Pengyu Chen

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RESEARCH INTERESTS

Applying deep learning and spatial statistics to analyze human and environmental spatial behavior; leveraging AI in remote sensing for environmental monitoring; integrating computer vision and multimodal data analysis for urban sensing and planning.

EDUCATION

Virginia Tech	Geospatial and Environmental Analysis	Ph.D., 2026–present
University of South Carolina	Geography	M.S., 2024–2026
Wuhan University of Technology	Geographic Information Science	B.S., 2020–2024
Wuhan University	Visiting Student	2023–2024

PUBLICATIONS

Refereed Journal Articles

[1] **Pengyu Chen**, Xiuchuan Liu, Sicheng Wang, Ma, T. F., Xunan Yang, Varun Goel. Modelling state-level crash fatalities by a network-constrained inhomogeneous poisson point process. *Applied Geography*, 114, 104053, 2026. [DOI]

[2] **Pengyu Chen**, Fangzheng Lyu, Sicheng Wang, Cuizhen Wang. FG-TreeSeg: Flow-Guided Tree Crown Segmentation without Instance Annotations. *IEEE Geoscience and Remote Sensing Letters*, 2026. [DOI]

[3] **Pengyu Chen**, Teng Fei, John A. Kupfer, Yunyan Du, Jiawei Yi, Yi Li. Intelligent bear deterrence system based on computer vision: Reducing human–bear conflicts in remote areas. *Ursus*, 37:e6, 1–11, 2026. [DOI]

[4] **Pengyu Chen**, Xiao Huang, Teng Fei, Sicheng Wang. Cross-Modal Urban Sensing: Evaluating Sound–Vision Alignment Across Street-Level and Aerial Imagery. *Transactions in GIS*, 30(2), e70246, 2026. [DOI]

[5] **Pengyu Chen**, Sicheng Wang, Cuizhen Wang, Senrong Wang, Beiao Huang, Lu Huang, Zhe Zang. A GAN-Enhanced Deep Learning Framework for Rooftop Detection from Historical Aerial Imagery. *International Journal of Remote Sensing* (Cover Article), 2025. [DOI]

[6] Yanbing Chen, Jonathan K. Nelson, Bing Zhou, Ryan Zhenqi Zhou, Shan Ye, Haokun Liu, Zhining Gu, Armita Kar, Hoeyun Kwon, **Pengyu Chen**. Where are GIScience faculty hired from? Analyzing faculty mobility and research themes through hiring networks. *Cartography and Geographic Information Science*, 2025, 1–25. [DOI]

[7] Xinyue Gu, **Pengyu Chen**, Chao Fan. Socio-demographic inequalities in the impacts of extreme temperatures on population mobility. *Journal of Transport Geography*, 114, 103755, 2024. [DOI]

Manuscripts Under Review

[1] **Pengyu Chen**, Sicheng Wang, Fangzheng Lyu, John A. Kupfer, Cuizhen Wang, Xiao Huang. VLM4S: A Vision-Language Model Framework for Geographically and Environmentally Informed Soundscape Assessment. Under review at *Transactions in GIS*, 2026.

Conference Papers

[1] **Pengyu Chen**, Xiuchuan Liu, Sicheng Wang, Xunan Yang, Ting Fung, Varun Goel. Spatial Model of Crash Fatalities by Examining Effects of Infrastructural Factors: A Case Study on South Carolina. *Transportation Research Board 105th Annual Meeting (TRBAM 2026)*, Washington, DC, January 2026. Oral Presentation. (Abstract #: TRBAM-26-00320)

[2] Ruixiang Cheng, Xinyu Wang, **Pengyu Chen**, Jiaxin Liu. Multi-Agent Path Optimization Based on STA* Algorithm. *ACM Conference Proceedings*, 2022. [Link]

[3] **Pengyu Chen**, Tengyuan Liang, Zibin Wu. Impacts of Ethiopia Dam on Vegetation and Water and Ecological Countermeasures. *IOP Conference Series: Earth and Environmental Science*, 2022. [Link]

PRESENTATIONS

[1] *AAG 2026*, San Francisco, CA, March 2026. A Vision-Language Model–Based Framework for Context Aware Soundscape Assessment.

[2] *TRBAM 2026*, Washington, DC, January 2026. Spatial Model of Crash Fatalities by Examining Effects of Infrastructural Factors: A Case Study on South Carolina.

[3] *AAG 2025*, Detroit, MI, April 2025. Sound, Space, and Sentiment: Understanding the Association of Urban Soundscapes and Perceptions.

[4] *SCARC Fall 2025*, Columbia, SC, 2025. High-Resolution Deep Learning to Map Tree Canopy Changes in Disadvantaged Neighborhoods, City of Columbia.

RESEARCH EXPERIENCE

University of South Carolina — Columbia, SC
Research Assistant — Summer 2025

- Funded by City of Columbia to train canopy segmentation model on 4 years of NAIP remote sensing imagery
- Analysis of canopy loss/gain across neighborhoods in Columbia
- Supervisors: Dr. Cuizhen Wang, Dr. Kirstin Dow

Wuhan University — Wuhan, China
Visiting Student & Research Assistant — 2023–2024

- Trained YOLO-based object detection algorithm and deployed model compression to K210 microcontroller
- Application: Detecting Tibetan brown bears and using K210 to drive water pumps and bear spray
- Supervisor: Dr. Teng Fei

Harvard University Spatial Data Lab — Remote
Research Intern — 2024

- Spatial Data Laboratory (SDL) Internship Program
- Geographic Big Data Analytics, Spatio-Temporal Data Mining
- Supervisor: Dr. Yuhang Pan, Peking University

Clemson University — Remote
Research Intern — 2022–2023

- Data processing, data cleaning, and curve generation using MATLAB and Python
- Published paper in the Journal of Transport Geography
- Supervisor: Dr. Chao Fan

TEACHING EXPERIENCE

Graduate Lab Instructor, Landform Geography (GEOG 201) — University of South Carolina
Independent Lab Sections — 2024–2026

- Spring 2026: Overall Instructor Effectiveness Score: **5.00 / 5.00**
- Fall 2025: Overall Instructor Effectiveness Score: **4.67 / 5.00**
- Fall 2024: Overall Instructor Effectiveness Score: **4.44 / 5.00**

PROFESSIONAL EXPERIENCE

Xuzhou Construction Machinery Group (XCMG) — Xuzhou, China
Algorithm Intern — 2022

- Developed digital roads using Leica software and presented results with ArcGIS
- Implemented curve fitting algorithms to support digital road modeling applications
- Supervisor: Mr. Bowen Wu

LEADERSHIP EXPERIENCE

GISphere — Remote
Development Team Leader, Council Member — 2022–Present

- Develop backend using Django framework with Django REST Framework APIs and MySQL database; frontend using Vue and Mapbox
- Manage user demand pool, leading backend and frontend development
- Website: https://gisphere.info/

SCHOLARSHIPS & AWARDS

2026	AAG 2026 CISG Robert Raskin Student Competition Second Place
2024–Present	Graduate Instructor Assistant Scholarship, University of South Carolina
2025	AAG Graduate Student Travel Grant
2022	Huazhong Cup Mathematical Modeling Competition, Second Prize
2022	MathorCup Mathematical Modeling Competition, Third Prize
2021	Huazhong Cup Mathematical Modeling Competition, Third Prize

TECHNICAL SKILLS

Programming	Python, C#
Software	MySQL, ArcGIS, QGIS, MATLAB

LANGUAGES

English (TOEFL iBT 102), Chinese

SERVICE

Peer Review	Transactions in GIS, Computational Urban Science
Volunteer	Board Member of GISphere