Brook Mao

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# Skills

## Technical

* Proficient in Python, JavaScript/TypeScript, Java, C/C++, and PHP, developing apps such as \_\_\_\_\_\_\_\_\_\_.
* Experienced with SQL databases and data modelling, building a full stack profile collection app leveraging MySQL.
* Familiar with NoSQL databases like MongoDB and Firebase Realtime DB, building apps such as \_\_\_\_\_\_\_\_\_\_.
* Familiar with basic system design from engineering a multiplayer chess clock app with a 3-tier architecture.
* Clear documentation skills demonstrated through open-source contributions to the VSCode user documentation.
* Skilled at writing clean and easily understandable code (by peers and TAs), through U of T's software design course.
* Detailed in quality assurance, writing unit tests for personal projects and school assignments using frameworks such as doctest, unittest, Jest, and JUnit.
* Familiar with DevOps, using Docker and GitHub Actions to set up CI/CD pipelines in projects such as \_\_\_\_\_\_\_\_\_\_.
* Knowledgeable at mining and visualizing raw CSV data to reveal insights using Python libraries such as Pandas and Matplotlib, through freeCodeCamp's data analysis certificate.
* Familiar using TensorFlow to build machine learning models, including a malaria cell classification neural network.
* Experienced in using Google Suite (Sheets, Docs, Slides) and Microsoft Suite (Excel, Word) through academic presentations and assignments.

## Interpersonal

* Experienced working in Agile and Scrum teams, leading a group of 6 as Scrum Master using Jira to build an artifact database Android app catering to client requirements for a final course project.
* Open communicator, facilitating standup meetings both in software teams and with colleagues as a camp counselor.
* Collaborates effectively and quickly learns new skills to fulfill roles in hackathon projects and meet tight deadlines.

# Education

## University of Toronto, Honors Bachelor of Science in Computer Science (Co-op) Expected 2027

Software Engineering Stream | Relevant Courses: Software Design, Computer Organization

## Additional Certifications

* JavaScript Algorithms and Data Structures, freeCodeCamp.org
* Data Analysis with Python, freeCodeCamp.org
* Web Applications for Everybody Specialization, University of Michigan (Coursera)

# Experience

## [Artifact Database Android App](https://github.com/BrookMaoDev/SoftwareDesignFinalProject) | *Android Studio, Java, Firebase, Jira, Agile and Scrum* July 2024 - August 2024

* Leveraged Firebase and Java to develop a mobile app that efficiently manages and organizes museum artifacts.
* Led a team of 6 as Scrum Master, facilitating standups and sprint planning, communicating tasks and deadlines, and enabling smooth collaboration on GitHub by resolving merge conflicts, earning a peer evaluation score of 5/5.
* Troubleshooted and resolved bugs for 3 team members, ensuring the artifact display page and report generation feature met requirements and kept the project on schedule.
* Implemented a vibrant, interactive UI by extending standard AndroidX fragments to create custom UI elements.
* Wrote maintainable and testable code by utilizing the Model-View-Presenter (similar to MVVM) architecture, and applying design patterns including Singleton, Adapter, and Strategy.

## [ThreatTrace AI](https://github.com/BrookMaoDev/ThreatTraceAI) - Malaria Detection CNN | *Python, TensorFlow, Flask, JavaScript, GCP* October 2023 - July 2024

* Collaborated in a team of 4 at Hack the Valley to develop a convolutional neural network that classifies cell images as healthy or malaria-parasitized with 95.45% accuracy, winning the Pulsar ML Challenge.
* Delegated tasks and ensured teammates were clear on their roles to deliver a prototype within a 36-hour deadline.
* Built the model with TensorFlow in a Google Colab notebook, training it on a dataset of 27,000+ images.
* Served the model using a Flask REST API, with Bootstrap and JavaScript on the client side, allowing users to try the model by uploading their own images through a web app.
* Leveraged GitHub Actions to set up a CI/CD pipeline, automating Docker image builds on repository updates, making for faster deployments (≈ 2 minutes) to Google Cloud Run.

## [Python Data Analysis Certification](https://www.freecodecamp.org/certification/BrookMaoDev/data-analysis-with-python-v7) | *Python, Pandas, NumPy, Matplotlib, Seaborn, SciPy, Unittest* June 2024

* Analyzed vast datasets with up to 70,000 data points using Pandas and visualized the data with Matplotlib and Seaborn to uncover patterns about global demographics, causes of cardiovascular disease, and page view times.
* Predicted future sea levels by conducting statistical analysis on historical data using SciPy.
* Verified the accuracy of the results by passing 100% of freeCodeCamp's unit tests.

## [MultiClock](https://github.com/BrookMaoDev/MultiClock) - Multiplayer Chess Clock | *MERN, Tailwind, NGINX, Docker, Linux, AWS, GitHub CI/CD* May 2024

* Developed a full stack web app using React for the frontend, Node and Express for the backend, and MongoDB for the database, resulting in an easy-to-use tool that serves as a timer for multiplayer board games.
* Enabled use of the app on both desktop and mobile by implementing a responsive web design.
* Containerized each layer of the application with Docker, allowing for individual scaling of each component.
* Deployed the application on AWS using a Linux VM and configured NGINX as a reverse proxy, achieving HTTPS encryption, and ensuring secure, reliable access for users.
* Leveraged GitHub Actions to set up a CI/CD pipeline, automating Docker image builds on repository updates, making for faster deployments (≈ 2 minutes) to Amazon Web Services.