

Safety-driven criticalities search within the Autonomous Vehicles Operational Design Domain

Master Thesis proposal

January 2022

Safety-driven criticalities search within the Autonomous Vehicles Operational Design Domain

Deadline: TBD

Context

In the context of ADAS/AV, drive and traffic simulators play the role of development, training and validation processes accelerators. Thus, due to the high demand, the industry is working on standardization of simulation model with the final goal of data exchange.

Description

The candidate will take part in a team dedicated to the exploration of State of the Art methodologies used to generate internationally standardized virtual road traffic scenarios starting from vehicle's sensors data. The stream of work consists in the exploration and comparison of State of the Art methodologies performing edge cases and criticalities research within the Operational Design Domain

Objective

- Development and comparison of different models performing Safety-driven automatic research of critical logical scenarios within a specific Operational Design Domain, with the final goal of drastically reduce the number of needed simulations
- To support evidences through the simulation of standardized logical scenarios within game engines (e.g. CARLA)

Prerequisites

- Knowledge of python, Matlab & Simulink
- Demonstrated interest in the Automotive field (university projects, extracurricular activities..)
- Interest in autonomous vehicles virtual testing and validation activities
- Self-directed learning skills

Skills acquired

- Learning about common frameworks relevant for automotive safety development: SOTIF and ISO 26262
- Running scenario-based autonomous vehicles virtual tests
- Learning about ASAM OpenSCENARIO and OpenDRIVE standards
- Usage of AWS compute and storage solutions

