

Multiple Object Tracking: Course Outline

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Outline

- 1 Tracking
- 2 Single Object Tracking
- 3 Multiple Object Tracking
- 4 Random Finite Sets
- 5 Multiple Object Tracking Using Conjugate Pairs

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1 Tracking

- Introduction
- Bayesian Filtering
- Motion Modeling
- Measurement Modeling
- Kalman Filter: A Bayesian Filtering Example

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 - Prediction & Measurement Updates
 - Clutter Modeling
 - Data Association
 - Algorithms
 - Nearest Neighbors
 - Probabilistic Data Association
 - Gaussian Sum Filtering
 - Gating

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Introduction

Single Object Tracking (SOT) and Multiple Object Tracking (MOT)

Single Object Tracking (SOT): SOT is a filtering problem. It can be described as the sequential processing of noisy sensor measurements to determine an object's state:

- Position.
- Other properties like kinematics, etc.
- Other attributes related to the detected object like Electronic Support Measures (ESM) data.

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 - n Object Data Association
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 - Multi Hypothesis Tracker

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 - Metrics in MOT

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- Modeling a Changing Number of Objects
- Multi-Bernoulli Mixture Filter
- Poisson Multi-Bernoulli Mixture Filter
- MOT Filter Implementation
- Labels

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5 Multiple Object Tracking Using Conjugate Pairs

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