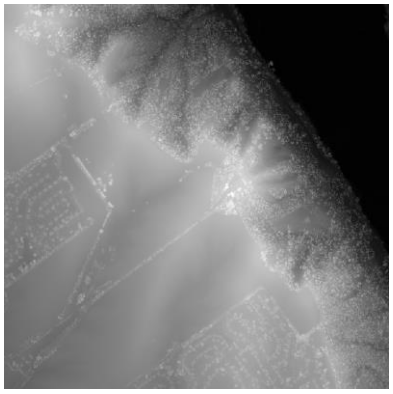
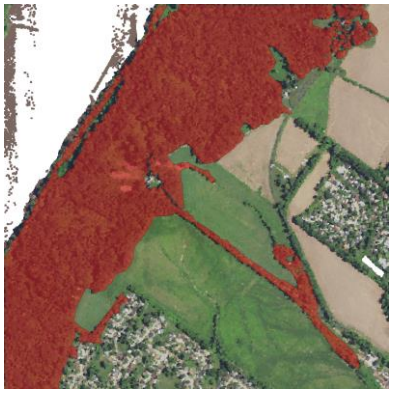
Machine Learning - Project Topic

In this project you will create a tree classifier using the given point cloud data (LAZ file) using Scikit-learn and what we learned in the class. You also have labels for tree class as a shape (.SHP) file and digital surface mode (DSM) as TIF file. Submit your project as a Jupyter Notebook file.

You can use the fields in the point cloud data LAZ file (*Intensity, Return Number, Number of Returns, Red, Green, Blue, Infrared*) but you can also compute your own features if you need. Start using given ground-truth for now, later I will give you better one.

- LAZ data
  https://drive.google.com/file/d/16q1dx56a79z3FLDAa_fmhwpN80KqcMgx/view?usp=sharing
- Digital Surface Model (DSM) data
  https://drive.google.com/file/d/16p_B6lr7OQTWuOLSYOKITlzQzzBPgByD/view?usp=sharing
- Shape data (ground-truth)
  https://drive.google.com/file/d/16qviLKUbE0MqzP1RtUbA3NnQEgailBT0/view?usp=sharing

Use *CloudCompare* and *QGIS* to investigate the data.
https://www.cloudcompare.org/
https://qgis.org/

Use the python libraries for accessing LAS, TIF, and Shape files.

https://laspy.readthedocs.io/	`pip install laspy`
https://geopandas.org/	`pip install geopandas`
https://shapely.readthedocs.io/	`pip install shapely`
https://rasterio.readthedocs.io/	`pip install rasterio`