

Where are the trees?

Research Project at ikg



Introduction and goal of the project

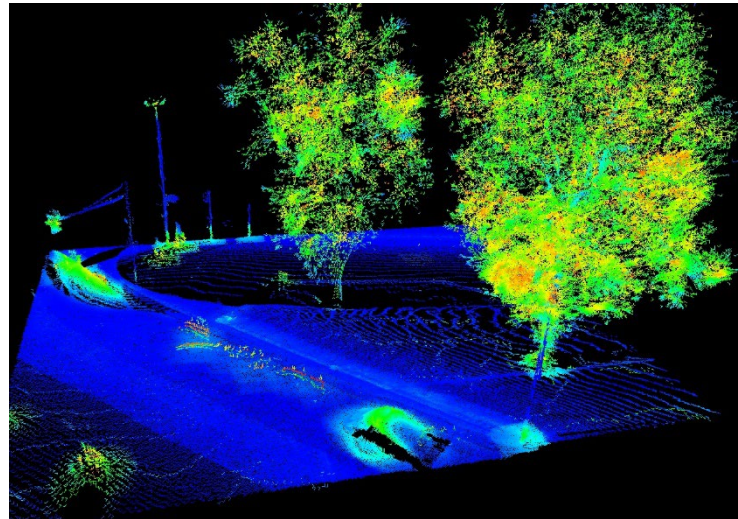
Trees are important objects in the cityscape, as they provide shadow, can keep the water and also are very attractive. From a technical point of view, trees can, however, also prevent GNSS rays from directly hitting the device, they can prevent a direct view to certain objects, e.g. road signs.

The task of this research project is to analyze Mobile Mapping point cloud data and classify trees, e.g. based on local features. Subsequently, the points classified as trees have to be stored in a map, so that they can be visualized easily in a GIS.

Different possibilities for representation should be investigated, e.g.

- Simple storage of points
- Heatmaps
- Detection of outlines of tree crowns
- Identification of tree stem
- Extraction of additional parameters, e.g. height of tree

The analysis should be done for a situation in summer (full vegetation) and in winter.



Tasks and time frame

1. Getting familiar with point cloud data
2. Developing algorithm for classification based on local features
3. Developing different approaches for mapping the trees
4. Document code in a Jupyter notebook
5. Write short documentation with description of approach, experiments and main findings (5 pages);

Resources

- ▶ Data

Requirements

- ▶ Programming skills (Python)
- ▶ Ability to work independently
- ▶ Knowledge of LiDAR processing (or strong willingness to learn it)

Contact person(s)

Prof. Monika Sester (E-Mail monika.sester@ikg.uni-hannover.de, Tel. 762-3588)

Prof. Claus Brenner (E-Mail: claus.brenner@ikg.uni-hannover.de, Tel. 762-5076)

Institute of Cartography und Geoinformatics, Appelstraße 9a, 30167 Hannover