Zhen Peng

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Education Background

Tongji University (2020-2024)
BEng in Civil Engineering

- GPA: 85.58/100
- The Tongji University Undergraduate Excellence Scholarship (2022-2023)
- Core Courses: Structural Mechanics, Engineering Mechanics, Principles of Civil Engineering Construction, Linear Algebra, Probability and Mathematical Statistics, etc.

Minor: Artificial intelligence

- Main courses: C/C++ PROGRAM DESIGN, Data structure, Basis of Artificial Intelligence

University College London (2024-2025)
MSc in Scientific and Data Intensive Computing

- Studying
- Core Courses: Research Software Engineering with Python, Database Fundamentals, Techniques of High-Performance Computing, Information Retrieval and Data Mining, Machine Learning with Big Data, Research Computing with C++

Research Project

Leading *Research on Seismic Response Characteristics of high-rise buildings based on seismic ambient noise*, (X2021441), 2021-2022, 4150 RMB.

- Main content: **Time series data process, Polynomial Regression, Fast Fourier Transform,** Experimental design, Results analysis, Visualization of results, Article writing, etc.
- Achievements:
  - **Publish a SCIE indexed journal (JCR Q2) article as the first author:** *Inter-Story Drift Ratio Detection of High-Rise Buildings Based on Ambient Noise Recordings* (DOI: 10.3390/app13116724) in Applied Science.
  - **Publish a utility model patent**: *a Seismometer base with stable buffer structure* (Patent ID: ZL202223084675.8)
  - **Write an invention patent(under review):** *a method for monitoring structural damage in high-rise buildings based on seismic ambient noise* (Application ID: CN202211386898.1)
  - **Write an invention patent(under review):** *a method for monitoring Inter-story drift of high-rise buildings based on seismic ambient noise* (Application ID: CN202211425670.9)

Participating in *Development of Intelligent Garbage Classification system for Shanghai*, 2022-2023.

- Main content: **Convolutional Neural Networks (CNNs)**, Data Cleaning, Data collection.

Participating in *Establishment of Intelligent Operation Platform for Critical Municipal Urban Infrastructure*, (2020YFB2103300), National Key Research and Development Program.

- Main content: **Data extraction, Computer vision, Object Detection, Unsupervised Learning,** Results analysis, Visualization of results, Article writing, etc.
- Achievements:
  - **Write an article as the first author (under review):** *Microscopic modelling of natural pedestrian movements towards visual attraction in underground transportation hubs* in Simulation Modelling Practice and Theory.

Participating in *Sustainability data generation from multimodal data through large language model*, 2024-2025

- Main content: **Adaptive LLMs, Prompt optimization, RAG rule base development, Data generation**, Article writing, etc.

Internship

CESTC
In 2022

In this project, I was responsible for following the leader and completing the assigned tasks as an intern. The major works include:

- Organization of traffic documents
- Scripting for the big data platform of the government of the Panyu district, Guangzhou
- Arrangement of the cutting-edge industry information

The main gains include:

- Understood the technology of the virtual machines using VMware.
- Skilled in the Linux operation system.
- Mastered the programming language of Shell.
- Understood the contents of the crossing field of the civil engineering and information technologies, e.g., digital twin, civil engineering metaverse and smart cities.

Shanghai construction No.1 (GROUP) CO.,LTD.
In 2023

In this project, I was responsible for following the leader and participated in construction of
Qiantan Plot 21-03 of Pudong District, Shanghai as an intern. The major works include:

- Construction management
- Organization of the project design documents

The main gains include:

- Understood the details of the preparation of construction project documents.

- Gained new experience of the management in construction projects.
- Understood a new technology of the concrete strut with automatic axial force compensation system.

Campus Activities

Extracurricular Activities: TJSU
From 2020 to 2021

I participated in organizing and publicizing of some important events, such as the School Celebration. Specifically, it includes event organization, poster production, venue design, and props production.

I received an A rating at the end of my term.

Volunteer Work: Volunteer Work Department of Tongji University Youth League Committee
In 2020

I volunteered to participate in the preparation, distribution, and delivery of materials for the new students.

Skills

- **Language:** Chinese (Native), English(Proficient)
- **Programming:** C/C++(3 years), Python(2 years), MATLAB(2 years), SQL(2 years), PHP(1 year)
- **Machine learning library:** TensorFlow, Pytorch, Sklearn, Keras
- **Machine learning skills:** Regression, SVM, CNN, Neural Network, Cluster
- **Platform:** Windows, Linux
- **BIM modeling:** Solid works, Revit
- **Other skills:** PS, PR, AE