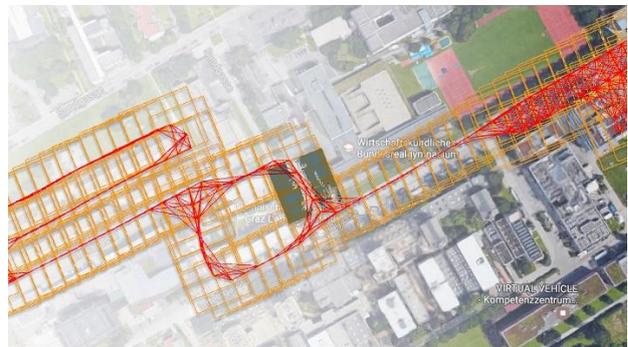# | Potential Master's degree topic:

Establishment of automated testing methods for ground-bound autonomous mobile robots.

| Additional Information:

Keywords: Automatization of robotic testing, ground-bound robotic vehicles, consumer robotics, Microcontroller

Fields of Research: Mechatronics, Electrical Engineering, Software-Development, Automatization

Short description: In developing software for autonomous mobile robots, testing plays an important role. The software can, to a certain extent, be tested virtually. But at some point, the tests must be performed in "real world scenarios". Such tests can be quite repetitive and time-consuming. Within a master's thesis framework, we want to explore how such test scenarios can be carried out faster and more automatically.

As a first task, the thesis should analyze the current testing workflow and estimate how much time can be saved by integrating the proposed testing methods. Throughout the thesis, different testing methods should be

explored to allow fast and accurate testing of different types of ground-bound robotic vehicles. The focus should be on strategies that automatically execute the tests for each release.

The thesis should cover different levels of testing, from unit tests up to integration tests, including showcases for each level and every part of the

system. To ensure proper execution on the Microcontroller, at least the integration tests should be executed (also) on the Microcontroller.

Additionally, the thesis should cover the tooling needed to allow the fast creation of additional tests apart from the showcases.

Apart from defining proper test methods, the thesis should also cover issues of appropriate test coverage to avoid creating too few/too many test cases.