

The Importance of Open Simulators and AI in a Changing Mobility Landscape

Robert Hilbrich
German Aerospace Center
Berlin, Germany

Abstract—The mobility landscape is undergoing significant changes. More and more mobility providers compete for customers with their own mobility services. Traditional public transport, demand-responsive transport, taxis, car sharing, ride pooling, bike sharing, e-scooters, ... the available modes of transport in cities are becoming increasingly heterogeneous and confusing. At the same time, significant changes to the landscape are induced by the effects of the global pandemic. They may lead to even more drastic changes in the mobility demand.

How to tame the complexity of this landscape and fight the climate change without neglecting mobility as a fundamental human need is an open - albeit essential - question.

In this talk, we examine the changes in the mobility landscape and look at the role of two important players in this discussion: open simulators and artificial intelligence. What do they bring to the table in order to tackle the rising complexity? How can they be applied to improve the transportation system in a city? The Eclipse SUMO project is used as an example to illustrate how to build digital twins of smart cities. Moreover, results from recent research projects are used to discuss the effectiveness and efficiency of applying artificial intelligence to optimize transportation systems.

Brief biography—Dr. Robert Hilbrich works as a manager for simulation and modeling at the German Aerospace Center in Berlin, Germany. He is a computer scientist and started his research career in the field of developing safety-critical real-time systems at the Fraunhofer research institutes FIRST and FOKUS. Since he joined the German Aerospace Center in 2015, he is responsible for the development of the traffic simulation suite Eclipse SUMO. In 2019 Robert also founded a startup, the Consultancy for Engineers GmbH, where he is employed as managing director in addition to his role at the German Aerospace Center.