

$$\hat{x}_t = f(\textcolor{red}{\#}, u_t)$$

$$\hat{P}_t = F_x \textcolor{red}{\#} F_x^T + F_u Q_t F_u^T$$

$$\hat{z}_i = h_i(\textcolor{red}{\#}, y_i)$$

$$S = H \textcolor{red}{\#} H^T + R$$

$$K_t = \hat{P}_t H S^{-1}$$

Then

$$x_t = \textcolor{red}{\#} + K_t \left(z_{0:n} - \hat{z}_{0:n} \right)$$

$$P_t = \textcolor{red}{\#} - K_t S K_t^T$$