Säker driftsättning av autonoma fordon, 2024-02011

Public report

Project within Accelerate Swedish Partnership FFI
Author Abhishek Michael
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Content

FFI in short

FFI, Strategic Vehicle Research and Innovation, is a joint program between the state and the automotive industry running since 2009. FFI promotes and finances research and innovation to sustainable road transport.

For more information: www.ffisweden.se

1. Summary

As part of the project, we conducted an evaluation of the capabilities of V&V tools to ensure the safety of our autonomous software stack. The evaluation included several days of training and also integrating the tools with the existing Scania tool chain. The tools evaluated included tools assisting in generating relevant synthetic scenarios for large-scale testing, and extracting metrics from real-world drives to present a cumulative result of the AV stack status. The tool aids in reducing the generation of invalid scenarios by utilizing a solver that can be configured to select parameters that generate physically possible scenarios.

2. Sammanfattning på svenska

Rapporten nedan ger en kortfattad genomgång av projektet och de resultat som uppnåtts Målet med detta projekt var att bättre förstå V&V-metoder som stödjer säkrare autonom driftsättning, scenariobaserad validering och OSC 2.0-standarden. Projektet har varit en framgång med flera fynd som stödjer utvecklingen och driftsättningen av säkra L4 autonoma lastbilar

3. Background

Scania is investing in developing a methodology to be able to validate and safely deploy L4 autonomous vehicles. Tools will enable defining the way forward with a scenario based approach to support a validation and verification strategy for safe autonomous deployment.

4. Purpose, research questions and method

Evaluate intelligent scenario generation at scale
Evaluate the coverage driven verification methodology
Evaluate coverage measurement (virtual + real world) in a unified tool
Understand if the tooling methodology can support with proving safety
Defining a scenario based approach within V&V
The project included class room training, following which there were weeks of hands on usage, training and evaluation, along with several training sessions on specific topics that came up during the project.

5. Objective

The project intends to enable Scania to safely deploy autonomous trucks for "Hub to Hub" applications to increase vehicle utilization, improve safety and reduce energy consumption in logistics.
The project will focus on evaluating digital tools and methodology for verification and validation of L4 autonomous trucks. The project helped Scania come to a much better understanding of the different methodologies within V&V

6. Results and deliverables

The project has been a success with several findings that support the development and deployment of safe L4 autonomous trucks, including answering of the research questions. The goal of this project, was to better understand V&V methodologies supporting safer autonomous deployment, scenario based validation, and the OSC 2.0 standard, and this has been achieved.

7. Dissemination and publications

7.1 Dissemination

How are the project results planned to be used and disseminated?	Mark with X	Comment
Increase knowledge in the field	x	Internal
Be passed on to other advanced technological development projects		
Be passed on to product development projects	x	Internal product development
Introduced on the market		
Used in investigations / regulatory / licensing / political decisions		

7.2 Publications

N/A

8. Conclusions and future research

N/A

9. Participating parties and contact persons

Scania CV AB
Abhishek Michael

Foretellix Ltd
Igor Kraz