# **Electric Vehicle Propulsion and Control**

**Electric Vehicle Propulsion and Control – UNIVAQ** 



# E-Pico Master's Thesis

# Traffic control for autonomous driving that incorporates human decision-making into the loop

#### Goals

As science and technology progress, autonomous driving vehicles have garnered significant attention. However, before they fully replace human-driven vehicles, we'll witness a period where both types coexist on roads. It becomes crucial for autonomous vehicles to accurately interpret drivers' intentions, make appropriate decisions, and execute driving tasks safely and efficiently. In addressing this challenge, the concept of human-in-the-loop control will be explored in this thesis, and a control strategy based on stochastic model predictive control will be designed and implemented. This strategy can be tested in two autonomous driving scenarios: lane merging and left-turn.

### Requirements

You should understand Automatic control, Machine Learning, Automotive.

#### **Bibliography**

- B. Rogic, D. Nalic, A. Eichberger and Stefan Bernsteiner, A Novel Approach to Integrate Human-in the-Loop Testing in the Development Chain of Automated Driving: The Example of Automated Lane Change, IFAC-PapersOnLine, vol. = 53 (2), pp. 10188-10195, 2020. https://doi.org/10.1016/j.ifacol.2020.12.2747.
- [2] Y. Pang, G. Zhang and H. Xia, "Autonomous Driving Traffic Control Based on Human-in-the-loop Decisions," 2021 33rd Chinese Control and Decision Conference (CCDC), Kunming, China, 2021, pp. 1116-1121, doi: 10.1109/CCDC52312.2021.9602582.

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