Roadside Infrastructure for AVs - Sensors and Communication Training Course

Professional Development Training Course Outline

Category	Traffic Management & Road Safety	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Autonomous Vehicles (AVs) are revolutionizing urban mobility, demanding a robust roadside infrastructure to ensure seamless communication, enhanced safety, and optimal traffic management. Roadside infrastructure, equipped with advanced sensors, V2X (Vehicle-to-Everything) communication, and IoT-enabled devices, acts as the backbone of connected autonomous ecosystems. Roadside Infrastructure for AVs - Sensors and Communication Training Course provides an in-depth exploration of state-of-the-art roadside technologies, emphasizing sensor integration, data-driven decision-making, and intelligent transportation systems (ITS).

The program equips participants with hands-on expertise in AV roadside deployments, real-time monitoring, predictive maintenance, and adaptive communication protocols. Through practical case studies and simulations, learners will gain insights into the challenges and opportunities of building scalable, reliable, and secure roadside infrastructures that support the next generation of autonomous mobility.

Programme Curriculum

Roadside Infrastructure for AVs - Sensors and Communication Training Course

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Course Duration

5 days

Course Objectives

1. Understand Autonomous Vehicle (AV) roadside infrastructure architecture and its critical components.
2. Explore sensor technologies including LiDAR, radar, cameras, and ultrasonic systems for AV communication.
3. Master V2X (Vehicle-to-Everything) communication protocols for real-time data exchange.
4. Analyze data collection and processing strategies for roadside AV sensors.
5. Evaluate Edge Computing and IoT integration in roadside infrastructures.
6. Learn intelligent traffic management systems leveraging AV sensors.
7. Understand safety, cybersecurity, and privacy protocols in AV roadside communication.
8. Study predictive maintenance and diagnostics for roadside sensor networks.
9. Explore AI and machine learning applications for anomaly detection and traffic prediction.
10. Gain knowledge of smart city integration and infrastructure scalability for AVs.
11. Investigate standards and regulations governing AV roadside deployment.
12. Analyze real-world case studies for successful AV infrastructure projects.
13. Develop hands-on skills in roadside sensor deployment, calibration, and performance optimization.

Target Audience

1. Transportation engineers and planners
2. Smart city solution architects
3. AV and connected vehicle developers
4. IoT and edge computing professionals
5. Traffic management authorities
6. Automotive OEM engineers
7. Infrastructure project managers
8. Researchers and academicians in intelligent transportation systems

Course Modules

Module 1: Introduction to Roadside Infrastructure for AVs

- Overview of AV ecosystems and roadside components
- Role of roadside sensors in autonomous mobility
- V2X communication fundamentals
- Infrastructure challenges in urban vs. rural areas
- Case Study: Deployment of AV roadside sensors in Singapore

Module 2: Sensor Technologies for Roadside Applications

- LiDAR, Radar, Ultrasonic, and Camera technologies
- Sensor fusion techniques for accurate detection
- Environmental and weather impacts on sensor performance

- Calibration and testing protocols
- Case Study: LiDAR-based traffic monitoring in Germany

Module 3: Communication Protocols and V2X

- DSRC vs. C-V2X communication standards
- Low latency and high-reliability data transmission
- Vehicle-to-Infrastructure (V2I) communication design
- Security and encryption in V2X networks
- Case Study: Connected corridors in the USA

Module 4: Data Management and Edge Computing

- Real-time data acquisition and processing
- Edge vs. cloud computing for roadside sensors
- Data analytics for traffic prediction
- Integration with IoT networks
- Case Study: Edge computing for AV traffic signals in Japan

Module 5: Intelligent Traffic Management Systems

- Smart traffic lights and adaptive signaling
- AV priority lanes and congestion management
- Predictive modeling using traffic data
- Simulation tools for traffic optimization
- Case Study: AI-based traffic control in the Netherlands

Module 6: Safety, Security, and Cybersecurity

- Risk assessment of roadside infrastructure
- Cybersecurity protocols for V2X networks
- Redundancy and fail-safe system design
- Privacy concerns in sensor data collection
- Case Study: Security breach mitigation in UK AV pilot projects

Module 7: Smart City Integration and Scalability

- Integration of roadside AV infrastructure with smart city initiatives
- Scalability challenges for dense urban environments
- Policy and regulatory compliance
- Sustainable infrastructure deployment
- Case Study: Smart city AV corridors in Dubai

Module 8: Hands-On Deployment and Practical Case Studies

- Sensor installation, calibration, and testing
- Performance monitoring and troubleshooting
- Field simulations for AV-roadside interaction
- Real-world lessons learned from global deployments
- Case Study: Multi-sensor roadside setup in South Korea

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call +254769199797

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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