Connected and Autonomous Vehicles: Sensors and Sensor Fusion
8 hour course

Course Introduction

The first part of the course covers the operational principles of the state-of-the-art sensors used in CAVs, presenting useful case studies and real-world applications.

The second part of the course deals with estimation and tracking, presenting the main types of sensor fusion architectures and the principal algorithms used for sensor fusion, such as the Kalman Filter, the Extended Kalman Filter and the Unscented Kalman Filter.

Learning outcomes

- Understand and classify the types of sensors used in autonomous cars
- Understand the main types of sensor fusion architectures
- Understand real problems and be able to apply filter algorithms for linear and non-linear systems

Course units

- Unit 1: Random Processes and Estimation
- Unit 2: Sensors 1
- Unit 3: Sensors 2
- Unit 4: Sensors 3
- Unit 5: Multi-Sensor Fusion and Architectures
- Unit 6: Kalman Filter
- Unit 7: Kalman Filter and Extended Kalman Filter
- Unit 8: Unscented Kalman Filter

Course content may be subject to change or updates. Please contact the IET for the latest course content.
Expert multidisciplinary e-courses for engineers at all career stages

Key features

■ A broad overview of sensor fusion and filtering
■ Insights into the types of sensors used in the autonomous industry
■ This course offers a solid basis to someone that is starting on the topic and offers insights into more advanced topics, stimulating further learning activities

What makes the IET Academy online courses different?

A new training resource from the IET, the Academy provides flexible e-learning using the latest techniques to enhance engagement and recall.

Each individual unit is fully interactive, with tasks to compete along the way to help embed your learning. Hosted on the renowned Cross Knowledge platform, the Academy uses proven, effective learning techniques.

Benefits for organisations

This course can be booked for multiple users across your organisation, ensuring that your workforce is up to date and working to the same level. The flexible access allows learners to complete modules in their own time and at their own pace, so that businesses are not impacted by external training days.

Target audience

The programme is aimed towards graduates and professional engineers wanting to acquire state-of-the-art knowledge on CAV technologies. Specifically, this course is aimed at Senior Engineers who are non-specialists of the subject, Project Managers or Junior Engineers.

Cost effective and flexible

For many engineers staying informed or changing technology to remain current in their role is paramount, however, finding the time and budget to attend external training is challenging. The IET Academy's flexible learning platform allows access to training 'anytime, anywhere' or the course content can be quickly and easily integrated into an existing learning management system.

Course pre-requisites

■ Basic statistical knowledge (Bachelor level)
■ Basic understanding of signal processing (Bachelor level)
■ A general tech-savy audience should be able to follow the first 6 units easily
■ The last 2 units require more advanced statistical knowledge

Other related courses

■ An Introduction to the Connected and Autonomous Vehicles Landscape
■ Connected and Autonomous Vehicles – Computer Vision and AI
■ Connected and Autonomous Vehicles – Cybersecurity
■ Connected and Autonomous Vehicles – Connectivity
■ Connected and Autonomous Vehicles – Human Factors and Human-Machine Interface

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