



Bachelor-/Semester-/Master-Thesis

Object-Aware Sensor Alignment using Machine Learning

**Join FTM to develop autonomous
driving software for real world
applications.**

Background

In the area of Autonomous Driving (AD), complex tasks shape the vehicle's ability to operate in diverse environments. The AD Perception sense about the surrounding world, understanding traffic dynamics, and executing precise maneuvers.

Object Detection, in particular, focuses on identifying and locating objects within images or point clouds. The accuracy and efficiency of object detection algorithms directly impact the reliability of autonomous systems. Online calibration is a solution that adjusts sensor relationships in real-time and ensures continuous correction, compensating for sensor degradation and maintaining optimal performance throughout the vehicle's lifespan.

This work will focus on the detection of misalignment/miscalibration of environment sensors using Machine learning and the use of online calibration algorithms to recalibrate sensors during operation.

Language

English/German

Your Role

- Research on the current State of Technology in Online Calibration and Miscalibration Detection
- Implementation and Evaluation of approaches from literature by performing a quantitative comparison
- Development of a real-time capable miscalibration detection algorithm
- Validation of the proposed methods and testing in Simulation and Real Data
- Analyse the accuracy and the limitations of the proposed methods

What should you bring along?

- Strong interest & motivation for autonomous driving
- Knowledge in the field of perception (computer vision, deep learning)
- Initiative & independent way of working
- Strong C++/Python programming
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If you are interested, please send me your grade sheets and your CV!