

# ETFA 2022

27<sup>th</sup> INTERNATIONAL CONFERENCE  
ON EMERGING TECHNOLOGIES  
AND FACTORY AUTOMATION

STUTTGART, GERMANY  
SEPTEMBER 6<sup>th</sup>-9<sup>th</sup> 2022

## DIVERSE — 4th Workshop on Advanced Technologies in Industrial Vehicular Systems

Organized and Co-Chaired by  
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❖ **FOCUS.** The innovation in modern vehicles can be largely attributed to advanced computer-controlled functionalities. With the increasing volume of these functionalities, the complexity in vehicular systems has increased enormously over the past few years. For example, the software in a high-end car consists of millions of lines of code running on several tens of distributed Electronic Control Units (ECUs). These ECUs can be connected by five or more different types of on-board networks, such as CAN, CAN-FD, FlexRay and switched Ethernet solutions, including various set of standards such as TSN. Many vehicular functions are constrained by real-time requirements. Hence, the developers of these functions are required to verify their timing predictability at the design time and provide predictable execution environments at run-time. In addition, vehicular systems need to be supported for precise time synchronization, deterministic communications, high-bandwidth and ultralow latency onboard communication, zero congestion loss, reliability, and fault tolerance. These properties are paramount for the next generation of Automated Driving vehicles. The advanced features in modern vehicles also require new levels of computational power and more complex coordination among subsystems. Multi-core ECUs offer a promising solution for running such computation-intensive vehicular functions. However, such advanced ECUs face many challenges due to shared resources. The objective of this workshop is to provide a platform to the researchers and practitioners to present and discuss advanced technologies that can address the challenges faced by the developers of vehicular systems.

### ❖ TOPICS

The workshop covers the advanced technologies and solutions for vehicular systems, mainly focusing on the following topics

- ❖ Models and languages for the development of software architectures
- ❖ Onboard network protocols, e.g., CAN, Automotive Ethernet, TSN
- ❖ Scheduling and schedulability analysis
- ❖ Autonomous vehicles, advanced driver assistance systems, V2X communications
- ❖ Advanced computing platforms for vehicular systems, e.g., multi-core
- ❖ Safety, security and certification (e.g., according to ISO 26262) aspects in vehicles
- ❖ Tool support and industrial case studies for vehicular embedded systems

❖ **WORKSHOP FORMAT.** The workshop is based on invited presentations from academia and industry. There will be a panel discussion after the invited presentations.

## Workshop: September 6, 2022

### Workshop Presenters

- ❖ Dakshina Dasari, Corporate Research, Robert Bosch GmbH, Germany
- ❖ Sara Afshar, Volvo Construction Equipment, Sweden
- ❖ Roberto Cavicchioli, University of Modena and Reggio Emilia, Italy
- ❖ Paulo Garcia, Carnegie Mellon KMITL in Bangkok, Thailand
- ❖ Marina Gutierrez Lopez, TSN Studio, Austria
- ❖ Rafik Henia, Thales, France
- ❖ John Lundbäck, Arcticus Systems, Sweden
- ❖ Peter Ulbrich, Technische Universität Dortmund, Germany
- ❖ Matthias Becker, KTH Royal Institute of Technology, Sweden
- ❖ Panel Discussion (all presenters)