DEDS Publicity Posts - Rodrigo

Publications:

Speed and Energy Consumption for Electrical Vehicles
Proceedings of the 15th ACM SIGSPATIAL International Workshop on Computational
Transportation Science
https://cusg.ornl.gov/workshops/IWCTS2022/proceeding/papers/paper13.pdf
https://doi.org/10.1145/3557991.3567802

Abstract Reducing emissions of greenhouse gases has become a major challenge for the next decades. The transportation sector is responsible for about a quarter of all the CO_2 in most developed countries. This study uses a large set of trajectory data (272.289 trajectories, built from 75.178.775 GPS points) to analyze and quantify, on a road segment level, the impacts of driving at a steady speed on the energy consumption of electrical vehicles. The results show that drivers should strive to maintain a steady speed for as much as possible as it can reduce the consumption by up to 42% while increasing the travel time by just 10%.

Roundabouts and the Energy Consumption of Electrical Vehicles
Proceedings of the 16th ACM SIGSPATIAL International Workshop on Computational
Transportation Science
(no link from ACM yet)
https://doi.org/10.1145/3615895.3628165

Abstract Understanding how the energy consumption of electrical vehicles behave on intersections can be paramount to save on electricity and reduce the emissions of greenhouse gases. This study uses a large dataset of high-frequency trajectory data to verify the feasibility of intersection analysis and study how roundabouts fare against each other when it comes to the energy consumption of EVs. The results show that there can be a difference of 25-33% in the consumption inside roundabouts depending on their category. They also show that the speed of the vehicles as they enter the roundabouts correlates to their energy consumption in a polynomial fashion.

Bio:

Rodrigo obtained his bachelor's degree in Computer Engineering from the Federal University of Goiás, Brazil, in 2017. After working as a software engineer for three years, he pursued a joint master's degree in smart telecom and sensing networks within the SMARNET 2020 program. For the first year of the master's, he studied machine learning and artificial intelligence in the University of Athens, Greece, and, for the second year, he studied photonics and fiber optics in Télécom SudParis, France. For his master's thesis, he participated in a six-month internship at the Orange Labs in Lannion, France, where he contributed to the development of the open-source optical route planning library GNPy. Currently, Rodrigo is pursuing a Ph.D. in data science within the DEDS Horizon 2020 framework. His work focuses on the analysis of GPS-based network-constrained trajectories with emphasis in fuel consumption and electrical vehicles.