

Formulas

$$\hat{y}_{k+1} = \frac{\hat{y}_k \sigma_{k+1}^2 + y_{k+1} \hat{\sigma}_k^2}{\hat{\sigma}_k^2 + \sigma_{k+1}^2} \quad (1)$$

$$(\hat{\sigma}_{k+1}^2)^{-1} = (\hat{\sigma}_k^2)^{-1} + (\sigma_{k+1}^2)^{-1} \quad (2)$$

$$\hat{\mathbf{x}}_{k+1} = \hat{\mathbf{x}}_k + K(\mathbf{x}_{k+1} - \hat{\mathbf{x}}_k) \quad (3)$$

$$K = P_k(P_k + C_{k+1})^{-1} \quad (4)$$

$$\hat{\mathbf{x}}_{k+1} = \hat{\mathbf{x}}_k + \mathbf{x}_{k+1} \quad (5)$$

$$P_{k+1} = P_k + C_{k+1} \quad (6)$$

$$\mathbf{x}(k+1|k) = \Phi \mathbf{x}(k) + \Gamma \mathbf{u}(k) \quad (7)$$

$$P_x(k+1|k) = \Phi P_x(k) \Phi^T + C_w \quad (8)$$

$$\mathbf{r}(k+1) = \mathbf{z}(k+1) - H \mathbf{x}(k+1|k) \quad (9)$$

$$\mathbf{x}(k+1) = \mathbf{x}(k+1|k) + K(k+1) \mathbf{r}(k+1) \quad (10)$$

$$K(k+1) = P_x(k+1|k) H^T (H P_x(k+1|k) H^T + C_v)^{-1} \quad (11)$$

$$P_x(k+1) = (I - K(k+1)H) P_x(k+1|k) \quad (12)$$

$$\mathbf{x}(k+1|k) = \Phi[\mathbf{x}(k), \mathbf{u}(k)] \quad (13)$$

$$P_x(k+1|k) = J_x P_x(k) J_x^T + J_u P_u(k) J_u^T + C_w \quad (14)$$

$$\mathbf{r}(k+1) = \mathbf{z}(k+1) - H[\mathbf{x}(k+1|k)] \quad (15)$$

$$\mathbf{x}(k+1) = \mathbf{x}(k+1|k) + K(k+1) \mathbf{r}(k+1) \quad (16)$$

$$K(k+1) = P_x(k+1|k) J_H^T (J_H P_x(k+1|k) J_H^T + C_v)^{-1} \quad (17)$$

$$P_x(k+1) = (I - K(k+1)J_H) P_x(k+1|k) \quad (18)$$

$$P(L_{T+1}|D_{T+1}) = \alpha_T P(s|l) P(L_T = l|D_T) \quad (19)$$

$$P(L_{T+1} = l|D_{T+1}) = \sum_{l'} P(l|l', a) P(L_T = l'|D_T) \quad (20)$$

$$\text{Bel}(x_{t+1}) \propto p(s_{t+1}|x_{t+1}) \int p(x_{t+1}|x_t, a_t) \text{Bel}(x_t) dx_t \quad (21)$$