

Bachelor Lab Project II: "Analysing LiDAR measurements via Machine Learning Technics"

Doppler LiDAR (Light Detection And Ranging) are laser-based remote sensing systems for wind speed measurements. Doppler LiDAR detect the wind velocity via the Doppler-effect of backscattered light from aerosol particles moving with the same speed and direction as the wind flow. In current wind energy related research, Doppler LiDAR have found a wider application onshore and offshore.

Scope

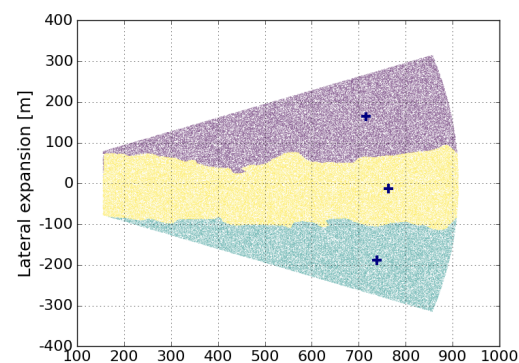
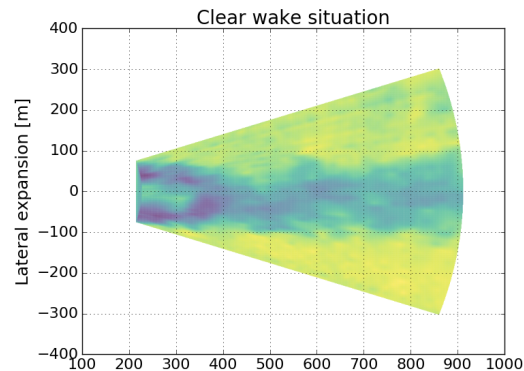
Within this project, the characteristics of LiDAR scans should be analysed using machine learning technics. Using classification or clustering algorithms characteristics of LiDAR scans are investigated. The project is suitable for a single person or a group of two.

Work steps

- Project planning
- Familiarisation with programming language (MATLAB/Python)
- Familiarisation with Machine learning technics
- Familiarisation with LiDAR data
- Implementation of algorithms
- Analysis of LiDAR scan characteristics

Aim/learning outcomes

- Basic understanding of a LiDAR
- Basic understanding of LiDAR data and its handling
- Insight on machine learning technics
- Insight on scientific research and project planning and management



Top: LiDAR scan of a wind turbine wake. The colour depicts the wind speed while the yellow-greenish colour stands for high wind speed and the blue colour for lower wind speeds. Bottom: LiDAR scan clustered with a mean shift algorithm. The crosses mark the position of the centroids.

Place	ForWind - Wind Energy Systems University of Oldenburg
Begin	Flexible
1st Supervisor	Janna Seifert +49 (0) 441 798 5035 janna.kristina.seifert@uol.de
2nd Supervisor	Jörge Schneemann +49 (0) 441 798 5066 j.schneemann@uol.de