

Yicheng Xia

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EDUCATION

University of Pennsylvania Philadelphia, PA
M.S. in Computer and Information Science, M.S. in Scientific Computing (GPA: 3.82/4.00) Aug 2021 – Present

Suzhou University of Science and Technology Suzhou, China
B.E. in Built Environment and Energy Utilization Engineering, B.A. in English (GPA: 3.7/4.0, ranked 1/68) Sep 2017 – Jun 2021
*Outstanding Graduate, Merit Student, China National Scholarship (*Top 0.2%, highest scholarship given by government of China*)

SKILLS

Languages: Java, Python, C/C++, MATLAB, SQL, HTML, JavaScript, CSS, L^AT_EX, Assembly, Lisp
Tools: Linux, AWS, Apache Maven/Hadoop/Spark, Django, MySQL, React, Node.js, PostgreSQL, MongoDB, Neo4j, OpenGL

EXPERIENCE

Teaching Assistant Philadelphia, PA
University of Pennsylvania, Department of Computer and Information Science May 2022 – Present

- Hosted weekly office hours and graded homework for 100+ students in CIS 551: Computer and Network Security, CIT 582: Blockchains and Cryptography

Software Engineer Intern New York, NY
Witness to Mass Incarceration Inc., E-Commerce Team May 2022 – Aug 2022

- Designed and built an e-commerce cloud system with interactive APIs and frontend interfaces on Figma
- Used Django for backend and PostgreSQL for database, then imported and processed 1K+ sellers' information to be searchable
- Deployed it on Heroku and supported admins, sellers, and customers with separated functions and responsive mobile views
- Maintained persistency and saved backend API calling by storing users from login to logout and using cookies for authentication

Research Assistant Suzhou, China
Suzhou University of Science and Technology, Prof. Junqi Wang's Team May 2020 – May 2021

- Built a raspberry Pi human detection system and saved 49.15% full speed fan energy with designed image processing algorithms
- Patent: *An Intelligent Demand-Oriented Ventilation Control System Based on Occupant Detection*. CN213365297U

PROJECTS

Forx News 🌐 📺 📺 MySQL, AWS RDS, React, Node.js, Express.js, Heroku Oct 2022 – Dec 2022

- Built a restaurant review website with Yelp datasets of 20K+ entries that allow users to search, filter, visualize, and compare
- Preprocessed and decomposed restaurants, reviews, and reviewers data files into Boyce-Codd Normal Form (BCNF) tables
- Designed REST APIs to securely handle authentication, user, restaurant, review, reviewer, and analytics routes
- Improved complex queries to be up to 106.57% faster than original by multiple optimizations like creating optimal indices
- Added basic and 3rd-party (Google and Twitter) login methods and introduced Google Maps API for the navigation feature

Mini Minecraft 🌐 📺 C++, OpenGL (GLSL), Qt Creator Oct 2022 – Dec 2022

- Created an interactive 3D world exploration and alteration program like Minecraft with Qt Creator
- Allowed players to fly, walk, and swim, place or break blocks, and generate user defined scenes by loading outside images
- Designed shading animation algorithms for game scenes including day and night cycles, distance fog, water, and lava
- Improved the terrain rendering efficiency to be 99% faster than original by rendering block chunks into multithreaded VBOs

Search Engine 🌐 Java, AWS EC2/S3/RDS, Berkeley DB, HikariCP, Apache Hadoop, Docker Apr 2022 – May 2022

- Implemented and deployed a search engine with distributed web crawlers, a TF-IDF indexer, PageRank, and web UI on EC2
- Developed a multithreaded crawler following the robots exclusion standard and allowed 30 workers to fetch documents parallelly
- Set up Berkeley DB, S3, and RDS to transfer and validate 1M+ crawled documents and computed indices locally and on cloud
- Cached PageRank and index, improving the inquiry performance to be 70% faster than original and the search time <1 second

Spark Java like HTTP Server 🌐 Java, HTML, Apache Maven/Log4j Feb 2022 – Mar 2022

- Built a multithreaded HTTP server with a thread-safe handler responding 1K+ simultaneous requests concurrently
- Handled various routes from requests with pattern matching for parsing and cookies and sessions for identification

Multidimensional Analysis of the Effects of Climate Change 🌐 Jupyter, pandas, ML libraries Nov 2021 – Dec 2021

- Analyzed relations between the global temperature and other data (accuracy >90% by random forest) with Scikit-Learn and used ARIMA model to predict and visualize global temperature changes in the next 20 years
- Used AFINN and NLTK to do sentiment analysis with labeled Twitter posts and visualize the word frequency

HONORS & AWARDS (SELECTED)

Meritorious Winner of 2020 Mathematical Contest in Modeling Top 8% all over the globe
Mao Yisheng Science and Technology Award (Railway Education Star of Outlook Award) Top 0.05%, only 2 winners from 3 colleges