THERESA CHEN

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EDUCATION

University of Minnesota Sept. 2022 - Present
PhD Student in Computer Science

Carleton College 2018-2022
Magna Cum Laude; B.A. in Computer Science, B.A. in Environmental Studies

PUBLICATIONS

MiTREE: Multi-input Transformer Ecoregion Encoder for Species Distribution Modelling SIGSPATIAL GeoAI 2024

PROJECTS AND RESEARCH

CEDAR: Carbon Estimation with Deep Learning [*ongoing*]
Funded by AI-CLIMATE Initiative, in collaboration with Chad Babcock

- This project focuses on leveraging machine learning to enhance the estimation of carbon in forests. Data inputs originate from multiple modalities, including LIDAR point clouds, satellite imagery, and environmental covariates. The primary objective is to develop machine learning approaches that effectively combine diverse, multi-resolution geographic data sources.

Peatlands Permafrost Mapping [*ongoing*]
Funded by AI-CLIMATE Initiative, in collaboration with Nic Jelinski

- This project employs machine learning models to map and predict the extent and characteristics of permafrost and peatlands across the United States. The research focus is on multimodal modeling with geographic data.

Automatically Georeferencing Geologic Maps [*ongoing*]
Funded by DARPA, USGS

- Geologic maps often do not contain digital information about the exact location of the map on the surface of the Earth. By combining text and computer vision methods, we are developing a system that can automatically georeference geologic maps by matching them to their underlying base topographic map.

Utilizing Machine Learning for Species Distribution Modeling [*finished*]
Research in collaboration with University of Minnesota Ecology

- In this project, I developed representations for ecosystems from multimodal, multi-resolution publicly available data in order to ultimately predict the distribution of bird species.

Using Deep Neural Networks to Generate Representations of Urban Neighborhoods [*finished*]
Research in collaboration with LASI-DAD

- Understanding urban environments by generating indicators, such as walkability or greenness, requires us to understand how the city is split up; i.e. what the neighborhoods are. By utilizing street view images and publicly available data, such as the human settlement layer, we automatically clustered urban areas into likely neighborhoods using self-supervised machine learning methods.

SELECTED SERVICE

Reviewer
ACM SIGSPATIAL (2023, 2024), W3PHIAI (2023), CV4EO @ WCCV (2024)

Mentorship to Women and POC in Computer Science
Edited applications for women and people of color applying for graduate school at University of Minnesota.

AWARDS AND HONORS

College of Science and Engineering 3-Year Graduate Fellowship University of Minnesota, 2022
Distinguished Senior Theses: Computer Science and Environmental Studies Carleton College, 2022
National Merit Scholar Carleton College, 2018

SKILLS

Programming: Python (Pytorch, Tensorflow, Numpy, Pandas/GeoPandas), Java, C, R
Technologies: LaTex, Git, ArcGIS, QGIS