Course on Machine Learning in Earth Observation and Geography

The course is primarily aimed at MSc. and PhD. students, as well as early-stage researchers interested in applying Machine Learning in Earth Observation and Geography. The purpose is to provide students with new skills that can be used in solving geography problems. The students will gain theoretical principles of machine learning applied to geographic data and apply these to practical research tasks. The students will work on assigned machine learning problems, solve them in groups, and critically review the results.

CONTENT

1. Machine Learning landscape overview, applications in geography. Lab: Scikit-learn package introduction.
2. Fundamental ML algorithms. Model generalization. Lab: Running and tuning Decision Trees, Random Forests, and Artificial Neural Network models in Scikit-learn package.
3. Ensemble learning (bagging, stacking, boosting, early stopping). Lab: ensemble algorithm with early stopping.
4. Working with raster and vector geospatial data in Python. Lab: rasterio, geopandas.
5. Machine Learning project. Lab: end-to-end machine learning workflow.

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https://github.com/lbrodsky/ml_geography
https://drive.google.com/drive/folders/1HMuB7Vd1SrNJdDXwbZ2z4Yz9xHWgUvCi?usp=sharing

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