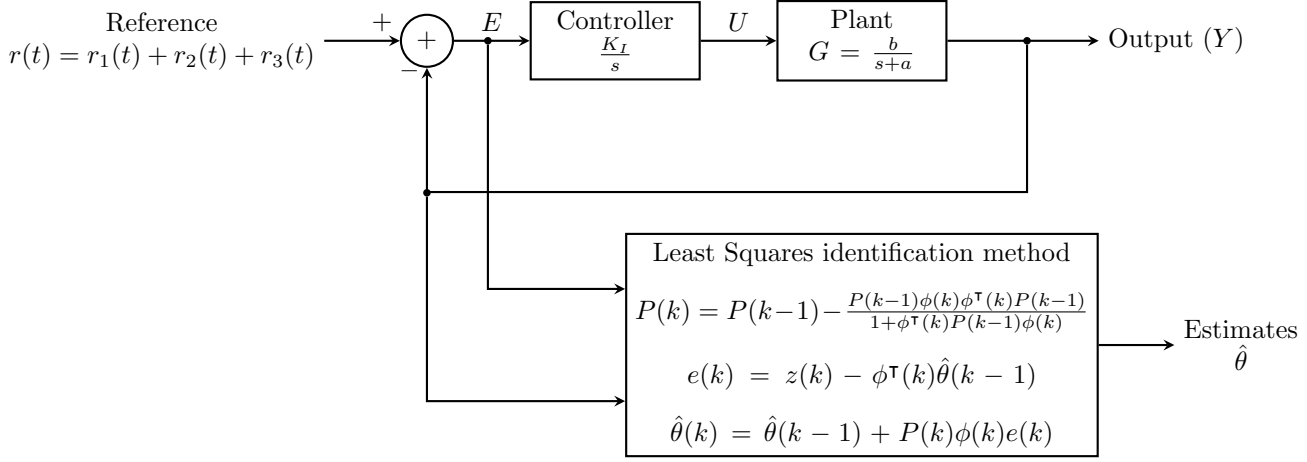

$P(0) = P_0 = P_0^\intercal > 0, P_0 = \rho \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}, z = y(k) - y(k-1),$

$\phi = \begin{bmatrix} e(k-1) + e(k-2) \\ y(k-1) - y(k-2) \end{bmatrix}, \theta = \begin{bmatrix} \theta_1 \\ \theta_2 \end{bmatrix}, \hat{a} = -\frac{\ln \hat{\theta_2}}{T_S}, \hat{b} = \frac{2\hat{\theta_1}\hat{a}}{T_S(1-\hat{\theta_2})K_I},$

and T_S is sampling time.