

YIFAN YANG

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EDUCATION

Texas A&M University

Ph.D. Student, Geography (GIScience) — GPA 3.80/4

Advisor: Dr. Lei Zou

2024 – present

College Station, TX, USA

University of Southern California

Master of Science, Spatial Data Science — GPA 3.96/4

Advisors: Dr. John P. Wilson and Dr. Siqin Wang

2022 – 2024

Los Angeles, CA, USA

Hainan University

Bachelor of Engineering, Software Engineering — Average score 87.4/100

Advisors: Dr. Jieren Cheng and Dr. Qi Qi

2018 – 2022

Haikou, China

RESEARCH INTERESTS

Geographic Information Science (GIScience) · Geospatial Artificial Intelligence (GeoAI) · Cartography · Spatial Data Science · Autonomous GeoAI · Generative AI · Multimodal AI · Disaster Resilience

Vision: To transcend the boundaries of screens and make the real world our playground of intelligence — where AI, space, and humanity coexist and co-create.

CURRENT PROJECTS

Sat2Street-DisasterGen — Satellite-to-Street View Synthesis for Post-Disaster Assessment

[GitHub](#)

Developed a multimodal generative framework for satellite-to-street view synthesis under post-disaster scenarios. The system benchmarks cross-view image generation strategies that integrate diffusion models, ControlNet, and VLM-guided semantic conditioning to synthesize realistic street-view imagery from post-disaster satellite imagery.

- Designed a unified evaluation framework ensuring consistent satellite inputs, data splits, and protocols across generative methods
- Implemented multiple cross-view generation pipelines, including Pix2Pix (cGAN), SD1.5 + ControlNet, VLM-guided synthesis, and Disaster-MoE (Mixture-of-Experts)
- Built a multi-stage LoRA training pipeline for damage-severity-aware generation (Mild / Moderate / Severe)
- Evaluated outputs using pixel-level metrics (FID, SSIM, LPIPS), semantic consistency (ResNet-based classification), and VLM perceptual scoring
- Developed reproducible dataset structure, inference scripts, and evaluation modules for controlled benchmarking

RAPID — A Reproducible Multi-Agent Pipeline for Interpretable Disaster Damage Assessment from Satellite and Street-View Imagery

[GitHub](#)

Developed an autonomous multi-agent GeoAI framework for hyperlocal, interpretable, and near-real-time disaster damage assessment. The system orchestrates multiple specialized agents leveraging vision-language foundation models to perform cross-view perception, damage recognition, reasoning, and automated report generation without task-specific retraining.

- Designed a modular multi-agent architecture, including Disaster Perception, Image Restoration, Damage Recognition, and Disaster Reasoning agents
- Integrated multimodal inputs: satellite imagery, street-view imagery, textual cues, and temporal change signals
- Implemented agent-based orchestration for zero-/few-shot disaster analysis using VLMs (e.g., GPT, Gemini)
- Enabled cross-view semantic alignment and causal reasoning for damage assessment and recovery recommendation
- Built an interpretable evaluation and reporting pipeline for structured disaster intelligence outputs

DamageArbiter — CLIP-Enhanced Multimodal Framework for Hurricane Damage Assessment

[GitHub](#)

Developed a CLIP-enhanced multimodal arbitration framework for hyperlocal hurricane damage assessment using bi-temporal street-view imagery. The system integrates vision-language models (e.g., CLIP) with deep vision backbones (e.g., ViT-B/16) to improve the robustness of damage classification under real-world post-disaster uncertainty.

- Designed a multimodal arbitration mechanism to reconcile conflicting visual and semantic signals

- Implemented image classification pipelines using ViT-B/16 and transformer-based architectures
- Evaluated performance on hurricane street-view datasets with precision, recall, F1, and cross-validation
- Built a reproducible codebase, including dataset structure, model training scripts, and figure generation

BiTemporal-StreetView — Hyperlocal Disaster Assessment via Bi-Temporal Street-View Imagery [GitHub](#)

Developed a bi-temporal street-view image analysis framework for hyperlocal disaster damage assessment using pre- and post-disaster imagery. The system employs dual-channel architectures with pre-trained vision backbones (Swin Transformer, ConvNeXt) to improve classification accuracy and the interpretability of damage-severity estimation.

- Designed a dual-channel fusion architecture for comparative reasoning between pre- and post-disaster imagery
- Constructed a dataset of 2,249 labeled street-view image pairs with fine-grained severity annotations
- Achieved performance improvement from 66.14% (post-only) to 77.11% (bi-temporal) classification accuracy
- Applied Grad-CAM visualization to demonstrate enhanced spatial attention using pre-disaster inputs
- Evaluated multiple fusion strategies (cross-attention, weighted fusion, Siamese difference)
- Enabled fine-grained damage mapping for climate-resilient urban planning

Industry engagement: The research is promoted by **Mosaic — Geospatial Imaging Leaders** (Prague, Czech Republic), highlighting its relevance to 360° street-level surveying, urban mapping, and disaster-intelligence applications.

[\[feature article\]](#)

PROFESSIONAL EXPERIENCE

Graduate Research Assistant, Texas A&M University

Aug 2024 – Present, TX

- Conduct research on GeoAI, multimodal disaster assessment, and spatial intelligence using remote sensing and street-view imagery.
- Develop deep learning pipelines (CLIP, BLIP, ViT, ConvNeXt, Swin, LLM-based reasoning) for bi-temporal disaster perception and geospatial representation.
- Build geospatial databases, run spatial analysis (PostGIS, ArcGIS Pro), and implement Python ML workflows for classification, localization, and explainability (Grad-CAM, semantic probing).

Research Intern, Spatial Data Lab, Harvard University

Mar 2025 – Aug 2025, Remote

- Conducted research on wildfire modeling and Autonomous GeoAI, focusing on Los Angeles wildfire dynamics using multimodal geospatial data (satellite imagery, fire perimeters, VIIRS/GOES data, and weather layers).
- Developed RL- and POMDP-based frameworks to simulate wildfire spread and evaluate autonomous decision-making strategies for response, resource allocation, and risk-aware planning.

Graduate Teaching Assistant, Texas A&M University

Aug 2024 – Dec 2024, TX

- Assisted in teaching Cartography (GEOG/GEOS course), including weekly labs, visualization exercises, and map design principles.
- Guided students in applying GIScience concepts, cartographic design, spatial thinking, and geovisualization techniques using ArcGIS Pro and related tools.

Student Worker (Graduate Research), University of Southern California

Sept 2023 – May 2024, CA

- Conducted research on urban tree shade modeling to evaluate microclimate impacts and heat mitigation benefits across Los Angeles neighborhoods.
- Built 3D urban environment models in ArcGIS Pro using building footprints, tree canopy data, LiDAR, and DSM/DEM layers.
- Performed sun-shade and solar radiation analysis to quantify shading patterns, assess thermal comfort variation, and support urban greening strategies.

Data Engineering and AI Model Fine-tuning, Vitality AI

Feb 2023 – May 2023, Remote

- Fine-tuned Stable Diffusion models using DreamBooth for personalized pet-style image generation, including embedding extraction, class/instance image balancing, and training with LoRA and prior-preservation loss to capture unique style features.
- Prepared and curated training datasets, performed image preprocessing (cropping, normalization, augmentations), optimized model configurations (learning rate, steps, scheduler, batch size).
- Developed Python scripts and automated data pipelines for dataset preparation, model training, and inference deployment; integrated workflows using PyTorch, HuggingFace Diffusers, and custom training utilities to support AI product prototyping and internal model experimentation.

PUBLICATIONS

Google Scholar Page — Total citations: 382 · *h*-index: 6 · *i10*-index: 5

Publications as the First Author

Journal Articles.

- [1] Yang, Y., Zou, L., Zhou, B., Li, D., Lin, B., Abedin, J., & Yang, M. (2025). Hyperlocal disaster damage assessment using bi-temporal street-view imagery and pre-trained vision models. *Computers, Environment and Urban Systems*, 121, 102335.
- [2] Yang, Y., Wang, S., Li, D., Sun, S., & Wu, Q. (2024). GeoLocator: A Location-Integrated Large Multimodal Model (LMM) for Inferring Geo-Privacy. *Applied Sciences*, 14(16), 7091.

Book Chapters.

- [1] Yang, Y., & Borrelli, D. (2025). Object detection and segmentation of trees using Text SAM in ArcGIS Online. In D. M. Ruddell & D. Ter-Ghazaryan (Eds.), *Security First: Geospatial Workflows for a Safe and Equitable World* (pp. 113–122). Redlands, CA: Esri Press.

Conference Proceedings.

- [1] Yang, Y., & Zou, L. (2025). Perceiving Multidimensional Disaster Damages from Street-View Images Using Visual-Language Models. *Abstracts of the ICA*, 10, 310. **Best Student Paper Award**
- [2] Yang, Y., Zou, L., & Jepson, W. (2026). Satellite-to-Street: Synthesizing Post-Disaster Views from Satellite Imagery via Generative Vision Models. *ArXiv*. [arXiv:2603.20697](https://arxiv.org/abs/2603.20697). Accepted by the 2026 IEEE International Geoscience and Remote Sensing Symposium.

Preprints.

- [1] Yang, Y., Gong, W., Zhang, K., Zou, L., Tu, Z., Li, H., Li, Z., & Ye, X. (2026). RAPID: A Reproducible Multi-Agent Pipeline for Interpretable Disaster Damage Assessment from Satellite and Street-View Imagery. *ArXiv*. [arXiv:2606.21819](https://arxiv.org/abs/2606.21819)
- [2] Yang, Y., Zou, L., Gong, W., Fu, K., Li, Z., Wang, S., ... & Tian, H. (2026). DamageArbiter: A CLIP-Enhanced Multimodal Arbitration Framework for Hurricane Damage Assessment from Street-View Imagery. *arXiv preprint arXiv:2603.14837*.

Publications as a Co-Author

Journal Articles.

- [1] Wang, S., Liu, H., Wu, C. Y., Huang, X., Wang, R., **Yang, Y.**, Corcoran, J., Lai, S., Xia, X., & Liu, Y. (2026). The Boiling Frog Effect: Global Warming Delays Emotional Impacts of Air Pollution in Warmer Climates. *Journal of Hazardous Materials*, 142440. [doi:10.1016/j.jhazmat.2026.142440](https://doi.org/10.1016/j.jhazmat.2026.142440)
- [2] Li, Z., Li, H., **Yang, Y.**, Wang, S., & Zhu, Y. (2026). Integrating earth observation data into the tri-environmental evaluation of the economic cost of natural disasters: A case study of 2025 LA wildfire. *International Journal of Applied Earth Observation and Geoinformation*, 150, 105342. [doi:10.1016/j.jag.2026.105342](https://doi.org/10.1016/j.jag.2026.105342)
- [3] Ye, X., Gong, W., **Yang, Y.**, Zou, L., Tu, Z., Huang, X., ... & Wu, L. (2026). Towards Agentic Urban Digital Twins (AUDiTs): advancing new urban science through Human-AI co-learning agents. *Urban Informatics*, 5(1), 9.
- [4] Wang, Y., Yin, H., **Yang, Y.**, Zhao, C., & Wang, S. (2025). Navigating spatial inequities in freight truck crash severity via counterfactual inference in Los Angeles. *Journal of Transport Geography*, 128, 104387.
- [5] Gong, W., Ye, X., Wu, K., Jamonnak, S., Zhang, W., **Yang, Y.**, & Huang, X. (2025). Integrating spatiotemporal vision transformer into digital twins for high-resolution heat stress forecasting in campus environments. *Journal of Planning Education and Research*, 1–15. [doi:10.1177/0739456X251391121](https://doi.org/10.1177/0739456X251391121)
- [6] Zhang, Y., Chen, J., Liu, B., **Yang, Y.**, Li, H., Zheng, X., Chen, X., Ren, T., & Xiong, N. (2020). COVID-19 public opinion and emotion monitoring system based on time series thermal new word mining. *Computers, Materials & Continua*, 64(3), 1415–1434. [doi:10.32604/cmc.2020.011316](https://doi.org/10.32604/cmc.2020.011316)
- [7] Shi, C., Mou, G., Wang, H., Liu, T., **Yang, Y.**, & Li, Z. (2020). Different Loss Functions Used in the Low-rank Approximation. *International Core Journal of Engineering*, 6(11), 360–368.

Conference Proceedings.

- [1] Zou, L., Mandal, D., Zhou, B., **Yang, Y.**, & Yang, M. (2025). Resilience in 4D: AI-Driven Geospatial Digital Twins for Urban Flood Simulation and Management. *AGU25*.
- [2] Yan, B., Wang, J., Cheng, J., Zhou, Y., Zhang, Y., **Yang, Y.**, ... & Liu, B. (2021, June). Experiments of federated learning for COVID-19 chest X-ray images. In *International Conference on Artificial Intelligence and Security*

(pp. 41–53). Cham: Springer International Publishing.

Preprints.

- [1] Gong, W., Srivastava, U., Wang, Y., Jia, Y., Wu, Q., Bai, W., . . . & Ye, X. (2026). Earth Embeddings Reveal Diverse Urban Signals from Space. *arXiv preprint* arXiv:2604.03456.
- [2] Lin, B., Zou, L., Tian, H., Cai, H., **Yang, Y.**, & Zhou, B. (2026). Predicting Healthcare System Visitation Flow by Integrating Hospital Attributes and Population Socioeconomics with Human Mobility Data. *arXiv preprint* arXiv:2601.15977.
- [3] Wu, Q., Xu, Y., Xiao, T., Xiao, Y., Li, Y., Wang, T., . . . & **Yang, Y.** (2024). Surveying attitudinal alignment between large language models vs. humans towards 17 sustainable development goals. *arXiv preprint* arXiv:2404.13885.

PRESENTATIONS (PRESENTING AUTHOR)

- [1] **2026** RAPIDMap: Rapid multi-Agent Pipeline for Interpretable Disaster Mapping from Satellite and Street-view Imagery. *Cartography and Geographic Information Society (CaGIS) Conference*, St. Louis, Missouri, September 8–11, 2026.
- [2] **2026** DamageArbiter: A Disagreement-driven Arbitration Framework for Hurricane Damage Assessment from Street-View Imagery. *AAG GISS Specialty Group Honors Competition for Student Papers 2*, AAG 2026 Annual Meeting, San Francisco, California.
- [3] **2026** Satellite-to-Street: Synthesizing Post-Disaster Views from Satellite Imagery via Generative Vision Models. *IEEE International Geoscience and Remote Sensing Symposium (IGARSS)*, Washington, D.C., August 13, 2026.
- [4] **2026** Satellite-to-Street: Synthesizing Post-Disaster Views from Satellite Imagery via Generative Vision Models. *Symposium on Spatiotemporal Data Science*, Virginia Tech Academic Building One, Alexandria, VA, August 7–8, 2026.
- [5] **2025** Seeing Disagreements: An Explainable Multimodal Framework for Disaster Assessment and Spatial Mapping. *Texas A&M University GIS Day Student Paper Competition*, Texas A&M University, College Station, USA (Oral).
- [6] **2025** Yang, Y., Gong, W., Zhang, K. DisasterVLP: Perceiving Multidimensional Disaster Damages from Street-View Images Using Visual-Language Models. *Summer School on Cyberinfrastructure and Disaster Resilience*, August 15, 2025, Texas A&M University, College Station, USA (Oral).
- [7] **2025** Perceiving Multidimensional Disaster Damages from Street-View Images Using Visual-Language Models. *Student Paper Session, International Cartographic Conference (ICC)*, Vancouver, Canada.
- [8] **2025** DisasterVLP: A Vision-Language Pretrained Framework for Multidimensional Disaster Damage Assessment Using Street-View Images. *GeoAnalytics for Sustainable and Livable Cities Symposium, International Cartographic Conference (ICC)*, Vancouver, Canada.
- [9] **2025** Hyperlocal Disaster Damage Assessment Using Bi-Temporal Street-View Imagery and Pre-Trained Image Processing Models. *GISS Specialty Group Paper Competition II*, AAG 2025 Annual Meeting, Detroit, Michigan.
- [10] **2024** GeoLocator: A Location-Integrated Large Multimodal Model for Inferring Geo-Privacy. *Symposium on GeoAI and Deep Learning for Geospatial Research: Human-Centered Geospatial Data Science III*, AAG 2024 Annual Meeting, Honolulu, Hawai'i.
- [11] **2024** GeoLocator: A Location-Integrated Large Multimodal Model (LMM) for Inferring Geo-Privacy. *Spatial Data Science Symposium — Thematic Session “Geoprivacy Challenges and Solutions in the Digital Society.”* Online Symposium.
- [12] **2024** GeoLocator: A Novel GeoAI Tool Making World Travel without Barriers & Urban Tree Shade Model. *2024 Los Angeles Geospatial Summit*, February 23, 2024, Los Angeles, California.
- [13] **2024** GeoLocator: A Location-Integrated Large Multimodal Model for Inferring Geo-Privacy. *AGI Leap Summit — Multimodality Session*, SuperAGI, February 29, 2024 (Virtual).

SESSION ORGANIZER & CHAIR

- [1] Spatiotemporal AI for Urban and Environmental Intelligence: Sensing, Inference, and Human-Centered Applications. *Symposium on Spatiotemporal Data Science*, Virginia Tech Academic Building One, Alexandria, VA, August 7–8, 2026. *Session Organizer*.
- [2] GeoAI and Data Science for Disaster Resilience. *33rd International Conference on Geoinformatics (GeoInformatics 2026)*, Singapore. Co-organized with Lei Zou, Yi Qiang, Yingjie Hu, Qunying Huang, Xiao Huang, and Bing Zhou. [\[programme\]](#)

- [3] GeoAI and Deep Learning Symposium: GeoAI for Disaster Resilience. *AAG 2026 Annual Meeting*, San Francisco, California. Co-organized with Lei Zou, Yingjie Hu, Qunying Huang, Yi Qiang, Marcela Suarez, and Morteza Karimzadeh.
- [4] Panel and Symposium Organization, *GISER Symposium: Past, Present, and Future of GIScience*, AAG Annual Meeting, San Francisco, USA, 2026. *Organizer*.
- [5] AAG Remote Sensing Specialty Group Student Illustrated Paper Competition. *AAG 2026 Annual Meeting*, San Francisco, California. Co-organized with Ying Lu.
- [6] Symposium on Human Dynamics Research: Urban Environmental Intelligence and Human–Climate Interactions (Sessions 1–2). *AAG 2025 Annual Meeting*, Detroit, Michigan. Co-organized with Wenjing Gong, Sisi Wang, Xinyue Ye, and Xiao Huang.

SELECTED HONORS, AWARDS, AND SPONSORSHIPS

- 2026 Cartography and Geographic Information Society (CaGIS) Doctoral Scholarship Award, \$1,000.
- 2026 IEEE GRSS Travel Grant — IGARSS 2026, Washington, D.C., \$500.
- 2026 NSF I-GUIDE Summer School: Spatial AI & Convergence Science — Selected Travel Award.
- 2026 AAG-GISSG Student Honors Paper Competition — 2nd Place, \$350.
- 2026 AAG-IGIF Scholarship Award, AAG International Geographic Information Funds (IGIF), \$1,200.
- 2025 Environment and Sustainability Graduate Fellow Award, Texas A&M University, \$2,500.
- 2025 Travel Grant, Summer School on Cyberinfrastructure and Disaster Resilience, TAMU (funded by NSF), \$200.
- 2025 Texas A&M Institute of Data Science (TAMIDS) Student Ambassador Scholarship, Domain Data Science Track, TAMU, \$2,000.
- 2025 CaGIS International Travel Grant — 2025 ICC, Vancouver, Canada, \$2,100.
- 2025 International Cartographic Conference (ICC), Vancouver, Canada — **Best Student Paper Award**.
- 2025 AAG-GISSG Student Honors Paper Competition — Honorable Mention, \$200 (Top 5).
- 2025 AAG Applied Geography Specialty Group — Student Travel Award, \$196.
- 2024 Travel Grant (Visiting), Department of Geography, University of South Carolina, \$400.
- 2024 Lifetime Membership — Nu Theta Chapter, Gamma Theta Upsilon (International Geographic Honor Society).
- 2024 Los Angeles Geospatial Summit — ArcGIS StoryMaps Competition: Most Suitably Applied Analysis Methodology.
- 2020 National First Prize — Computer Design Competition for Chinese College Students (Big Data Practice).
- 2020 Third Prize — 10th MathorCup College Mathematical Modeling Challenge.
- 2020 Second Prize — 13th “Certification Cup” Mathematics China Mathematical Modeling Network Challenge (Inner Mongolia Region).
- 2020 Third Prize — China–US Youth Creators Competition (Haikou Region).
- 2020 Second Prize — 3rd China Youth Cup National University Student Mathematical Modeling Competition.
- 2020 Third Prize — 6th National Mobile Internet Innovation Competition (South China Region).
- 2020 Third Prize — Innovation Group of the 2020 China University Computer Competition (Artificial Intelligence Track).
- 2020 Third Prize — Finalist, Hainan Selection Competition of the 4th China Creative Wings Innovation Competition.
- 2020 Honorable Mention — 2020 Hainan Free Trade Port Entrepreneurship Competition.
- 2020 Silver Award — Hainan Creative Group, 6th China International “Internet+” Student Innovation and Entrepreneurship Competition.
- 2020 Bronze Prize — Hainan Region, Challenge Cup Student Entrepreneurship Plan Competition.
- 2020 Second Prize — 14th iCAN International Innovation and Entrepreneurship Competition (South China Region).
- 2020–2021 First-Class Comprehensive Scholarship — Hainan University, ¥2,500.
- 2020–2021 Recognized as “College Student with the Most Innovative Spirit and Practical Ability” — Hainan University.

2024–2025 NSF I-GUIDE Spatial AI Challenge — Selected Abstract (2 consecutive years)

- Selected in a competitive international challenge on Spatial AI and GeoAI innovation
- **2025:** GeoAgent4Disaster — Autonomous multi-agent framework for multimodal disaster assessment

- **2024:** Perceiving Multidimensional Disaster Damages from Street-View Images Using Visual-Language Models

PROFESSIONAL ACTIVITIES AND SERVICE

- 2025–2026** Data Science Student Ambassador, Texas A&M Institute of Data Science (TAMIDS).
- 2025–2026** Executive Committee Member, Aggie Geographers Graduate Society (AGGS).
- 2025–2027** Student Co-Director of Remote Sensing Specialty Group, American Association of Geographers.
- 2025–2027** Student Co-Director of Hazards, Risks, and Disasters, American Association of Geographers.
- 2024–2025** Board Member, GISphere (responsible for the GISalon Roundtable Series).
- 2021–2022** Vice President, Association of Robotics and Artificial Intelligence, Hainan University.

Reviewer for leading journals and conferences, including: ACM Transactions on Autonomous and Adaptive Systems · Computational Urban Science · Climatic Change · International Journal of Applied Earth Observation and Geoinformation · International Journal of Geographical Information Science · International Journal of ITS Research · Scientific Reports · Transactions in GIS · Tourism Geographies · Journal of Transport Geography · International Journal of Remote Sensing · 32nd SIGKDD Conference on Knowledge Discovery and Data Mining (KDD 2026) — AI for Sciences Track

OPEN-SOURCE LEADERSHIP

Founder, AutonomousGeoAI4Science (AutoGeoAI4Sci)

[GitHub Organization](#)

Founded and led an open research community advancing autonomous and multimodal GeoAI for scientific discovery. The initiative integrates tutorials, open-source research code, cross-view modeling projects, and agent-based spatial intelligence systems.

- Curate and maintain 40+ repositories on cross-view GeoAI, disaster intelligence, and autonomous spatial reasoning
- Develop open-source tutorials and research frameworks for multimodal geospatial AI
- Build a collaborative platform connecting AI, GIScience, and Earth observation communities
- Promote reproducible research in autonomous geospatial intelligence

TECHNICAL SKILLS

Applications: PyTorch, TensorFlow, Scikit-learn, HuggingFace Transformers, Stable Diffusion, Visual Studio Code, Git/GitHub, Jupyter Notebook, Anaconda, Linux/Unix, Docker, Esri ArcGIS Pro, MS SQL Server, SQL Server Management Studio, PgAdmin, PostgreSQL & PostGIS

Programming: C, C++, Java, Python, SQL, R, ArcGIS API (JavaScript, Python), JavaScript, HTML