Robot Motion Planning

Filtering Algorithms

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Outline

Kalman Filter

- Kalman filtering provides a recursive method of estimating the state of a dynamical system in the presence of noise
- it simultaneously maintains estimates of both the state vector ($\hat{x}$) and the estimate error covariance matrix (P)
- Kalman filter is a specific example of a more general technique known as **probabilistic estimation**
- the motion model is assumed to be a linear function of the state variables and the inputs
- Errors in both the motion model and the sensor model are assumed to be zero-mean white Gaussian noise