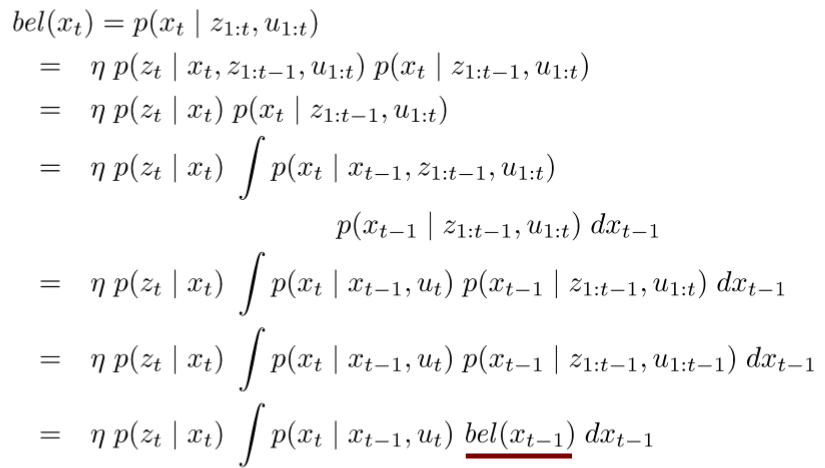
Bayesian Filter:



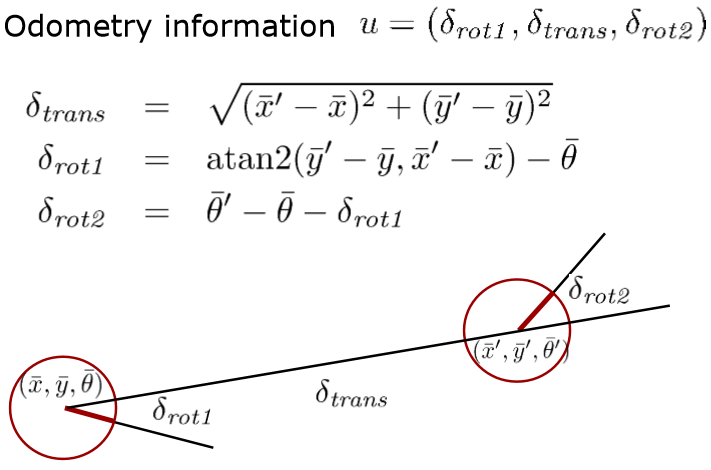
It can be divided into two parts: Prediction step and Correction step.

Prediction step is calculated via motion model.

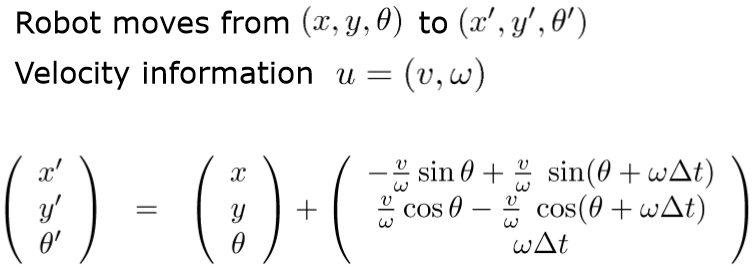
Correction step is calculated via observation model.

## Typical Motion Models

* Odometry-based ( equipped with wheel encoders)

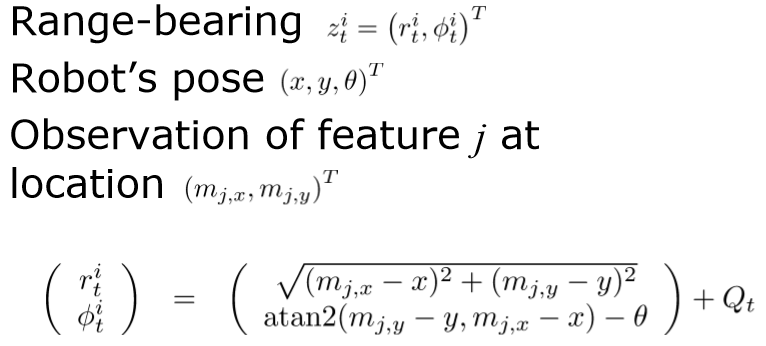


* Velocity-based ( no wheel encoders are available )

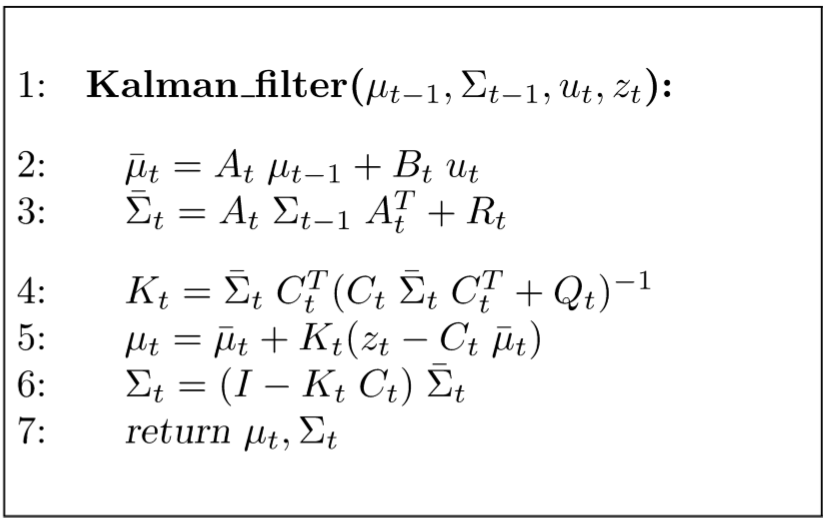


**Sensor Model**

Range-Bearing Sensors:



Kalman Filter Distribution:



**Non-Gaussian Distributions**

