

# CV01 Individual tree segmentation

## Background

As part of the Biodiversity Exploratories, a drone equipped with a LiDAR sensor was employed to survey 23 forest sites in Germany. Each site generated approximately 150 million 3D points. The primary objective of the survey is to extract single tree variables such as crown shape, horizontal biomass, tree height, and other 3D characteristics. The assignment of LiDAR points to individual trees is necessary to achieve this objective. Forest managers and modellers are particularly interested in tree crown variables as they can identify productive and healthy trees. In addition, forest modellers can establish relationships between crown characteristics and other tree variables, which is an important subject in remote sensing applications.

## Goal

- Individual tree segmentation from UAS derived LiDAR point clouds

## Tasks

- Review literature about semantic segmentation in point clouds e.g. PointNet
- Generating a training and independent test database
- (try to) train a model able to segment individual trees and (try to) classify the corresponding tree species
- Compute the accuracy against the background of spatial autocorrelation



Dr. Nils Nölke

nnoelke@gwdg.de

