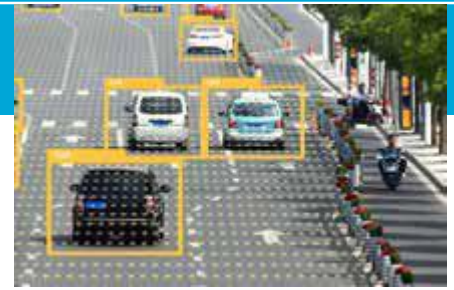


Quantitative Safety Target for Functional Safety and SOTIF



Problem description

It is expected that Autonomous Vehicles (AV) will be safer than manual driven vehicles. The safety of AV will be achieved through robust development processes, countless tests to measure the AV performance and by introducing threshold to not exceed. The goal is to have a road traffic system with zero accidents (Vision Zero). However, this is long term goal. In the meantime Automotive Stakeholders should identify the acceptable level of safety to allow an AV to operate safely in the traffic system. In few words, it should be established when safe is safe enough.

The current regulatory approach is mainly based on qualitative rather than quantitative targets. However, there are several on-going discussions to quantify the level of safety (i.e. Quantitative Safety Target). For instance, the Functional Safety and Safety of Intended functionality (SOTIF) do not include safety metrics (e.g. probability of occurrence of having accidents) in the regulation requirements. These safety metrics can improve the level of safety, can provide tools for an assessor to compare the level of safety achieved by different vehicles and will be crucial to assure that the level of safety in the Netherlands will be increased with the introduction of AV. In addition, the safety metrics can indirectly drive the OEMs to Fail-Safe architecture, to design for minimizing the hazard as well as to assure the safety during the operational phase.

Objectives & Assignment

The main goals of this topic are:

- Identification of Safety metrics for Functional Safety and Safety of Intended functionalities;
- Recommendation for the validation/assessment of the Safety Metrics for Functional Safety and Safety of Intended functionalities.

In this perspective, it is expected that the intern could investigate:

- Where and how quantitative safety metrics are used
- Accident/incident statistics to derive appropriate
- Engineering Design Handbooks/technical documents to derive dedicated metrics/targets and to identify possible limitations (e.g. software);
- Methodologies to validate and assess the quantitative safety metrics
- Options for an Experiment to validate the safety target (e.g. simulation or pilot test).

Who do you work with?

This project will also help RDW prepare for the upcoming regulations and policies around automated vehicles by accruing knowledge about auditing AI systems.

As an intern, you work for the Vehicle Regulation & Licensing (VRT) division of RDW. You are part of the Applied Innovation team that focuses on knowledge and product development for the development of new legislation, new licensing frameworks and working methods for vehicle innovation. We take a learning-by-doing approach, developing new products and knowledge and then validating them by also applying them, including by conducting practical trials on public roads. Various benefits are available including an internship allowance of €450,- per month.

More information

Do you want to know more about this assignment? Please contact Espedito Rusciano (senior advisor): ERusciano@rdw.nl or 06-25764089. Or at TU Delft: s.c.calvert@tudelft.nl

To apply, please send your application, including motivation and CV to Patty Alleman-Pronk, PProng@rdw.nl.

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