Zuchen Li

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Education

University of Michigan, Ann Arbor **Aug 2024 – Present**
Major in Honors Data Science & Statistics, Minor in History **Major GPA: 3.8/4.0**
University of Illinois Urbana-Champaign **Aug 2023 – July 2024**
Major in Statistics & Computer Science, Minor in Meteorology **GPA: 4.0/4.0**

Experience

Generative AI for Music and Audio (Advisor: Prof. Herman Dong) **Oct 2025 – Present**
Research Assistant *Ann Arbor, Michigan*

- Developed a universal, annotation-efficient OMR framework targeting visually complex notations—demonstrated on *Jianzipu*, the centuries-old tablature of the *guqin* (China's most culturally revered instrument)—with human-in-the-loop design enabling generalization to similarly underrepresented musical heritage scripts
- Superconductor: Research real-time Human–GenAI Interaction for controllable music generation, exploring feedback mechanisms and adaptive interfaces that enable expressive, user-driven creative workflows

Ambient Intelligence Lab (Advisor: Prof. Ke Sun) **Oct 2025 – Present**
Research Assistant *Ann Arbor, Michigan*

- Developed privacy-driven geolocation attack and defense frameworks leveraging diffusion models and Vision Language Models (VLMs), incorporating causal inference and explainability analysis to identify and mitigate semantic visual cues exploited during VLM-based geolocalization
- Designed a new human-computer interaction for intelligent IoT systems of chairs, applying machine learning on novel Moiré-pattern optical sensors to enable robust, deployable embodied sensing for smart environments

Energy Distance Dimension Reduction (Advisor: Prof. Kerby Shedden) **Jan 2025 – Present**
Selected by the Undergraduate Research Program in Statistics(URPS) *Ann Arbor, Michigan*

- Developed engression and sufficient dimension reduction model for multilevel, dyadic, and longitudinal wearable data from bone marrow transplant patients, addressing the non-iid structure unhandled by existing methodology
- Re-implemented several sufficient dimension reduction algorithms in JAX with GPU acceleration, achieving a 7,000× speedup over the official R package for U-statistic computation on large-scale clinical time series

Lab of Atmospheric and Earth System Sciences, Nanjing University **May 2024 – Aug 2024**
Summer Research Intern *Nanjing, China*

- Advised by Professor Minghuai Wang, we applied statistical machine learning methods to explore complex relationships between aerosols and clouds, isolating the role of aerosols on cloud and climate interactions
- Enhanced the accuracy of simulations pertaining to aerosol optical properties and their subsequent climate effects

E2-E Lab, University of Illinois Urbana-Champaign **Aug 2023 – May 2024**
Undergraduate Research Assistant *Champaign, Illinois*

- Conducted airflow experiments and processed experimental PIV and camera data using Python (OpenCV & OpenPIV) for flow-field reconstruction and particle tracking. Performed CFD simulations in ANSYS Fluent to analyze particle–airflow interactions in complex 3D geometries

Projects & Courses

Analyzing and Predicting Weather-Induced Flight Delays | *Machine Learning & Statistics* **Dec 2023**

- Led a four-member team under Professor Kelly Findley's mentorship, employing Random Forest, SVM, MLP, and Logistic Regression to model and compare predictions across various scenarios
- Presented at the *Electronic Undergraduate Statistics Research Conference* (eUSR) 2023

MCMC-Based Data Augmentation for Clinical Wearable Heart-Rate Time Series

- Develop Bayesian MCMC augmentation and evaluation pipelines for post–bone marrow transplant wearable heart-rate time series, enabling robust downstream modeling under sparse, noisy, and irregular sampling

Extracurricular

Michigan Daily | *News Reporter, Photographer, Videographer*

- Produced and edited multimedia content for The Michigan Daily, including short-form videos and digital features

Illinois Student Organization of Meteorology (ISTORM)

- Student chapter of the American Meteorological Society; focused on severe and hazardous weather forecasting

Honors & Awards

Outstanding Research Paper Award (1.875% over 800+) IMMC Greater China Round **Apr 2022**
Finalists Research Paper Award (8.75% Internationally) IMMC International Round **March 2022**
Intellectual Promise Gold Scholarship Beijing National Day School **July 2022**