

Welcome to the Multiple Object Tracking for Autonomous Vehicle

Kumar Bipin

BE, MS, PhD (MMTU, IISc, IIIT-Hyderabad) (Robotics Control and Computer Vision)

Motorola, STMicroelectronics, Tata Elxsi (Embedded System Software Engineer)

Section 1: Introduction to Multi-object Tracking

1.1 Introduction to Multi-object Tracking

1.2 Challenges in MOT

1.3 Bayesian Filtering

1.4 Kalman Filter Review

1.5 Assumed Density Filtering



Section 2: Single-object Tracking in Clutter

2.1 Introduction to SOT in Clutter

2.2 Motion and Measurement Models

2.3 SOT Conceptual Solution

2.4 Single-object Tracking Algorithms



Section 3: Tracking N Objects in Clutter

3.1 Introduction to tracking n objects in clutter

3.2 Modelling the measurements

3.3 Estimating n object density

3.4 Data association as an optimization problem

3.5 N Object tracking algorithms

3.6 Multi Hypothesis Tracker



Section 4: Random Finite Sets

4.1 Introduction

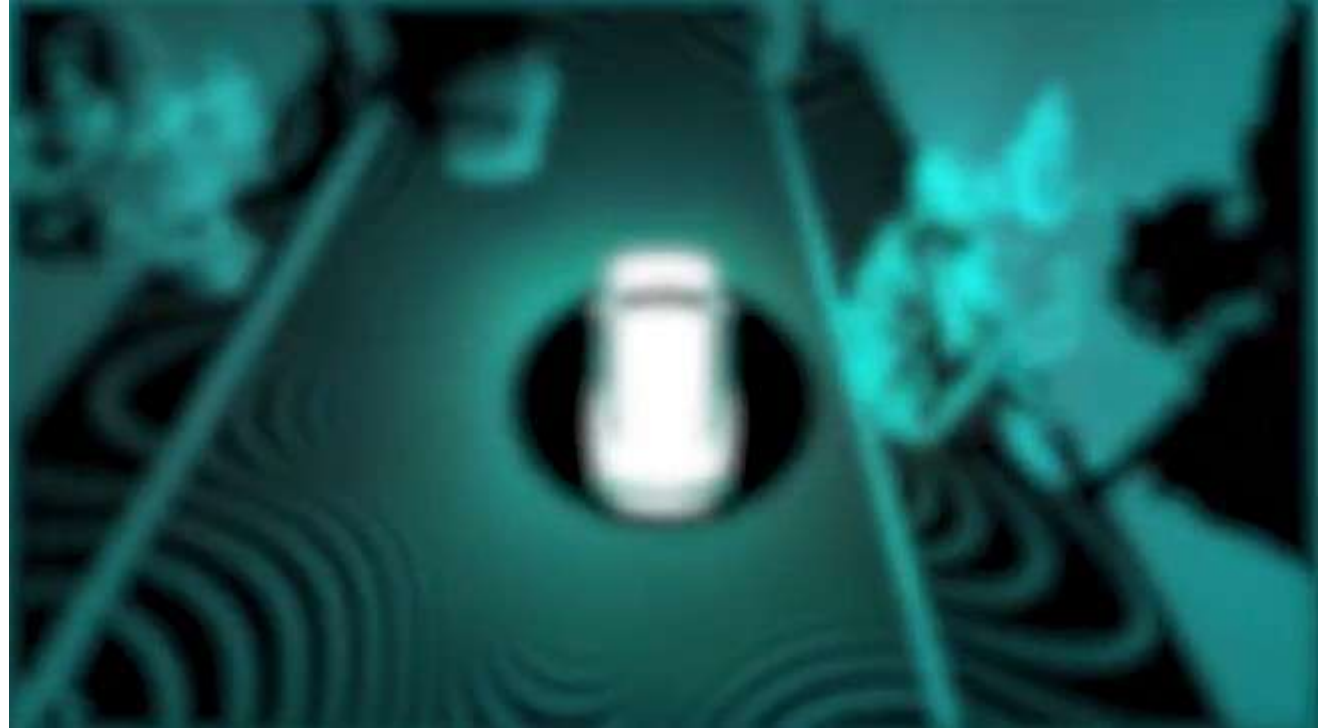
4.2 Random Finite Sets

4.3 Common Random Finite Sets

4.4 Standard models in MOT

4.5 Probability hypothesis density filtering

4.6 Metrics in MOT



Section 5: MOT Using Conjugate Priors

5.1 Introduction

5.2 Modelling a changing number of objects

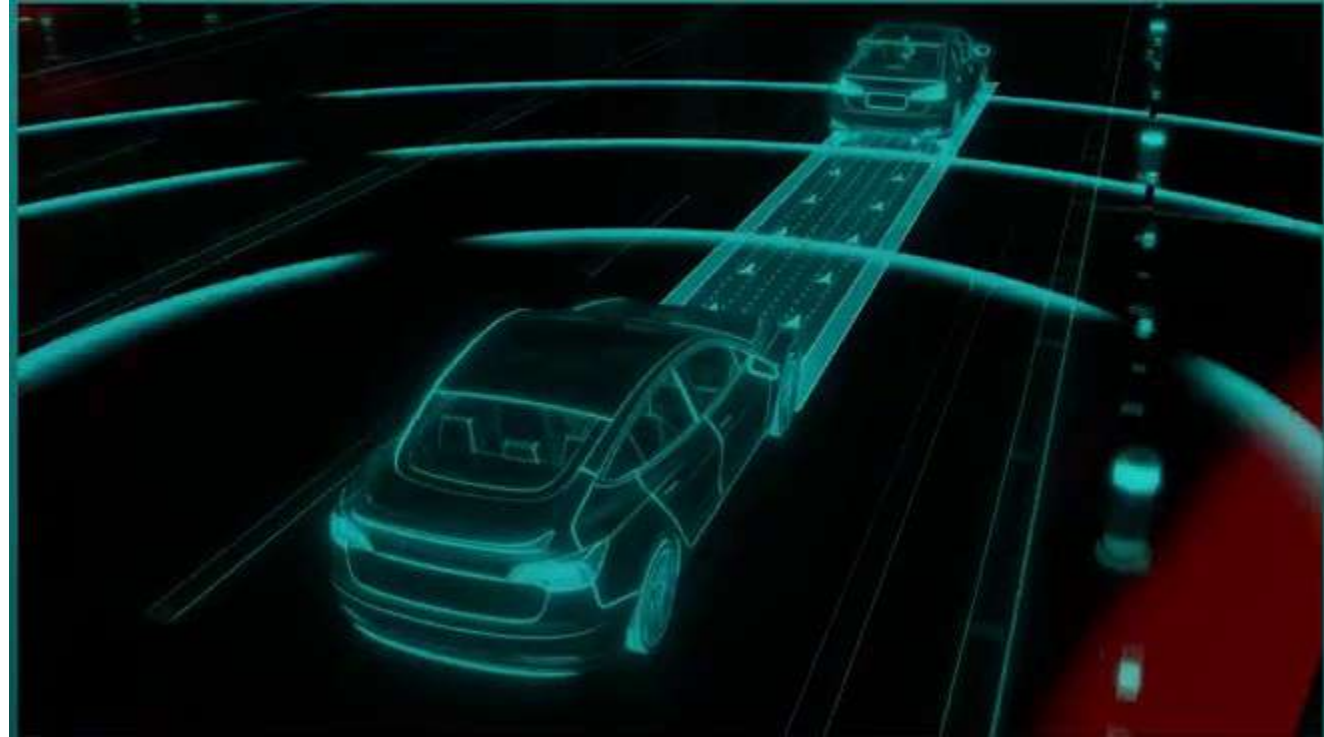
5.3 Multi-Bernoulli Mixture filter

5.4 Poisson Multi-Bernoulli Mixture filter

5.5 MOT filter implementation

5.6 Labels

5.7 Summary

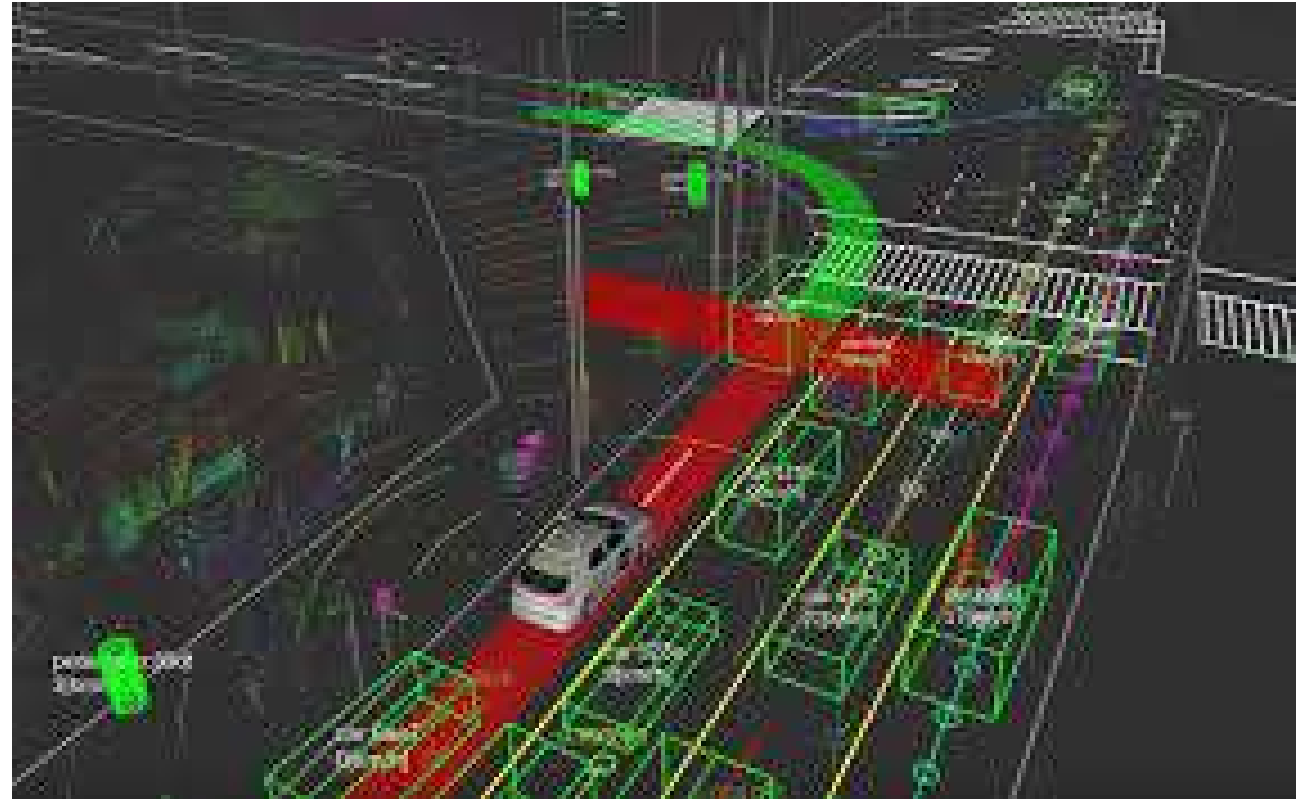


Section 6: Outlook - What's Next?

6.1 Extended Object Tracking

6.2 Sets of Trajectories

6.3 Deep Learning



**** Course Summary ****

Thank You

linux.kbp@gmail.com | Tel +91 9971594004