

Yige Zhang

✉ tjzhangyige@gmail.com | 💻 yyggzz | 🌐 zhangyige

Education

University of Colorado Boulder

Boulder, CO

PH.D. IN STRUCTURAL ENGINEERING AND STRUCTURAL MECHANICS

2016-2020

- **Coursework:** Data Structures, Probability and Statistical Methods

Ecole des Ponts ParisTech

Paris, France

M.S. IN MATERIAL SCIENCE FOR SUSTAINABLE CONSTRUCTION & INGÉNIEUR OF CIVIL ENGINEERING

2013-2015

- **Coursework:** Molecular Simulation by Python, Numerical Statistics & Data Analysis

Tongji University

Shanghai, China

M.S. IN STRUCTURAL ENGINEERING & B.S. IN CIVIL ENGINEERING

2008-2016

- **Coursework:** Fundamentals of Computers, C++ Language, Computer Software Development Technology (C/ C++), Computer Animation, Theory of Probability, Numerical analysis, Linear Algebra, Higher Mathematics

Technical Skills

LANGUAGES Python, C++, Java, HTML/ CSS, JavaScript/ TypeScript, R, MATLAB, SQL

FRAMEWORKS & LIBRARIES Flask/ Django, TensorFlow, pygame, unittest, React, Bootstrap, Spring Boot

TOOLS Git, Linux/ Unix, VSCode, IntelliJ, MySQL, GCP, AWS

OTHER Data Structures & Algorithms, Object Oriented Programming (OOP), Unit Testing, Machine Learning, Data Analysis and Statistics

Projects

Web development

BUILD A PERSONAL WEBSITE WITH CSS, HTML, JAVASCRIPT, PYTHON FLASK

- Use **CSS & HTML** to build a personal website frontend with multiple tabs, illustration of images, texts, hyperlinks etc.
- The backend routing is implemented by **Python & Flask**. The Website is hosted on cloud service of **AWS EC2**.
- Include an interactive HTML browser game using **Canvas** and **JavaScript**. The game is hosted on **GitHub**.

Data Structure Study

COMPARE THE EFFICIENCY OF DIFFERENT DATA STRUCTURES USING C++ & R

- Compare the time performances of **CRUD** operations for different data structures (Linked List, Binary Search Tree, Hash Table with open addressing) implemented by **C++**.
- Use **R** to conduct **statistical analysis** on different sets of data from USPS packages, and study the impact of data ordering in the dataset.

Material Science Research Project

RESEARCH PROJECT OF CEMENT PASTE MICROSTRUCTURE PROPERTIES USING C++ & R.

- Implement a finite element model (**FEM**) in **C++** to simulate 3D cement paste microstructures during the hydration process.
- Use **Python** for forming/ preprocessing/ postprocessing of files. Use **Bash** to automate calling and running series of different programs.
- Use **R** for **statistical analysis** and **data visualization** to study the correlation between microcracks morphologies and the stress concentrations.

Game Software development

DEVELOP VIDEO GAMES WITH PYTHON & PYGAME

- Develop a tower defense game and a fish shooting game using **Python** and **pygame** for **GUI**.
- Implemented functions of moving/ jumping, hitting/ collision, health/ lives, scores/ restart, sound effects etc.

Work Experience

Princeton University

Princeton, NJ

POSTDOCTORAL RESEARCH ASSOCIATE

2021

- Use **R & Python** for statistical analysis and data visualization of experimental results for characterization of alkali-activated materials.

University of Colorado Boulder

Boulder, CO

POSTDOCTORAL RESEARCH ASSOCIATE

2020

- Use **TensorFlow** to learn the correlation between cross-section images and the mechanical properties of concrete by **machine learning**.

University of Colorado Boulder

Boulder, CO

RESEARCH ASSISTANT & TEACHING ASSISTANT

2016 - 2020

- Develop a finite element analysis program implemented by **C++** to study the time-dependent properties of cement paste.
- Use a finite difference method implemented by **MATLAB** to study the impact of cracking network on drying of cement paste.
- TA for Probability, Statistics and Decision for Civil Engineers, Structural Analysis, Mechanics of Materials, Analytical Mechanics.

Lafarge Centre de Recherche

France

RESEARCH ENGINEER

2014 - 2015

- Use **math model and curve fitting** to study the hydration kinetics of oil & gas well cements under elevated temperatures and pressures.
- Developed a novel method to characterize well cements, which saves €120,000 for the company to buy another equipment.