



## **Abschlussvortrag Masterarbeit Arunprasad Ramakrishnan**

„Design and evaluation of a digital twin-based parking management system for future smart cities“

With increasing populations and mounting vehicular communities in current urban settings, the requirement for proper parking management has grown to be of critical importance. Modern cities face challenges that traditional parking systems provide optimal space utilization and fulfill the dynamic needs of modern cities. This thesis ventures into the world of Digital Twin-Based Parking Management Systems to transform our approach towards thinking, developing, and improving urban parking spaces. Traditional parking management systems face several challenges, including poor space utilization, reservations, traffic jams, and spotty information. Such challenges are compounded by the increasing intricacy of urban environments urging a paradigm shift to innovative solutions that can tackle these issues squarely. This research mainly aims at advancing parking management through Digital Twin technology. The study will utilize real-time data collection, cloud infrastructure, and advanced analytics to optimize the utilization of parking space by introducing predictive analysis for better allocation of resources. It is significant in the sense that it can contribute to improving urban life by curtailing parking-related issues. The research aims to decrease congestion, minimize environmental impact, and improve the entire quality of life in urban areas by designing and deploying Digital Twin-Based Parking Management Systems. This thesis has been presented in a more structured manner, allowing the reader to follow its various stages of research and development. The other chapters further reveal an in-depth analysis of relevant literature, describe the process used to develop a Digital Twin-based Parking System, and explain how data was collected and processed before implementing Azure services as well as machine learning models for optimizing parking spaces

Betreuer der Arbeit: Prof. Dr. Andreas Rausch, PD Dr. Christoph Knieke

Datum: Mittwoch, 20. März 2024, 08:30 Uhr

Ort: Online-Meeting über BBB

Link: <https://webconf.tu-clausthal.de/rooms/sim-uc9-rvy/join>