

Chia-Yu Hsu

chiayuhsu@asu.edu | (213) 446-7800 | www.linkedin.com/in/chiayu-hsu/

EDUCATION

M.S. in Computer Science, Arizona State University, Tempe, AZ.

B.S. in Electrical Engineering, National Tsing Hua University, Hsinchu, Taiwan.

EXPERIENCE

School of Geographical Science & Urban Planning, Arizona State University.

Assistant Research Professional. Mentor: Wenwen Li

Jan. 2022 –

Early Positions: Associate Scientific Software Engineer, Research

June 2017 – July 2021

Assistant, Graduate Intern and Student Worker.

- Research on geospatial applications and solutions utilizing computer vision and emerging deep learning algorithms, especially with geo-specific information integration.
- Exploration on recent breakthroughs in machine learning and high-performance computing to achieve scalable processing, reveal complex hidden patterns and intelligent analysis of massive geospatial data.
- Development of interpretability methods for deep nets to reveal decision process and connect feature maps with scientist-recognizable geomorphological features.

School of Computing and AI, Arizona State University.

Research Assistant. Mentor: Yezhou Yang

May 2018 – Sept. 2018

- Research on intelligent robots by exploring human action understanding from visual input, grounding them by natural language as well as high-level reasoning.

Institute of Information Science, Academia Sinica.

Research Assistant. Mentor: Tyng-Luh Liu

Sept. 2015 – May 2016

- Research on deep learning based human facial expression and emotion recognition, especially leveraging connectionist models to capture temporal information for sequential data prediction.

PUBLICATION

Journal Papers

Harnessing Geospatial Artificial Intelligence and Deep Learning for Landslide Inventory Mapping: Advances, Challenges, and Emerging Directions

Xiao Chen, Wenwen Li, Chia-Yu Hsu, Samantha T Arundel, Bretwood Higman. Remote Sensing, 2025.

A multi-scale vision transformer-based multimodal GeoAI model for mapping arctic permafrost thaw

Wenwen Li, Chia-Yu Hsu, Sizhe Wang, Zhining Gu, Yili Yang, Brendan M Rogers, Anna Liljedahl. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2025.

STEPNet: A Spatial and Temporal Encoding Pipeline to handle Temporal Heterogeneity in Climate Modeling using AI: A Use Case of Sea Ice Forecasting

Sizhe Wang, Wenwen Li, and Chia-Yu Hsu. IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, 2025.

GeoAI Reproducibility and Replicability: a computational and spatial perspective

Wenwen Li, Chia-Yu Hsu, Sizhe Wang, and Peter Kedron. Annals of the American Association of Geographers, 2024.

Advancing Arctic sea ice remote sensing with AI and deep learning: Opportunities and challenges

Wenwen Li, Chia-Yu Hsu, Marco Tedesco. Remote Sensing, 2024.

Geospatial foundation models for image analysis: Evaluating and enhancing NASA-IBM Prithvi's domain adaptability

Chia-Yu Hsu, Wenwen Li, and Sizhe Wang. International Journal of Geographical Information Science, 2024.

Segment anything model can not segment anything: Assessing ai foundation model's generalizability in permafrost mapping

Wenwen Li, Chia-Yu Hsu, Sizhe Wang, Yezhou Yang, Hyunho Lee, Anna Liljedahl, Chandi Witharana, Yili Yang, Brendan M Rogers, Samantha T Arundel, Matthew B Jones, Kenton McHenry, Patricia Solis. Remote Sensing, 2024.

Explainable GeoAI: can saliency maps help interpret artificial intelligence's learning process? An empirical study on natural feature detection

Chia-Yu Hsu and Wenwen Li. International Journal of Geographical Information Science, 2023.

GeoImageNet: a multi-source natural feature benchmark dataset for GeoAI and supervised machine learning

Wenwen Li, Sizhe Wang, Samantha T Arundel, and Chia-Yu Hsu. GEOINFORMATICA, 2023.

GeoAI for Large-Scale Image Analysis and Machine Vision: Recent Progress of Artificial Intelligence in Geography

Wenwen Li and Chia-Yu Hsu. ISPRS International Journal of Geo-Information, 2022.

Knowledge-Driven GeoAI: Integrating Spatial Knowledge into Multi-Scale Deep Learning for Mars Crater Detection

Chia-Yu Hsu, Wenwen Li and Sizhe Wang. Remote Sensing, 2021.

Tobler's First Law in GeoAI: A Spatially Explicit Deep Learning Model for Terrain Feature Detection under Weak Supervision

Wenwen Li, Chia-Yu Hsu and Maosheng Hu. Annals of the American Association of Geographers, 2021.

Automated terrain feature identification from remote sensing imagery: a deep learning approach

Wenwen Li and Chia-Yu Hsu. International Journal of Geographical Information Science, 2020.

Conference Papers

Real-time GeoAI for high-resolution mapping and segmentation of arctic permafrost features: the case of ice-wedge polygons

Wenwen Li, Chia-Yu Hsu, Sizhe Wang, Chandi Witharana, and Anna Liljedahl. Proceedings of the 5th ACM SIGSPATIAL International Workshop on AI for Geographic Knowledge Discovery, 2022.

Learning from Counting: Leveraging Temporal Classification for Weakly Supervised Object Localization and Detection.

Chia-Yu Hsu and Wenwen Li. 31st British Machine Vision Conference (BMVC), 2020.

Oral Presentation

Recognizing terrain features on terrestrial surface using a deep learning model: An example with crater detection.

Wenwen Li, Bin Zhou, Chia-Yu Hsu, Yixing Li, and Fengbo Ren. Proceedings of the 1st Workshop on Artificial Intelligence and Deep Learning for Geographic Knowledge Discovery, 2017.

ACADEMIC SERVICES

Collaborator

- GeoAI Martian Challenge. [Website](#) Jan. 2022 – April 2023
A Mars crater detection challenge and benchmark for the geospatial community.
- Cyber2A. [Website](#) May 2023 –
A network aims to help Arctic researchers apply and create the most suitable AI models for their work.

Program Committee

- DIGITAL 2022. [Website](#)
- DIGITAL 2023. [Website](#)
- Urban AI 2023. [Website](#)

Guest Lecturer

- GIS 494/591 Data Mining and Data-Driven Geography, Arizona State University. Spring 2021
Tutorial on PyTorch: A deep Learning Framework. [Slide](#)
- GIS 521 Geographic Information Science Programming, Arizona State University. Spring 2022
Tutorial on Deep Learning. [Slide](#)

Reviewer

- Applied Sciences
- DIGITAL

- Drones
- Electronics
- European Journal of Remote Sensing
- Geoinformatica
- Geoscience and Remote Sensing Letters
- Image Science Journal
- International Journal of Digital Earth
- International Journal of Geographical Information Science
- ISPRS Journal of Photogrammetry and Remote Sensing
- Journal of Applied Remote Sensing
- Journal of Marine Science
- Remote Sensing
- Science of Remote Sensing
- The Platform for Advanced Scientific Computing