AVs using Eqasim pipeline for Shanghai: input and output data

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Conference Paper STRC 2022

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May 2022

Abstract

The concept of sustainable development keeps advancing in the future, and autonomous vehicles (AVs) can become an alternative to cars. Thereby, AVs will have a significant impact of sustainable urban mobility. The existing AVs simulation models are for some small scale cities and have not been extended to explore mega-cities such as Shanghai.

This study tackles this issue by developing a trip-based Eqasim pipeline in the context of existing urban traffic, using mobile signaling data from Shanghai. Here, AVs are modeled as a novel mode choice.

This work describes a data pipeline for generating the input data for Eqasim. Mobile signaling data with their activity patterns and travel modes is taken as the travel demand. Besides the standard four travel mode choices, including car, pt, bike and walk, AVs are appended here. It could be used in the field of transport simulation and urban sustainability research in the upcoming times. This work provides the details of how input data for MATSim was generated from accessible and open-source data. It also illustrates how to integrate discrete model choice (DMC) for Eqasim simulation. Characteristics and pre-processing steps of the input data set for Eqasim are presented in detail in this paper.

Keywords

Autonomous vehicles (AVs), Eqasim, Mobile signaling data, Shanghai