Università di Pisa

Corso di Laurea magistrale
in Ingegneria Robotica e dell'Automazione

Progetto robotica
Nome progetto

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1 Kalman, Discorsi

State:

$$\mathbf{x}(k) = [q_1(k) q_2(k) \dots q_{10}(k)]^T \tag{1}$$

State Update Function:

$$\mathbf{x}(k) = f(\mathbf{x}(k-1), \mathbf{u}(k-1)) + \mathbf{w}(k-1) \tag{2}$$

$$f(\mathbf{x}(k-1), \mathbf{u}(k-1)) = \mathbf{x}(k-1) \tag{3}$$

Measures: Hand, Elbow, Shoulder, T8 and T12.

$$\mathbf{y}(k) = [pos_{\text{Hand}}(k)\ quat_{\text{Hand}}(k) \dots pos_{\text{T12}}(k)\ quat_{\text{T12}}(k)]^T \in \mathbb{R}^{35\times 1} \tag{4}$$

Measure Function, we will use the data at sample k

$$\mathbf{y}(k) = h(\mathbf{x}(k), \mathbf{u}(k), \mathbf{v}(k)) = \text{data}(k) \tag{5}$$

Error, innovation:

$$\mathbf{e}(k) = \mathbf{y}(k) - \text{forward\_kinematics}(q(k)) \in \mathbb{R}^{35\times 1} \tag{6}$$