Joshua Zhang

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Education

University of Washington June 2026
GPA: 3.98, B.S. in Computer Science *Seattle, WA*

Experience

Art of Problem Solving June 2024 - Current
Software Engineering Intern *San Diego, CA*

- Implemented an online placement exam in **React**, increasing accessibility to AOPS Academy courses for over 20,000 students across 12 campuses.
- Synchronized data on the new Academy site to the old PHP site using a **REST API** written in Fastify.
- Improved loading speed of placement exam site by 34% by pruning unnecessary API calls and caching data.

Advanced Robotics at UW Sept 2023 - Current
Controls Software Engineer *Seattle, WA*

- Refactored Sentry robot code in **C++**, implementing substantial enhancements for improved functionality.
- Maintains Taproot, an open-source framework for Robomaster robots used by most teams within the US.
- Won 1st place out of 20 teams in the RoboMaster competition inside North America 2024.

Department of Homeland Security June 2023 - Aug. 2023
Software Engineering Intern *Washington D.C.*

- Conducted a study on the accuracy of fetching information from texts using a Large Language Model (LLM).
- Improved the accuracy of LLMs in answering prompts by **30%** by connecting a **ChromaDB** Vector Database to the LLM through **LangChain**.
- Created the baseline framework in **Python** for future information retrieval research within the DHS.

Red Cheetah Foundation Jan 2023 - June 2023
Computer Science Tutor *Cupertino, CA*

- Taught a class of 15 middle school students basic web development skills involving HTML, CSS, and Javascript.
- Developed an engaging curriculum that guided students in building and hosting a final portfolio website.

Fweefwop Cybersecurity May 2021 – June 2022
Web Developer *Cupertino, CA*

- Hosted a cybersecurity competition with **600**+ participants from **28** countries, and **40,000**+ submissions.
- Set up **Docker Containers**, giving each individual problem its own secure environment.

Identifying NEOs with NASA WISE June 2021 – March 2022
ML Researcher *Cupertino, CA*

- Used **Tensorflow** to identify 40+ Near Earth Objects in NASA's WISE database via image subtraction.
- Identified synthetic NEOs with **96%** accuracy and real NEOs with **91%** accuracy.

Projects

Spotify Recommender | *Python, Flask, Scikit-learn, NextJS, React, Typescript, Tailwind*

- Used Cosine, Euclidean, and Manhattan distance formulas to generate vector embeddings for 12,000 songs.
- Built a frontend using **React**, giving users a graphical visualization of songs and their recommendations.
- Used Microsoft Azure to spin up a container and host the website.

WildEye AI | *Flask, Tensorflow, NextJS, React, Typescript, Tailwind*

- Trained a model based on **Tensorflow** Inception_V3 capable of identifying 90 different animal species from photographs with an 86% test accuracy.

Technical Skills

Languages: Typescript, Javascript, Python, Java, C++, SQL, HTML/CSS, Bash
Frameworks: React, Next, Tailwind, Tensorflow, PyTorch
Developer Tools: Git, Microsoft Azure, Google Firebase
Libraries: Pandas, NumPy, Matplotlib, Strapi, Storybook, Jest
Awards: USAPhO Top 400 (2021, 2022), National Cyber Scholar (2022, 2023)