

Advanced Machine Learning for In-Car Display Monitoring

Master Thesis

Modern machine learning (ML) systems leverage advanced techniques such as transfer learning, few-shot learning, and anomaly detection to effectively manage new or unseen data. In this project, you will develop an ML system designed to continuously monitor in-car display screens using video camera streams. The objective is to accurately detect and classify notifications and icons that appear on the dashboard screen while driving.

Most icons, such as engine warnings, are standardized and can be used to train the model. However, not all vehicles strictly adhere to these standards. Some manufacturers use proprietary symbols, which can cause confusion or require a learning curve for drivers unfamiliar with these unique designs. Therefore, an approach should be developed to learn from variations in display content. This includes recognizing new icons introduced via software updates and detecting anomalies that may indicate system malfunctions or critical alerts.

YOUR RESPONSIBILITIES:

- Analyze Existing ML Capabilities: Evaluate current machine learning systems to identify patterns in real-time video streams from in-car displays.
- Detect and Describe New Icons and Notifications: Develop an ML system to not only detect known icons and notifications but also to identify new, unseen icons and generate an appropriate description.
- Develop a Prototype System
- Validate with Current Car Models

YOUR PROFILE:

Ongoing master's study in the fields of Computer Science, Telematics, or Electrical Engineering

- Good programming skills in Python and/or C++
- Strong background in Machine Learning and Computer Vision
- Interest in automotive technology
- Good knowledge of German and English
- Your sporadic presence at AVL headquarters in Graz is required



WE OFFER:

- Hands-on experience with cutting-edge ML applications.
- You will have the opportunity to exchange ideas with experts in the company and benefit from their expertise.
- Take the opportunity to immerse yourself in the world of AVL and embed your theoretical knowledge in a practical environment.

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The successful completion of the thesis is remunerated with a one-time fee of EUR €3,500.00 before tax.

You don't want to write your final thesis just for the books. Explore the mobility of the future together with us - maybe you will be a part of it soon!

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