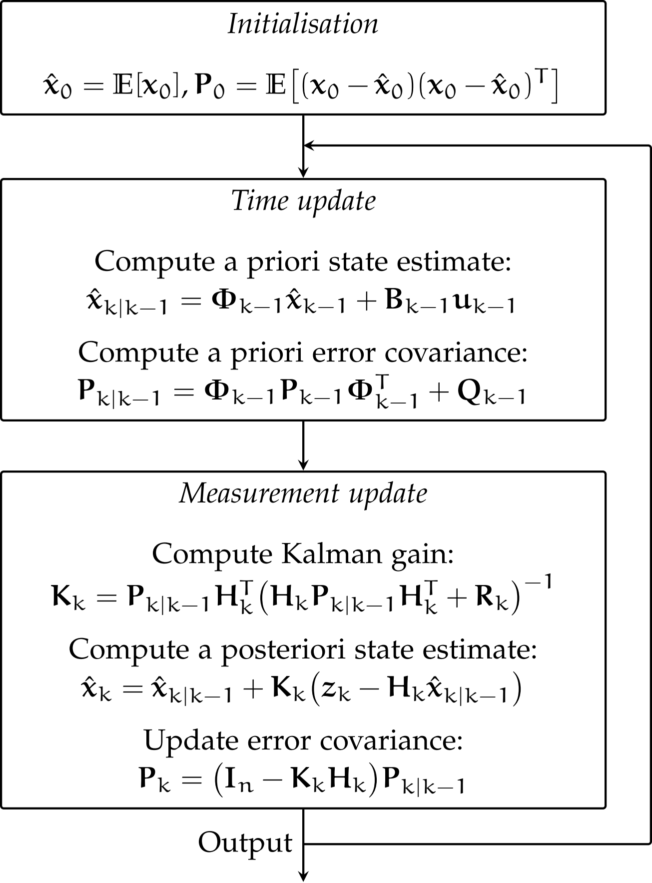
Initialisation
$\hat{\mathbf{x}}_0 = \mathbb{E}[\mathbf{x}_0], \mathbf{P}_0 = \mathbb{E}\left[(\mathbf{x}_0 - \hat{\mathbf{x}}_0)(\mathbf{x}_0 - \hat{\mathbf{x}}_0)^T\right]$
Time update
Compute a priori state estimate:
$\hat{\mathbf{x}}_{k|k-1} = \mathbf{\Phi}_{k-1}\hat{\mathbf{x}}_{k-1} + \mathbf{B}_{k-1}\mathbf{u}_{k-1}$
Compute a priori error covariance:
$\mathbf{P}_{k|k-1} = \mathbf{\Phi}_{k-1}\mathbf{P}_{k-1}\mathbf{\Phi}_{k-1}^T + \mathbf{Q}_{k-1}$
Measurement update
Compute Kalman gain:
$\mathbf{K}_k = \mathbf{P}_{k|k-1}\mathbf{H}_k^T\left(\mathbf{H}_k\mathbf{P}_{k|k-1}\mathbf{H}_k^T + \mathbf{R}_k\right)^{-1}$
Compute a posteriori state estimate:
$\hat{\mathbf{x}}_k = \hat{\mathbf{x}}_{k|k-1} + \mathbf{K}_k\left(\mathbf{z}_k - \mathbf{H}_k\hat{\mathbf{x}}_{k|k-1}\right)$
Update error covariance:
$\mathbf{P}_k = \left(\mathbf{I}_n - \mathbf{K}_k\mathbf{H}_k\right)\mathbf{P}_{k|k-1}$
Output