

Master/Bachelor Thesis

Self-Supervised Learning for HI-RES Tree Cover and Tree Species Segmentation



Background: Using machine learning methods to classify very high-resolution satellite imagery requires a vast amount of training data. Collecting such data is an extremely time-consuming task and often only valuable for a specific problem. Self-supervised learning could enable a considerable reduction of required training data by learning generic features. Due to a lack in availability of large amounts of high-resolution imagery, self-supervised model pre-training is done on freely available Sentinel-2 imagery. Such a data set is for example available for the EarthNet2021 challenge (<https://www.earthnet.tech>).

Aim of this thesis is to test how well can model pre-trained on medium spatial resolution Sentinel-2 imagery (10m resolution) generalize for the segmentation of tree cover and tree classes in very high-resolution imagery (0.3m resolution).

Requirements:

Enthusiasm to work in the field of machine learning and forest remote sensing.
Basic skills in Python programming.

Further information: Based on the content of the topic, both bachelor's and master's theses in the fields of forestry and computer science are possible.

Contact

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