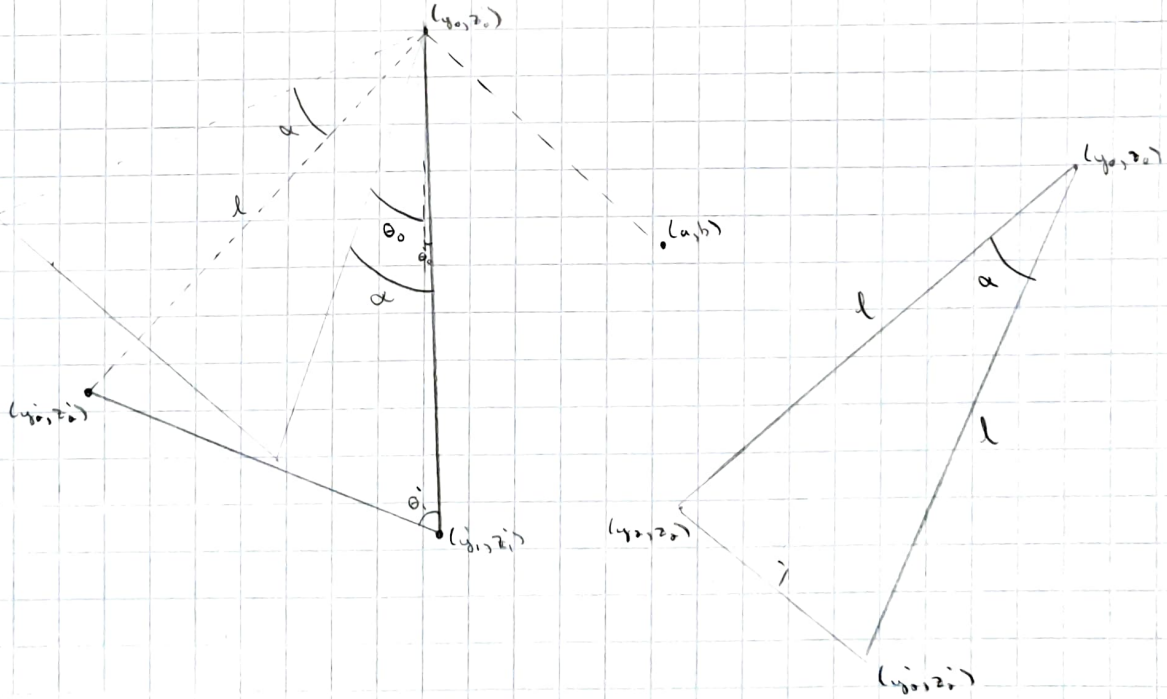
$\alpha \rightarrow$ amount to rotate

$$\alpha = \frac{1}{10}\phi = \theta_0 + \dot{\theta_0} \therefore \dot{\theta_0} = \frac{1}{10}\phi - \theta_0$$

$$\dot{\theta_0} = \alpha - \theta_0$$

$\dot{\theta_0} \rightarrow$ new upper leg angle

$$\dot{\theta_0} = \frac{1}{10}\arccos\left(\frac{\vec{a}\cdot\vec{c}}{\|\vec{a}\|\cdot\|\vec{c}\|}\right)$$



$$\dot{y_2} = (y_2 - y_0)\cos(\alpha) - (z_2 - z_0)\sin(\alpha) + y_0$$

$$\dot{z_2} = (z_2 - z_0)\cos(\alpha) + (y_2 - y_0)\sin(\alpha) + z_0$$

$$d\_upper = dist(\langle \dot{y_2}, \dot{z_2} \rangle, \langle a, b \rangle)$$