EBERHARD KARLS UNIVERSITÄT TÜBINGEN

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

Forschungsprojekt

Semantic NDT Mapping using Fused Laser and Camera Data

High resolution and semantically interpretable maps can be used for navigation tasks in complex 3D environments and allow for appropriate interactions. This can be achieved by fusing precise depth estimations from a laser sensor with semantic labels acquired through camera images.
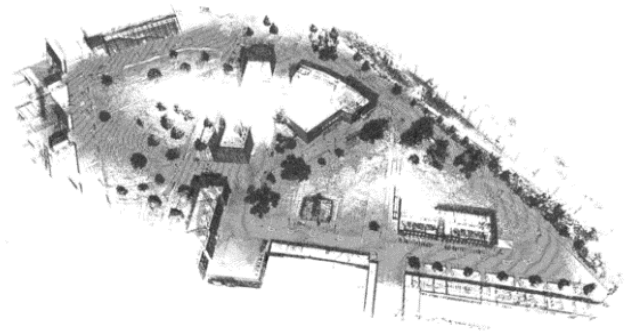
We will try to combine 3D laser data with color images in order to obtain precise depth information with high resolution and object semantics. The laser sensor is especially useful in outdoor environments due to its robustness to external influences (e.g. sunlight). On the other hand, color images offer high spatial resolution and better semantic information. We want to employ neural networks to extract labels for each pixel. Elevating all these data, we aim to construct a high-density 3D point cloud containing semantic labels. We intend to use Normal Distribution Transform (NDT) maps to store the point clouds and account for noisy measurements. Integrating the data over time, this should result in a consistent high-resolution 3D representation of the environment containing semantic information.

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