



Abschlussvortrag Masterarbeit Yesha Ashokkumar Patel und Dhaval Kantilal Kareliya

„Modeling and Evaluating Road Pricing Mechanisms for Traffic Management: An Agent-Based Simulation Approach“

As urban traffic congestion escalates with the surge in vehicle numbers, managing road usage becomes increasingly challenging. Our thesis delves into a comprehensive literature review, examining various pricing mechanisms while also outlining self-interested road user models and governance structures. We conduct an in-depth study covering eleven toll collection methods, with a focused analysis on six selected methods. From these, four pivotal methods—Distance-based Pricing, Area-based Pricing, Vehicle-specific Pricing, and Time-based Pricing—are carefully implemented and evaluated using the Bongana dataset from DLR's repository, specifically the Acosta and Pasubio scenarios. Our analysis centers on toll collection rates, the average toll paid per user, and emissions attributed to each toll method. Leveraging the SUMO simulation platform coupled with Python, TraCI, Sumolib, and Matplotlib, we thoroughly assess the effectiveness of these pricing strategies in managing traffic dynamics. By contributing valuable insights into road pricing strategies, our research aims to inform and enhance the efficacy of traffic management practices.

Betreuer der Arbeit: Prof. Dr. Jörg P. Müller (Institut für Informatik), Prof. Dr. Benjamin Leiding

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Ort: Institut für Informatik (D3), Besprechungsraum 1.06, Julius-Albert-Straße 4, 38678 Clausthal-Zellerfeld