WEIMING HU

Ph.D. Candidate Specialized in GIScience, AI, and HPC

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EDUCATION

The Pennsylvania State University
Ph.D. in Geography with Minor in Computer Science

📅 Sep 2016 – July 2021 (Expected)   📍 Pennsylvania, US

The Pennsylvania State University
M.Sc. in Geography

📅 Sep 2016 – June 2018   📍 Pennsylvania, US

Wuhan University
B.Eng. in Remote Sensing and Geoinformatics

📅 Sep 2012 – June 2016   📍 Hubei, CN

RESEARCH PROJECTS

Arctic in Hot Water
Quantifying Maritime Transport under Declining Sea Ice and Increasing Geopolitical Tension

📅 September 2020 – Present

- Sponsor: Center for Security Research and Education, PSU.
- Used machine learning to quantify linkages between changing sea ice coverage and maritime traffic in the Arctic Ocean.
- Assessed recent and future changes in Arctic maritime traffic with Earth system models.
- Implemented a machine learning algorithm for maritime traffic simulation and forecast.

Parallel Analog Ensemble
The Power of Weather Analogs

📅 October 2017 – Present

- Sponsor: U.S. Army Geospatial Center
- Developed an efficient and scalable implementation of the Analog Ensemble technique with the deployment on supercomputers.
- Packaged research code as open-source tools for the broader scientific community, available at
  `https://weiming-hu.github.io/AnalogsEnsemble/`

Power of Many
Co-Design of Scalable Cyberinfrastructure for Complex Ensemble Simulations

📅 October 2017 – October 2020

- Sponsor: National Science Foundation of U.S.A.
- Co-developed ensemble simulation workflows for solar photovoltaic energy production with the RADICAL team at Rutgers University.
- Studied the predictability and uncertainty quantification of solar photovoltaic energy production forecasts with ensemble simulations.
- Carried out a large scale assessment of the photovoltaic energy production over the continental US with high spatial resolution.

RESEARCH KEYWORDS

Rare Events   Renewable Energy   Uncertainty Quantification   Geospatial   Machine Learning   Artificial Intelligence   High Performance Computing

TECHNICAL SKILLS

C++   R   Python   Linux   ArcGIS   HTML   OpenMP   MPI

TEACHING EXPERIENCES

Instructor
- GEOG 365, Introduction to GIS Programming
  Fall 2019
- GEOG 160 WEB, Mapping Our Changing World
  Spring 2020

Guest Lecturer
- EMSC 100S, EMS First Year Seminar   Fall 2020

Mentor
- 1 undergraduate student from Meteorology
- 2 undergraduate students from Geography
- 1 master student from Geography

ACADEMIC SERVICES

- Program chair of the Software Engineering Assembly's Improving Scientific Software Conference and Tutorials   2020, 2021
- Liaison of the Outstanding Student Awards program at AGU Fall Meetings   2018, 2019
- Graduate student representative in the Department of Geography   2017

ACCOMPLISHMENTS

- Academic Enrichment Award from the Knight Fund in the Department of Geography.   2020
- Free Software Foundation Scholarship to attend LibrePlanet 2020, Boston, MA.   2020
- 2019 Open Science Grid User School Scholarship at Madison, WI.   2019
- Third place in the Penn State Graduate Exhibition poster competition, Physical Sciences & Mathematics section.   2019
- Sustainable Energy Fund for EnergyPath.   2018
- 12th Annual Graduate Climate Conference Scholarship.   2018
- First place in 2018 Institute of CyberScience Symposium Student Poster Competition.   2018