Scenario.center: A Database Converting Data to Test Scenarios

Automated vehicles have the opportunity to disrupt the mobility of the future. However, to introduce those vehicles into the market, their safety has to be ensured. Traditional methods relying solely on real-world testing would necessitate covering billions of kilometers, making them impractical and prohibitively expensive. Scenario based testing has become a promising approach reducing this effort by testing the system under test systematically utilizing scenarios. However, this approach comes with significant challenges: Scenarios to confront a system under test with have to be acquired or defined. Furthermore, since a significant number of scenarios is usually needed to cover an ODD comprehensively, these scenarios have to be easily accessible and manageable.

To address the issues of acquiring and managing significant amounts of scenarios, a set of methods is developed and implemented into a scenario database. These methods are presented as an end-to-end solution, from processing trajectory data into scenarios of a single common scenario concept to generating purpose specific test scenarios to execute in a simulation. Thereby, the overall concept, specific methods and formats are presented to process large amounts of data for the urban domain automatically and highly systematically. Depending on the use case, from each scenario, different methods are presented to create targeted test scenarios. Furthermore, a solution to store and manage scenarios within a database is presented allowing for an efficient handling and selection of relatively simple as well as complex scenarios. To demonstrate the feasibility and applicability of the presented methods and concepts, a demo is available at *https://scenario.center*.