Zemin Wu

+86 17376000394 | @ 12332214@mail.sustech.edu.cn | in LinkedIn | GitHub | China, Shenzhen

EDUCATION

Southern University of Science and Technology — China, Shenzhen
*M.Sc. in Geophysics; **GPA: 3.53/4.00*** — *Sep 2023 – Present*

Relevant coursework: Quantitative Seismology, Advanced Marine Seismic Observation, Geodynamics, Modern Signal Analysis and Data Processing, Marine Geophysical Signal Analysis, Scientific Writing in English

Advisors: Prof. Bin Luo, Prof. Zhen Guo

Southern University of Science and Technology — China, Shenzhen
*B.Sc. in Computer Science; **GPA: 3.3/4.00*** — *Sep 2019 – Jun 2023*

Relevant coursework: Computer Organization, Algorithm Design and Analysis, Database Systems, Computer Networks, Object-Oriented Analysis and Design, C/C++ Programming, Compiler Principles, Operating Systems, Artificial Intelligence

Advisors: Prof. Jiang Liu

SKILLS

Languages: Mandarin (Native), English (IELTS: 7)

Proficiency in programming: C/C++, C#, Java, Python, JavaScript, SQL, MATLAB, R, MATLAB

Familiar with AI/ML framework and reproducible code: PyTorch, TensorFlow, Flask, Django, Node.js, MySQL, Git, Docker, Kafka, OpenCV, GitHub

RESEARCH EXPERIENCE

Finetuneing PLM and Develop DL-based Earthquake Monitoring System with DAS
Project Leader — *Feb 2025 – Present*

- Manually labeled a dataset of DAS seismic events using high-precision earthquake catalogs to support supervised model training.
- Evaluated multiple deep learning models(PhaseNet, SeisT, EqTransformer etc.) and demonstrated the superior performance of large pre-trained DiTing model in phase picking tasks.
- Fine-tuned DiTing to achieve over 90% recall in seismic phase picking in DAS data.
- Trained a YOLOv12-based detection model to swiftly identify and extract earthquake signals from DAS data, effectively doubling the number of detectable seismic events.
- Conducted feasibility analysis for earthquake localization, compare three association algorithm (REAL, GaMMa, PyOcto), validating the potential for DAS in distributed seismic monitoring.
- Integrated an end-to-end workflow covering DAS-data seismic detection, phase picking, event association, and location.
- Application in two scenarios: the Xinfengjiang Reservoir area induced micro seismic and Anyuan mining-induced seismicity, and contributing to the generation of high-resolution earthquake catalogs.

Long-Range Traffic Monitoring and DL-based Vehicle Tracking With DAS
Project Leader — *Jul 2024 – Nov 2025*

- Manually labeled a mixed dataset of **40,000** samples containing highway vehicle-induced DAS traces to support model training and validation.
- Trained a YOLOv5-based detection model to accurately identify and extract vehicle signals from DAS spatio-temporal diagrams, achieving 92% detection accuracy.
- Developed multi-vehicle tracking and correlation algorithms to transform detection outputs into continuous vehicle trajectories, enabling precise traffic flow analysis and extraction of quasi-static strain waveform.
- Utilized waveform simulation techniques to model and interpret the relationship between DAS signal characteristics and underlying vehicle physical attributes, such as weight and axle configuration.

Long-Term Bridge Health Monitoring and Urban Noise Analysis on DAS
Project Leader — *Dec 2023 – June 2024*

- Extracted fundamental frequencies and vibration modes from ambient background noise through Power Spectral Density (PSD) analysis of long-term DAS recordings.
- Applied continuous spatio-temporal signal analysis to assess structural health and dynamic behavior of bridges based on vibration characteristics.
- Evaluated the energy distribution of urban background noise in DAS data, revealing its correlations with construction activities and human behavior patterns.

Diffusion Model-Based Surgical Image Generation

Project Leader   *Dec 2022 – May 2023*

- Developed an image generation model combining mesh transfer and Stable Diffusion to create realistic cataract surgery images
- Trained the model to generate images in specified styles based on text prompts.
- Addressed data imbalance issues in surgical datasets by synthesizing high-quality training samples.

Cross-Domain Data-Based Surgical Video Analysis

Core Project Member   *Oct 2021 – Jun 2022*

- Applied domain adaptation methods to improve the generalization of semantic segmentation models for cataract surgical tool segmentation.
- Conducted spectral analysis on datasets to identify domain-invariant features.
- Built and trained a multi-view adversarial network (GAN) to learn domain-invariant features.

ACADEMIC HONORS & SCHOLARSHIPS

Outstanding Graduate (Nov 2025)

Graduate Research Assistant Stipend – Special Prize (Sep 2023, Sep 2024)

Graduate Academic Scholarship – Special Prize (Octo 2023, Octo 2025)

Graduate Academic Scholarship – First Prize (Octo 2024)

PUBLICATION & PRESENTATIONS

[1] **Zemin Wu** [*], Lipeng He, Bin Luo, and Zhen Guo. "Intelligent Traffic Flow Recognition from DAS Data Based on Deep Learning". In: *CGU Meeting* (Sept. 2024).

[2] **Zemin Wu** [*], Zhuowei Xiao, Luo Bin, Guo Zhen, and Chen Shi. "Fine-Tuning the DiTing Seismogram Foundation Model to DAS Data for Natural Earthquake Phase Picking and Association". In: *AGU Meeting, Oral Presentation* (Dec. 2025).

EXTRACURRICULAR ACTIVITIES

Team Leader   China, Shenzhen

Earthquake Prevention and Disaster Mitigation Digital & Intelligent Technology Competition   *Jul 2025 – Present*

- Led a 4-member graduate student team to achieved the **2nd place** in cumulative rankings for 6-month consecutive competition cycle.
- Mentored new members in model fine-tuning and API integration and optimized signal analysis pipelines.
- Among 85 participating teams across China, we developed the top-performing Phase Picking Model and Event Classification Model.

Workshop Participant & Practical Trainer   China, Beijing

Advanced Seminar on Seismic Large Models   *Jul 2025*

- Topic: DAS Technology Fundamentals and Practical Application of DiTing Large Model in Seismic Phase Picking
- Delivered hands-on tutorials on DAS data preprocessing workflows and step-by-step guidance for fine-tuning the DiTing model to solve low-SNR seismic signal picking challenges.

Workshop Speaker   China, Shanghai

Sheshan School 2025: Dense Array Technology & AI Applications   *Nov 2025*

- Session: Hands-On Practice: Distributed Fiber-Optic Seismic Signal Picking with AI Models
- Led group exercises on implementing pre-trained AI models for DAS seismic signal extraction, provided real-world case examples (e.g., mining-induced microseisms) and troubleshooting support for participants.