

$$x_{k+1}^{\downarrow} = a x_k + \varepsilon_k$$

$$P(x_{k+1} | y_1 \dots y_k)$$

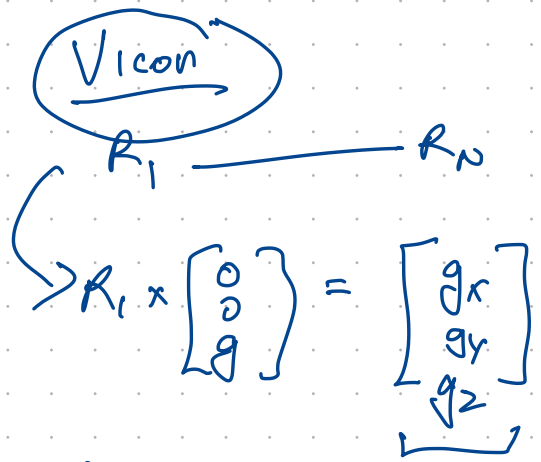
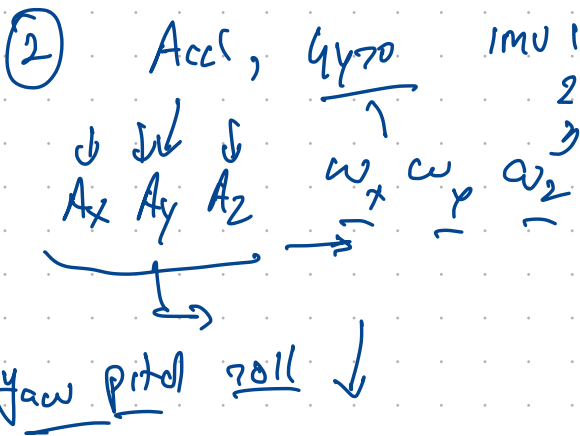
$$\Rightarrow a = -1 \quad \underbrace{y_1 \dots y_{100}}$$

$$\varepsilon_k \rightsquigarrow a$$

$$y_{k+1} = (1 + x_k^2)^{1/2} + v_k$$

(C/x_k + v_k)

$$P(a | y_1 \dots y_{100})$$



② UKF

$$\begin{bmatrix} a \\ \omega \end{bmatrix}$$

(θ, ω)

↓ (cos(θ/2), sin(θ/2) · ω)

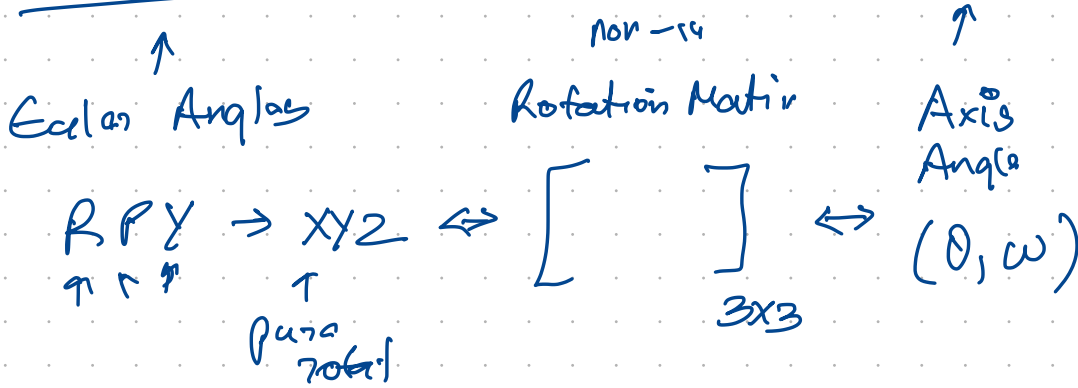
$q = [q_0, q]$

$$Q \quad R \rightarrow Q$$

$$Q \rightarrow EA$$

multi $q_1 \times q_2$

3D Rotations



$$q = (0, 0, 0) \quad (R \leftrightarrow q \leftrightarrow (\theta, \omega))$$

$$q_1 \times q_2 = (\quad) \quad [\quad]$$

$$q_0 + q_1 i + q_2 j + q_3 k \quad \left(\underbrace{\cos \frac{\theta}{2}}_{\text{unit}}, \underbrace{\sin \frac{\theta}{2} \omega}_{\text{unit}} \right)$$

Given a map \rightarrow localization \Downarrow

Given the position/pose \rightarrow Mapping
 (x, y, z, orient)

SLAM

