EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

Mathematisch-Naturwissenschaftliche Fakultät
Fachbereich Informatik
Kognitive Systeme (Prof. A. Zell)

Bachelorarbeit

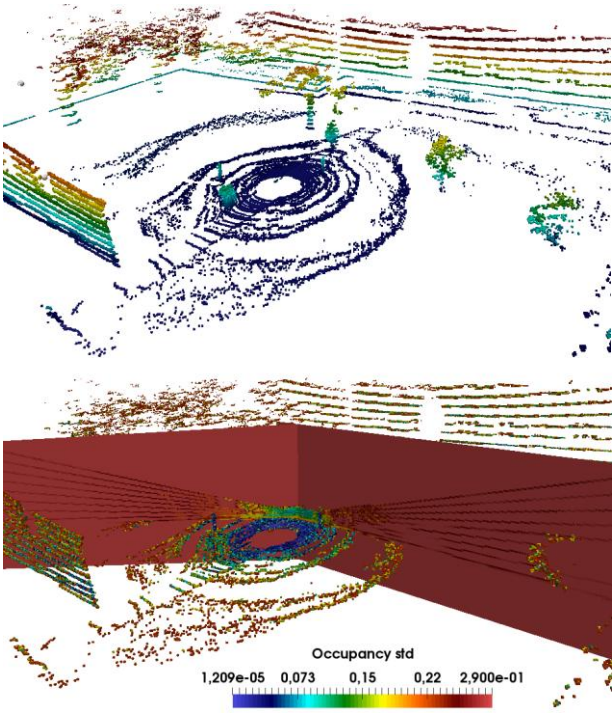
Use of LiDAR reflected power for mapping

LiDAR has become an increasingly popular sensor in the robotic community thanks to its ability to easily produce 3D maps of the environment. New generation of LiDAR sensors designed for indoor and outdoor use are able to generate over one million points per second for higher density 3D mapping. While most of the maps make use of time of flight information returned by LiDAR, few of them are properly incorporating reflected power information.

During this bachelor thesis, we propose to study the possibility to generate robust maps using both time of flight information and reflected power. The goal is to eventually produce 3D/4D tensor fields which contain occupancy information and material reflectivity. The core work will consist in using Bayesian data assimilation schemes along with designing a novel appropriate forward model. Algorithms will be tested using both simulated data and real data.

Requirements:

- C++ programming skills
- Interest in applied mathematics
- Knowledge in probabilities and statistics



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