Connected and Autonomous Vehicles: Computer Vision and AI
8.5 Hour Course

Course Introduction

This course covers a number of key topics in Computer Vision, Machine Learning, Deep Learning and Artificial Intelligence.

It provides a general overview of the key challenges faced when applying such techniques to Connected Autonomous Vehicles, starting with fundamental concepts and techniques. Topics include:

- Connected Autonomous Vehicle Routing
- Game Theory
- Coordination

The course also shows how a variety of AI techniques can be combined to solve specific use-cases of CAVs.

Key Learning Outcomes

- Discuss the key challenges and benefits of applying AI, Machine Learning and Computer Vision in CAV applications
- Select and apply a variety of AI, Machine Learning and Computer Vision techniques to CAV applications
- Model CAV coordination and routing problems
- Identify ethical and social impacts of CAVs

Why Choose this Course?

- Wide coverage of Machine Learning, Computer Vision and Artificial Intelligence
- Includes deeper dives into Deep Learning and Reinforcement Learning
- Considers coordination challenges for collectives of Autonomous Vehicles
- Covers advanced topics such as Game Theory, Mechanism Design and Routing

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

Course Units
- Unit 1: Overview of the Challenges
- Unit 2: Machine Vision
- Unit 3: Deep Learning
- Unit 4: Deep Learning for Machine Vision
- Unit 5: Reinforcement Learning
- Unit 6: CAV-Routing
- Unit 7: CAV-Coordination
- Unit 8: Game Theory and Mechanism Design
- Unit 9: Assessment

About the IET Academy
The IET Academy is an e-learning solution to meet the needs of companies training and development objectives, courses are tailored for engineers at all career levels providing a unique and engaging learning experience through a mix of rich media and interactive course content. Allowing learners to learn at their own convenient pace, monitor their progress and set up personalised dashboards to track their development as they learn.

The Institution of Engineering and Technology offers topics covering a broad range of technical and professional areas from power systems and mobile communications to management and leadership, all provided in partnership with expert academics and industry organisations.

In depth-learning
The IET Academy courses range up to 30 hours in full courses and can be studied in whole or bite-size units allowing companies and individuals to invest in the most suitable training programmes for them.

Course pre-requisites
Learners embarking on this course would benefit from having a basic understanding of engineering mathematics and a basic understanding of computers and algorithms.

Who should learn?
This course will be advantageous to junior and senior engineering learners whose primary role falls within the following industries: Civil, Transportation, Computing, Electronic. Mid-level to Senior Management can also take advantage of this course and gain a better understanding.

Other engineering courses
- An Introduction to the Connected and Autonomous Vehicles Landscape
- Connected and Autonomous Vehicles: Sensors and Sensor Fusion
- Connected and Autonomous Vehicles: Connectivity
- Connected and Autonomous Vehicles: Cybersecurity
- Connected and Autonomous Vehicles: Human Factors

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