



Autonomous Electric Cars Control: Dynamic Path Planning and Battery Charging Optimization in Transportation Networks

■ Goals

The thesis proposal introduces a method for dynamic path-planning and charging optimization tailored for autonomous electric vehicles (AEVs) within transportation networks. This approach aims to enhance the efficiency and sustainability of AEV operations by optimizing both route selection and charging strategies. Through simulation and analysis, the effectiveness of the proposed method should be demonstrated, showcasing its ability to adaptively plan paths and optimize charging schedules based on real-time conditions, thereby improving overall system performance and reducing energy consumption.

■ Requirements

You should understand *Automatic control*, *Traffic control*, *Automotive*.

Bibliography

- [1] Tang, Q.; Li, D.; Zhang, Y.; Chen, X. Dynamic Path-Planning and Charging Optimization for Autonomous Electric Vehicles in Transportation Networks. *Appl. Sci.* 2023, 13, 5476. <https://doi.org/10.3390/app13095476>
- [2] Mince Li, Yujie Wang, Pei Peng, Zonghai Chen, Toward Efficient Smart Management: A Review of Modeling and Optimization Approaches in Electric Vehicle-Transportation Network-Grid Integration, Green Energy and Intelligent Transportation, 2024, <https://doi.org/10.1016/j.geits.2024.100181>.

Contact:

Di Gennaro Stefano: stefano.digennaro@univaq.it
Bianchi Domenico: domenico.bianchi@univaq.it

Website:

www.univaq.it