

3D Perception, Localization and Mapping

Background:

Autonomous vehicles are slowly being introduced to society to simplify our everyday life. For an autonomous vehicle to function five abilities are necessary: Perception, Localization, Mapping, Path planning and Control. Perception, Localization and Mapping supplies the vehicle with its whereabouts as well as its surroundings. Different kinds of sensor technologies with different advantages and disadvantages can be used to achieve these functions. In the case of an autonomous warehouse truck the two-dimensional whereabouts and surroundings are most often sufficient, but in the case of a personal car the whereabouts and surroundings in three dimensions are required to safely operate in all areas. There are a multitude of different sensor and technology combinations that can be used to achieve autonomous operation.

Description and objective:

- Research sensor technologies and their applicability when it comes to three-dimensional perception, localization and mapping.
- Either simulate the chosen sensors or apply them to the real world, and show how they achieve 3D perception, localization and mapping.
- Measure suitable variables to verify the results.

