

Zhang Zhiyu

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EDUCATION

Imperial College London, Department of Earth Science and Engineering Oct. 2022- Oct. 2023

Master of Science in *Environmental Data Science and Machine Learning*

Sichuan University (SCU), College of Architecture and Environment Sept. 2018-Jun. 2022

Bachelor of Science in *Environmental Science*

GPA: 3.81/4; Weighted Average Mark: 89.89/100

English Proficiency:

TOEFL: 101; GRE: 326+3.0

Relevant Skills:

- Coding: Python (PyTorch; TensorFlow; scikit-learn); C/C++
- Machine Learning and Deep Learning: Linear Regression; Random Forest; PCA; Convolutional Neural Network; Generative Adversarial Network; Auto Encoder; LSTM

Main Courses:

Environmental Monitoring; Environmental Economics; Environmental impact assessment; Optimization and Inversion; Computational Mathematics; Data Science and Machine Learning; Deep Learning

Honors & Scholarships:

- 2020-2021 Scholarship for Undergraduate from SCU
- 2019-2020 Scholarship for Undergraduate from SCU
- 2018-2019 Scholarship for Undergraduate from SCU
- Excellent Student in 2021 from SCU

RESEARCH EXPERIENCE

An investigation into Tidal Range Energy Integration in the UK's Renewable Energy Mix

Independent research project

Participant Jun. 2023-Sept. 2023

- The project's objective is to evaluate and quantify the implications and necessity of integrating Tidal Energy into the UK's energy mix towards achieving the 2030 net-zero goal
- Leveraging Atlite, we convert weather data into renewable energy limits and use PyPSA to optimize the power system, thereby investigating Tidal Energy's role in the UK's 2030 decarbonization strategies

Wildfire Forecasting using LSTM and Data Assimilation with Satellite Data

Group project

Participant May 2023

- This project aimed to create predictive models of wildfire using LSTM and VAE techniques. Dimensionality reduction (PCA and AE) and Data Assimilation techniques are employed for saving computational resource and model correction, thereby improving wildfire prediction accuracy
- Responsible for building a recurrent neural network to train a surrogate model of a wildfires predictive model

Flood Risk Prediction and Visualisation in the UK

Group project

Participant Feb. 2023

- The project was to develop a Python code with two features: An ML flood risk predictor to predict flood impact for UK postcodes. A visualizer to display this data and link it to information on rainfall, river and tide levels
- In charge of data preprocessing and data visualization including scatter plots and heatmaps

Composition Characteristics and Causes of SNA in the Context of PM_{2.5} and O₃ Composite Pollution in Chengdu

National Natural Science Foundation of China (General Program)

Participant

Nov. 2021-Jun. 2022

- The project was designed to explore Composition characteristics and causes of sulfate, nitrate, and ammonium in Chengdu City, where the composite pollution of PM_{2.5} and O₃ is the core of air pollution
- Responsible for analyzing *Composite pollution characteristics of PM_{2.5} and O₃ in Chengdu in 2019-2021*

Study on the Economics of Ecosystems and Biodiversity (TEEB) of China Panda National Park

The Undergraduate Innovation and Entrepreneurship Training Program

Project Leader

Jan. 2019-Apr. 2020

- The project focused on the ecosystem service value of China Panda National Park in Sichuan Province
- My role involved designing research the topic, formulating the research plan, gathering information, and writing an essay reviewing the economic valuation of ecosystem services

PRACTICAL EXPERIENCE

Internship at the Chengdu Academy of Environmental Sciences

Intern

May. 2022-Jun. 2022

- Completed an internship at the Environmental Quality Prediction and Forecasting Institute, Chengdu Academy of Environmental Sciences
- Optimized PM_{2.5} concentration forecasts through machine learning methods, learned the weather Research and Forecasting Model (WRF) and the CALPUFF air quality model

Environmental Degradation and Recovery Survey

Team Leader

Jul. 2021

- Discovered the environmental degradation and restoration in Wenchuan, located in southwestern China
- Through interviews with the locals, on-site observations, and literature reading, investigated the impact of climate, geological hazard, and human activities on the local environment and practices of restoration measures

Ecological Field Survey in the Emei Mountain Area

Participant

Sept. 2020

- Examined the ecological environment, natural resources status, and social and economic development in Emei Mountain Area
- Grasped the methods of investigating plant communities, drawing longitudinal river profiles, and discovering soil profiles