



NCEAS MONTHLY ROUNDTABLE

Wednesday, January 22nd, 2025, @ 12:00 pm

In Person on the 3rd Floor Lounge + [Zoom](#)

Adam Stewart

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Chair of Data Science in Earth Observation*

TorchGeo: Deep Learning With Geospatial Data

Remotely sensed geospatial data are critical for applications including precision agriculture, urban planning, disaster monitoring and response, and climate change research, among others. Deep learning methods are particularly promising for modeling many remote sensing tasks given the success of deep neural networks in similar computer vision tasks and the sheer volume of remotely sensed imagery available. However, the variance in data collection methods and handling of geospatial metadata make the application of deep learning methodology to remotely sensed data nontrivial. In this roundtable, I introduce TorchGeo, a Python library for integrating geospatial data into the PyTorch deep learning ecosystem.

TorchGeo provides data loaders for a variety of benchmark datasets, composable datasets for generic geospatial data sources, samplers for geospatial data, and transforms that work with multispectral imagery. TorchGeo is also the first library to provide pre-trained models for multispectral satellite imagery (e.g., models that use all bands from the Sentinel-2 satellites), allowing for advances in transfer learning on downstream remote sensing tasks with limited labeled data.

About the Speaker: Adam J. Stewart is a postdoctoral researcher at the Technical University of Munich in the Chair of Data Science in Earth Observation under the guidance of Prof. Xiaoxiang Zhu. His research interests lie at the intersection of machine learning and Earth science, especially remote sensing. He is the creator and lead developer of the popular TorchGeo library (<https://github.com/microsoft/torchgeo>), a PyTorch domain library for working with geospatial data and satellite imagery. He received his B.S. from the Department of Earth and Atmospheric Sciences at Cornell University and his Ph.D. from the Department of Computer Science at the University of Illinois Urbana-Champaign.

Questions, comments, or concerns?

Contact: roundtable-org@nceas.ucsb.edu