Automotive Systems and Software Engineering

2 days

Date/Time	Location	Language
Apr. 15–16, 2024/ 8:30 a.m. - 5:30 p.m. CEST	Berlin or online (optional) Registration	English

Modern premium cars have dozens of control units containing well over 100 million lines of code. Hundreds of messages and thousands of signals are transmitted via different communication buses. Today, more than 90% of all innovations in the automotive sector are already electronic or software-based. Consequently, a car bundles many questions of software engineering, including the development of complex and reliable software systems, within an area of 5 x 2 m².

In this training class, we will discuss not only the fundamentals but also the peculiarities and challenges of software engineering in the automotive domain. We will cover the core process for in-vehicle software development and familiarize ourselves with selected methods that are used in the development of automotive software. As a foundation, we will cover selected technical fundamentals of in-vehicle electric / electronic (E/E) systems. Following that, we will focus on the safety aspects of software development given that many software-based systems are safety-related.

Target Audience

This introductory training class is designed for current automotive professionals as well as career changers looking to develop their skills regarding software development in the automotive domain.

Highlights

- Life cycle models to develop software-based automotive E/E systems (V-model, agile models, model-based development, Automotive SPICE)
- ECUs and E/E systems
- E/E architectures today and tomorrow
- Automotive bus systems
- Driving Automation Systems (SAE Levels)
- Introduction to AUTOSAR
- Collaborative development in the automotive domain (automotive supply pyramid, development interface agreement)
- Cost model for automotive E/E systems
- Dependability domains (Functional safety, SOTIF, cybersecurity)

????? Nikhil Mathew, DynaFusion Technologies Pvt. Ltd.

"This training class provided a comprehensive overview of the topic area. The key aspects of automotive software engineering were very well covered."

Languages

Available in English and German

Formats

Icon On Site Training

Open-enrollment Trainings
at one of our locations

Icon Online Training

Virtual Classroom Trainings
wherever you are

Icon Inhouse Training

In-house Trainings
online or in-house

More Details on Formats and Locations

Learning Objectives

By the end of this course, you will:

- Be able to compare and contrast software development in the automotive domain with software engineering in other domains
- Understand why system and software engineering are deeply interwoven
- Be familiar with characteristics and differences of key life cycle models
- Understand the different activities of the core process for the development of automotive E/E systems
- Understand selected methods used for automotive software engineering
- Understand peculiarities and challenges of software development in the automotive domain

Cost, Terms & Conditions

See all fees, terms & conditions for training classes provided by tudoor academy

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Our Trainers

Agenda

This training class combines the following tech topics and process considerations:

Introduction

Tech Topics

- ECUs, Domain Control Units (DCUs), and E/E Systems
- Distributed Systems and E/E Architectures
- In-Vehicle Networking (CAN, LIN, Flexray, Ethernet)
- AI Systems and Components
- AUTOSAR

Process Considerations

- Life Cycle Models, Automotive SPICE
- Core Process for Automotive Software Development
- Specification of the Logical System Architecture
- Specification of the Technical System Architecture
- Specification of Software Components
- Design and Implementation of Software Components
- Software Component Testing
- Software Integration and Testing
- System Integration and Testing
- Calibration
- System and Acceptance Testing
- (Over-the-Air) Software Updates