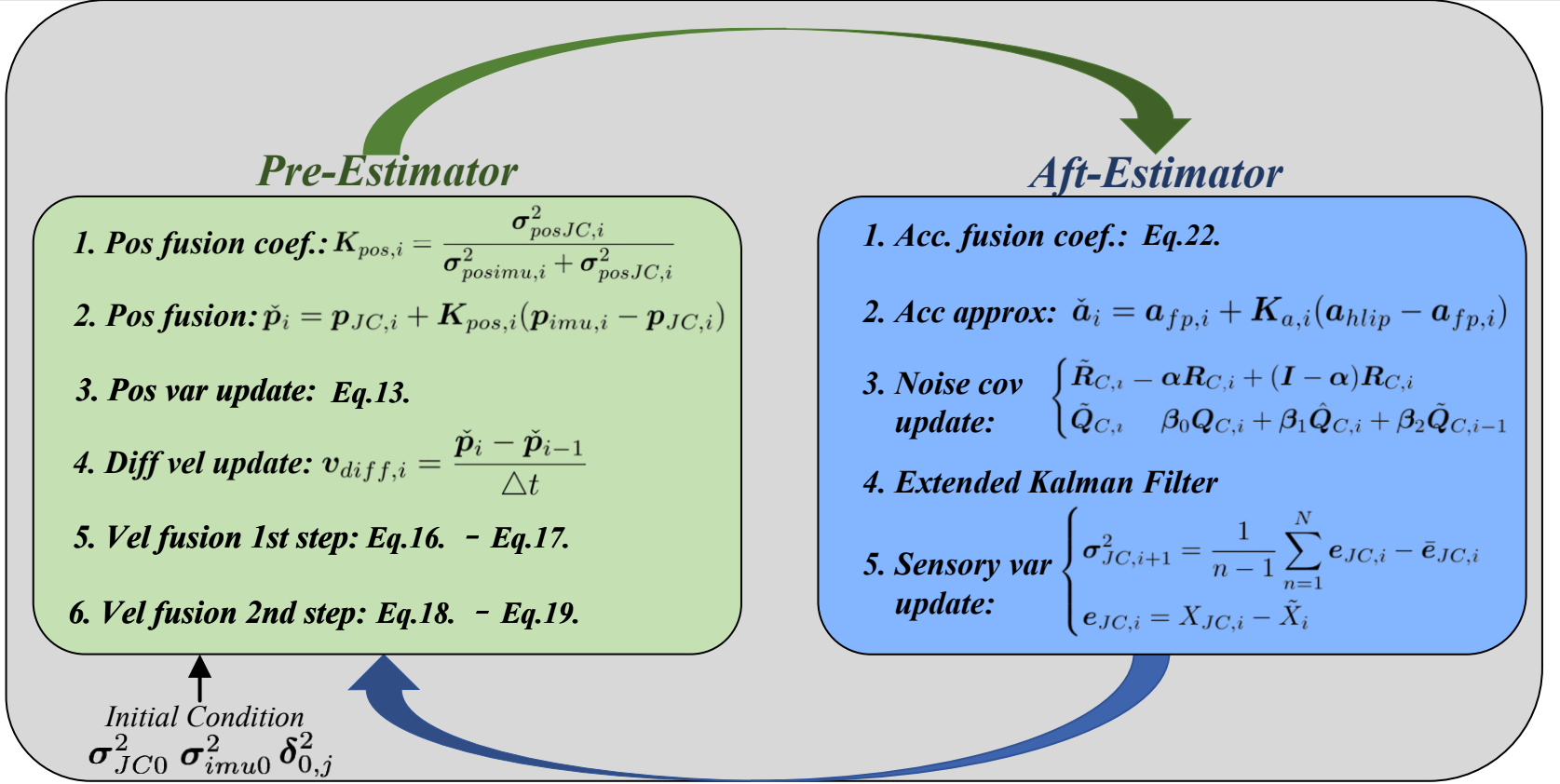
Pre-Estimator
1. Pos fusion coef.: $K_{pos,i} = \frac{\sigma^2_{posJC,i}}{\sigma^2_{posimu,i} + \sigma^2_{posJC,i}}$
2. Pos fusion: $\check{p}_i = p_{JC,i} + K_{pos,i}(p_{imu,i} - p_{JC,i})$
3. Pos var update: Eq.13.
4. Diff vel update: $v_{diff,i} = \frac{\check{p}_i - \check{p}_{i-1}}{\triangle t}$
5. Vel fusion 1st step: Eq.16. - Eq.17.
6. Vel fusion 2nd step: Eq.18. - Eq.19.
Aft-Estimator
1. Acc. fusion coef.: Eq.22.
2. Acc approx: $\check{a}_i = a_{fp,i} + K_{a,i}(a_{hlip} - a_{fp,i})$
3. Noise cov update: $\begin{cases} \tilde{R}_{C,i} - \alpha R_{C,i} + (I - \alpha) R_{C,i} \\ \tilde{Q}_{C,i} \quad \beta_0 Q_{C,i} + \beta_1 \hat{Q}_{C,i} + \beta_2 \tilde{Q}_{C,i-1} \end{cases}$
4. Extended Kalman Filter
5. Sensory var update: $\begin{cases} \sigma^2_{JC,i+1} = \frac{1}{n-1} \sum_{n=1}^{N} e_{JC,i} - \bar{e}_{JC,i} \\ e_{JC,i} = X_{JC,i} - \tilde{X}_i \end{cases}$
Initial Condition
σ^2_{JC0} σ^2_{imu0} $\delta^2_{0,j}$