Suwen JIN

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Portfolio: https://shizukuyu.com/

Education

University College Dublin — Dublin, Ireland
Master of Science, Computer Science (120 ECTS) — *Sep 2022 - Jan 2024*
GPA: 3.5/4.2

Xiamen University Tan Kah Kee College — Xiamen, China
Bachelor of Engineering, Environmental Science and Engineering — *Sep 2018 - Jun 2022*
GPA: 3.4/4.0 (Ranking: 18/192)

Skills Summary

- **Machine Learning Frameworks:** PyTorch, TensorFlow, Scikit-learn
- **Neural Architectures:** Diffusion Models, Transformers, LSTM, Attention Mechanisms
- **Machine Learning Algorithms:** XGBoost, Random Forest, SVM, KNN, PCA, KMeans
- **Multisource & Earth Observation Data:** NetCDF, HDF5, xarray
- **Environmental Data Processing:** WRF/WRFDA, NCL
- **Programming Languages & Tools:** Python (NumPy, Pandas, matplotlib), Bash, JavaScript
- **Data Infrastructure:** PostgreSQL, MySQL, Redis, Distributed Training (DDP)
- **Scientific Visualization:** Plotly, D3.js, Cartopy, Seaborn

Projects

Precipitation Super-Resolution Using Diffusion Model with CMA and ERA5 Data — Hong Kong, China
Hong Kong University of Science and Technology — *Mar 2025 - present*
Advisor: Prof. Xiaoming Shi and Dr. Yueya Wang — `[Code]`

- Developed a DDPM with U-Net (ConvNeXt + attention) to downscale ERA5 precipitation (25km to 5km).
- Preprocessed multi-source data and trained with extreme-weather-optimized loss (MSE + SSIM + perceptual loss).

Regional Reanalysis System for High-Impact Weather Using 4D-Var — Hong Kong, China
Hong Kong University of Science and Technology, Hong Kong Observatory — *Sep 2024 - Mar 2025*
Advisor: Dr. LAW Hiu Fai and Prof. Xiaoming Shi — `[Code]`

- Developed a regional reanalysis system by assimilating multi-source weather data (stations, radar, wind profiles) into WRF/WRFDA via 4D-Var technique.
- Enhanced prediction resolution from 10km to 2km for high-impact weather events through optimized data preprocessing and assimilation.

Traffic Prediction based on NYC Taxi Data using Machine Learning — Dublin, Ireland
University College Dublin — *Jun 2023 - Aug 2023*
Advisor: Prof. Gavin McArdle and Prof. Fatemeh Golpayegani — `[Code]`

- Designed and implemented a machine learning framework integrating heterogeneous urban data (taxi trajectories, weather, temporal patterns) to predict short-term mobility demand using ensemble methods (XGBoost/Random Forest).
- Developed novel spatiotemporal feature engineering techniques capturing urban dynamics and deployed the predictive system with interactive visualization capabilities.

Time Series Forecasting of Rainfall using Deep Learning (LSTM) — Dublin, Ireland
University College Dublin — *May 2023*
Kaggle Project — `[Code]`

- Developed a deep learning pipeline using LSTM to forecast heavy precipitation events based on historical weather data.
- Engineered domain-specific features and addressed class imbalance, achieving robust predictive performance on real-world climate data.

Removal of NDMA from Water by UV-Advanced Oxidation Process Xiamen, China
Xiamen University Tan Kah Kee College *Jan 2021 - Apr 2022*
Advisor: Prof. Xiaosong Zha

- Effectively utilized UV/H_2O_2 and UV/PS to efficiently degrade N-nitrosodimethylamine (NDMA) in water; Optimized water treatment processes by adjusting parameters such as oxidant dosage, pH, dissolved oxygen etc.
- Conducted detailed analyses using High-Performance Liquid Chromatography (HPLC) to monitor and quantify reaction products.

Transformation of Chloride Ions in Electro-Oxidation Technology Shanghai, China
Fudan University, Tongji University *Jul 2021 - Sep 2021*
Advisor: Prof. Yan Liu and Ms. Chenxi Li

- Operated and maintained lab instruments(GC-MS,HPLC), analyzed pre-made Trichloromethane samples using mass spectrometry, and superimposed chromatograms of different samples to test the content changes.
- Made detailed observations and produced graphs based on the experimental findings.

Work Experience

Hong Kong University of Science and Technology, Hong Kong Observatory Hong Kong, China
Research Assistant *Sep 2024 - Present*

- Responsible for Super-Resolution of Meteorological Fields and Weather Forecast by Data-Driven Methods and Physical Models.

GDS Holdings Ltd. Shanghai, China
Large Language Model Intern *Jan 2024 - June 2024*

- Designed and implemented a RAG (Retrieval-Augmented Generation) system with fine-tuned Llama2-7B to power an interactive Q&A interface for data center operations.

Publications

Xiaosong Zha, **Suwen Jin**, Qian Zhao, Peinan Huang, et al. Research on the removal of NDMA from water using ultraviolet-based advanced oxidation technology [J]. *Chinese Journal of Water Treatment Technology*, **2022** (In Chinese)

XiaoSong Zha, Lin Zhang, YuanJie Weng, ZhiLiang Feng, **Suwen Jin**. Reductive Degradation of N-Nitrosodimethylamine in Water by Ultraviolet Advanced Reduction Processes[J]. *Chinese Journal of Applied Chemistry*, **2022** (In Chinese)

Awards

Certificate of Completion *2024*
Shanghai AI Laboratory - InternLM Pratical Camp
Excellent Student Scholarship (awarded to the top 10% of the grade) *2018, 2019, 2020, 2021*
Xiamen University Tan Kah Kee College
Group Leader Award, Provincial level *2020*
National College Students' Innovative Entrepreneurial Training Plan Program
First Prize, Group leader *2019*
University Student Social Practice and Science Contest on Energy Saving and Emission Reduction

Personal detail

Nationnality: Chinese
Gender: Female
Language: Chinese(Native), English(C1), Japanese(N2), German(Basic)
Countries of residence: China, Ireland
Hobbies: Skateboarding, Playing the Guitar, Visiting Museums, and Art Exhibitions