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: 3.80/4.00) — *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, LaTeX, 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*