

$$x_{k+1} = \underline{a} x_k + \underline{\varepsilon}_k$$

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

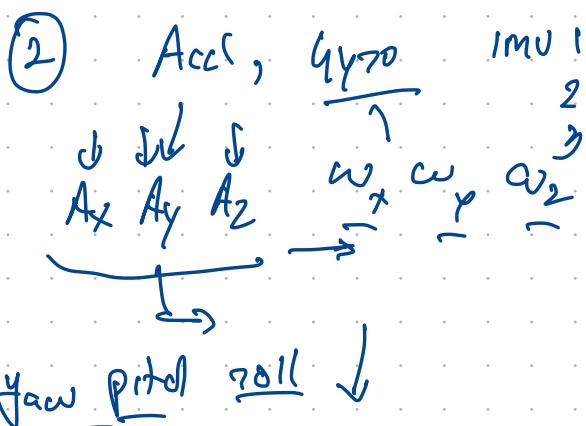
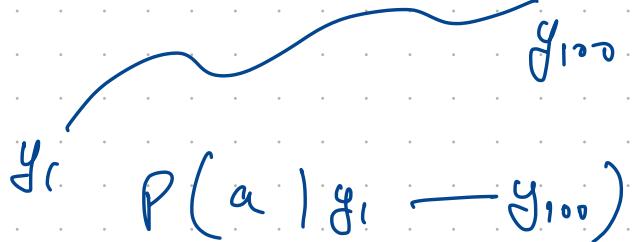
$$P(x_{k|k} | f_c \rightarrow y_k)$$

$$(Cx_k + v_k)$$

$$\rightarrow a = -1$$

$$y_c \rightarrow y_{100}$$

$$z_k \sim a$$



Vicon

$R_i \rightarrow R_N$

$$R_i \times \begin{bmatrix} 0 \\ 0 \\ g \end{bmatrix} = \begin{bmatrix} g_x \\ g_y \\ g_z \end{bmatrix}$$

② UKF

$$\begin{bmatrix} \dot{q} \\ \dot{\omega} \end{bmatrix}$$

$$\begin{bmatrix} q_r = (q_0, q_r) \\ (\cos \frac{\theta}{2}, \sin \frac{\theta}{2}, \omega) \end{bmatrix}$$

$$Q \quad R \rightarrow Q$$

$$Q \rightarrow EA$$

$$\underline{\text{multi}}^\circ \quad q_1 \times q_2$$

3D Rotations

<p>↑ Euler Angles</p> <p>$RPY \rightarrow XYZ \Leftrightarrow []$</p> <p>$\pi \uparrow \pi \uparrow \pi$ Pitch Yaw Roll</p>	<p>non-π</p> <p>Rotation Matrix</p> <p>3×3</p>	<p>↑ Axis Angle</p> <p>(θ, ω)</p>
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$q = (0_0, 0) \quad (R \Leftrightarrow q \Leftrightarrow (\theta, \omega))$

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

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

Given a map \rightarrow localization \Downarrow

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

SLAM

