

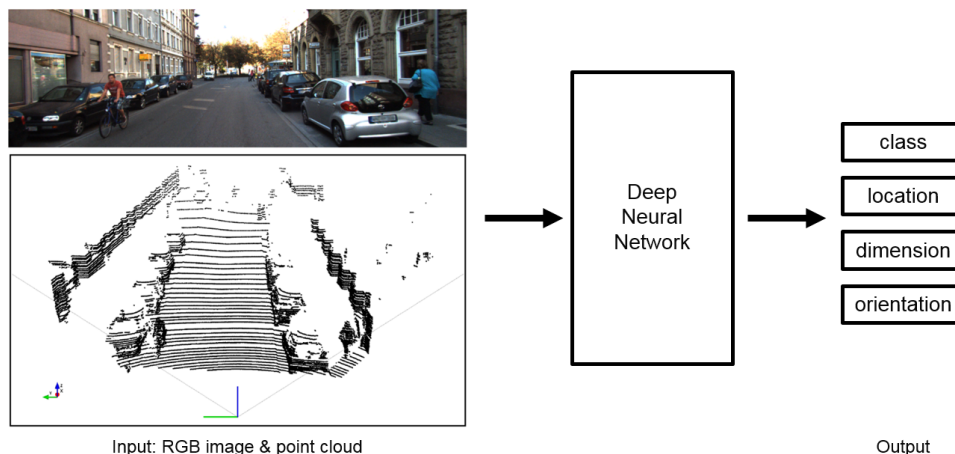
Master Thesis (2020)

3D Pedestrian Detection with LiDAR and Camera Data

Robust detection and accurate localization of vulnerable road users (VRU) in various scenarios are crucial tasks towards “safety driver free” autonomous driving. In computer vision, these tasks are referred as 3D object detection, which aims to identify location, dimension, orientation as well as class category of each object. The focus of this thesis is 3D pedestrian detection with multi-modal data. In order to leverage complementary nature of LiDAR and camera, rich contextual information from image and accurate spatial information from point cloud will be fused.

The proposed thesis consists of the following parts:

1. Literature review in 3D object detection and sensor fusion
2. Implementation of a method for 3D pedestrian detection
3. Evaluation of the implemented method using KITTI/NuScenes datasets



I am happy to answer questions regarding the topic, reference literature or alternative topics. If you are interested, please write me an email with your CV and transcripts.

Requirements: Knowledge in machine learning, deep learning and statistics
Solid knowledge of Python or C++
Knowledge of PyTorch or TensorFlow

Knowledge of point cloud processing is preferred

Keywords: Deep Learning, Sensor Fusion, 3D Object Detection

Supervisor: M.Sc. Juncong Fei

Institute of Measurement and Control Systems (MRT)

Tel.: +49-6142-6-924532

Email: juncong.fei@partner.kit.edu

Start Date: Flexible