Pengyu Chen

Columbia, SC, USA pengyuc@email.sc.edu pengyu-gis.github.io Pengyu-gis

Research Insterests

- Applying deep learning and spatial statistics to analyze human and environmental spatial behavior.
- Leveraging AI in remote sensing for environmental monitoring and conservation efforts.
- Integrating computer vision and multimodal data analysis for urban sensing and planning.

Education

M.S. **University of South Carolina**, Geography — Sept 2024 – May 2026
- Advisor: Dr. Sicheng Wang || TA scholarship

B.S. **Wuhan University of Technology**, Geographic Information Science — Sept 2020 – June 2024
- Advisor: Dr. Wei Cui || Chair of GIS Association

Wuhan University, Geographic Information Science — July 2023 – Aug 2024
- Visiting Student. Advisor: Dr. Teng Fei

Publications

Where are GIScience Faculty Hired from? Analyzing Faculty Mobility and Research Themes Through Hiring Networks — Aug 2025
Yanbing Chen, Jonathan Nelson, Bing Zhou, Ryan Zhenqi Zhou, Shan Ye, Haokun Liu, Zhining Gu, Armita Kar, Hoeyun Kwon, **Pengyu Chen**, Maoran Sun, Yuhao Kang
https://doi.org/10.1080/15230406.2025.25675643 (Cartography and Geographic Information Science)

A GAN-Enhanced Deep Learning Framework for Rooftop Detection from Historical Aerial Imagery — July 2025
Pengyu Chen, Sicheng Wang, Chengyang Wang, Senrong Wang, Beiao Huang, Lu Huang, Zhe Zang
https://doi.org/10.1080/01431161.2025.2534994 (International Journal of Remote Sensing (Cover Article))

Cross-Modal Urban Sensing: Evaluating Sound-Vision Alignment Across Street-Level and Aerial Imagery — June 2025
Pengyu Chen, Xiao Huang, Teng Fei, Sicheng Wang
https://doi.org/10.48550/arXiv.2506.03388

Intelligent Bear Prevention System Based on Computer Vision-An Approach to Reduce Human-Bear Conflicts in the Tibetan Plateau Area, China — Mar 2025
Pengyu Chen, Teng Fei, John A. Kupfer, Yunyan Du, Jiawei Yi, Yi Li
https://doi.org/10.48550/arXiv.2503.23178 (Ursus (Accepted))

Socio-demographic inequalities in the impacts of extreme temperatures on population mobility — June 2023
Xinyue Gu, **Pengyu Chen**, Chao Fan
https://doi.org/10.1016/j.jtrangeo.2023.103755 (Journal of Transport Geography)

Multi-Agent Path Optimization Based on STA* Algorithm — Nov 2022
Ruixiang Cheng, Xinyu Wang, **Pengyu Chen**, Jiaxin Liu
https://doi.org/10.1145/3582935.3583037

Impacts of Ethiopia Dam on Vegetation and Water and Ecological Countermeasures — Nov 2022
Pengyu Chen, Tengyuan Liang, Zibin Wu
https://doi.org/10.1088/1755-1315/1011/1/012044 (IOP Conference Series: Earth and Environmental Science)

Ongoing Projects

Spatial Model of Crash Fatalities by Examining Effects of Infrastructural Factors
Co-first author | Accepted by Transportation Research Board(TRB) Conference | Oral Presentation

Deep Learning in the Urban Forest: High-Resolution Canopy Change Detection in Columbia, SC (2005-2023)
First author

Research Experience

University of South Carolina, Research Assistant — Columbia, South Carolina
July 2025 – Aug 2025
- This project is funded by City of Columbia.
- Training a canopy segmentation model of 4 years NAIP remote sensing imagery.
- Analysis canopy loss/gain across each neighborhoods in Columbia.
- Supervisor: Dr. Cuizhen Wang, Dr. Kirstin Dow

Wuhan University, Visiting Student & Research Assistant — Wuhan, China
July 2023 – July 2024
- Trained YOLO-based object detection algorithm and deployed model compression to the 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, Research Intern — Remote
May 2024 – Oct 2024
- Spatial Data Laboratory (SDL) Internship Program
- Geographic Big Data Analytics, Spatio-Temporal Data Mining
- Supervisor: Dr. Yuhang Pan, Peking University

Clemson University, Research Intern — Remote
Sept 2022 – Jan 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

Landform Geography (GEOG 201), Graduate Lab Instructor, 2024 Fall

Landform Geography (GEOG 201), Graduate Lab Instructor, 2025 Spring

Landform Geography (GEOG 201), Graduate Lab Instructor, 2025 Fall

Professional Experience

Xuzhou Construction Machinery Group (XCMG) - Road Machinery Division, Algorithm Intern — Xuzhou, China
Jan 2022 – Mar 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

Leading Experience

GISinfo (Subprojects under GISphere), Development Team Leader, Council member — Feb 2022 – present
- Develop backend using Django framework with Django REST Framework APIs and MySQL database. Develop frontend using VUE and Maptable.
- Manage user demand pool, leading backend and frontend development.
- website: https://gisphere.info/

Scholarship & Awards

Graduate Instructor Assistant Scholarship (start from 2024 fall)

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

Technologies

Programming Languages: Python, C#

Software: MySQL, ArcGIS, QGIS, MATLAB

Languages: English (TOEFL iBT 102), Chinese(First language)

Services

Peer Review for Academic Journals: Computational Urban Science

Voluntary Service: Board members of GISphere