

# SULONG ZHOU

Applied AI, LLMs, GeoAI, Large-Scale Spatial Data Systems

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## EDUCATION

**University of Wisconsin-Madison**

**Madison, WI**

*Ph.D.: Environment & Resources*

Sep 2015 – May 2021

Dissertation: Applied Machine Learning for Monitoring the Environment | [Link](#)

*M.S.: Computer Science*

Sep 2019 – May 2021

## WORK EXPERIENCE

**Texas A&M University**

**College Station, TX**

*Postdoc Researcher - LLMs for Disaster Response*

Oct 2024 – Present

- Built a multimodal topic modeling pipeline using LLM embeddings and BERTopic to analyze **150K+** Reddit posts, improving topic coherence scores by **38%** for spatiotemporal disaster response analysis.
- Managed and optimized PostgreSQL/PostGIS ETL pipelines processing **1.5B+** nationwide longitudinal property records to support large-scale data analytics across multiple research groups.
- Engineered features across **200+** variables to train a regression model (adjusted  $R^2 = 0.87$ ) to quantify wildfire impacts on housing prices and identify lagged effects.
- Led development of an urban digital twin prototype by building an AR-assisted geospatial mobile application for real-time data collection and interactive urban design workflows.

**ArtEast** - An online fitness platform

**Madison, WI**

*Data Scientist*

Jan 2024 – Oct 2024

- Developed a conversational AI agent using OpenAI Realtime API to automate customer support service and reduce customer response time by **70%**.
- Analyzed customer behavior to guide new service strategy, driving a **12%** uplift in quarterly revenue.

**DataChat** - A conversational business intelligence platform

**Madison, WI**

*Senior Software Engineer*

May 2021 – Aug 2023

- Collaborated on GenAI integration and cross-team A/B testing to increase conversion rates by **20%**.
- Optimized backend message queue and Python APIs to reduce inference latency by **15%**.
- Refactored React components to ensure reusability and improve rendering performance by **30%**.

## SELECTED PUBLICATIONS

- **S. Zhou**, et al. "Revealing time-sensitive latent public health and emotional distress topics in Reddit discourse during the 2025 Southern California wildfires". International Journal of Disaster Risk Reduction: 106167, 2026. | [Link](#)
- **S. Zhou**, et al. "Advancing smart disaster response by leveraging social sensing and mobile technology." Geo-spatial Information Science: 1-19, 2025 | [Link](#)

- **S. Zhou**, et al. "A guided latent Dirichlet allocation approach to investigate real-time latent topics of Twitter data during Hurricane Laura". Journal of Information Science, 49(2): 465-479, 2023. | [Link](#)
- **S. Zhou**, et al. "Application of image segmentation in surface water extraction of freshwater lakes using radar data." ISPRS international journal of Geo-information 9.7: 424, 2020 | [Link](#)

## OPEN SOURCE PROJECTS

### React & Firebase & Netlify E-commerce System | [Git](#) 2022 – 2024

- Built interactive and responsive e-commerce interfaces using React, Redux, and React Router to improve frontend user experience.
- Integrated Firestore NoSQL databases to support real-time data synchronization and persistent cloud storage.
- Implemented automated CI/CD deployment pipelines with Netlify to maintain high-availability frontend infrastructure with **99.99%** uptime.

### Spring-based Recommendation Web Platform | [Git](#) 2019 – 2023

- Developed a client-facing ticket management web application using content-based filtering to improve recommendation relevance based on geographic and user behavioral data.
- Built RESTful Java servlets and optimized Apache Tomcat backend services to improve request processing and system responsiveness.
- Scaled infrastructure via Amazon EC2 to support a throughput of **160 QPS**, validated through performance benchmarking with Apache JMeter.

## SKILLS

**Programming & Tools:** Python, Java, SQL, React, Git, PyTorch, Linux, AWS, Google Colab

**LLMs:** Transformers, Fine-tuning, RAG, Prompt Engineering, Multimodal Inference, Hugging Face

**Machine Learning:** Topic modeling (BERTopic, LDA), Regression, Gradient Boosting, A/B Testing

## HONORS AND AWARDS

**Workshop Grant** (2025 Texas A&M Institute of Data Science)

**Honorable Award** (2025 AI and Cities: An International Forum for Innovation and Collaboration)

**Selected Poster** (2025 UT System AI Symposium in Health Care)

**Student Scholarship** (ESRI Geodesign Summit)

**Selected Work for GIS Solutions Expo** (ESRI Federal GIS Conference)