

Kevin Wang

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Recent master's graduate from the University of Michigan with prior internship and academic research experience in systems engineering and machine learning applications. Strongly interested in roles that require optimizing critical, high-performance code.

Skills

Languages: C++, Python, Java, Javascript, Rust, Bash, SQL, HTML/CSS

Tools: Git, AWS (EC2, S3, DynamoDB, Lambda), Kafka, PyTorch, LLVM, GCP, CMake, GDB, Valgrind, Wwise, Perforce, Jira, HuggingFace, Jekyll, React

Work Experience

U.S. Fulbright Program, Poland

Oct 2023 - present

Student scholar - teaching faculty

- Developing an open-source **on-device chatbot** for usage as an **automated teaching assistant** in foreign language classes, able to generate and vocalize responses in less than five seconds while constrained to 4 GB of VRAM
- Creating materials and hosting weekly labs in introductory and intermediate computer science with C++, Java, and Python
- **Founded the university's first coding club** and currently serving as faculty supervisor, leading game jams, guiding students through team coding projects, and giving talks on software engineering practices from the United States

Censored Planet Laboratory

Research assistant

Jul 2023 - Aug 2023

- Investigated reinforcement learning sampling methods to intelligently adjust the volume and targets of network measurements, **accelerating workflow by 10x** and letting researchers **automatically detect changes in censorship patterns**
- Implemented a testing framework in Python, including **data preprocessing and simulation**, to evaluate sampling methods

Department of Computer Science and Engineering, University of Michigan

Graduate student instructor

Jan 2022 - Jul 2023

- Taught three classes on **machine learning**, **introductory computer architecture**, and **introductory data structures and algorithms** in classes ranging from 60 to 1400 students, working on teams of teaching staff of sizes between 5 and 50
- Reviewed course content and supervised practical coding assignments in **weekly lab sessions with 30 students** per semester
- Supported course logistics outside of labs by hosting weekly office hours, writing and proctoring exams, grading student assignments, answering forum questions, and guiding students through large semester-long team projects

Bungie

Software engineering intern, platforms and partnerships

May 2022 - Aug 2022

- Prototyped a novel video game controller rumble system in C++ using the Wwise API and enabled integration into Bungie's Tiger engine, **used in the Destiny game franchise**, to **speed up designer workflow by 10-100x** for rumble events
- Enabled usage of platform-specific haptic features to **allow designers additional creative freedom** when making games
- Adjusted product to **align with requirements from multiple stakeholder groups totaling 150+ individuals** from engineering, design, audio, and platform teams, ensuring **long-term documentation and visibility** of prototype

Ford Autonomous Vehicles

Software engineering intern, full stack

May 2021 - Aug 2021

- Built a new informational dashboard with **Java backend** and **React frontend** using **AWS DynamoDB and Lambda**, **Apache Kafka**, and **Spring Boot** to **continuously provide status of 200+ connected vehicles** for internal and external users
- Integrated external APIs from Ford subsidiary Autonomic to process and include relevant third-party data on dashboard
- Practiced an **agile, CI/CD** workflow using **Jira** and **Jenkins** to rapidly iterate and deliver end product in three months

University of Michigan Transportation Research Institute

Student research team lead

Jan 2020 - Dec 2021

- Produced and documented an application utilizing keypoint detection and clustering to categorize unlabeled image data, allowing researchers to **automatically annotate videos** used in research on automotive safety
- Set up team ceremonies, weekly sprints, and technical specs to **produce new data tools within one month** after onboarding

Projects

LLM-based joke generator with variable humor levels

Nov 2022 - Dec 2022

- Annotated and augmented a text corpus from the r/jokes subreddit to create a **novel text dataset** of funny and unfunny jokes
- Combined humor detection methods with fine-tuned BART model to generate jokes with **variable humor level**

Upgraded LLVM loop tiling optimization pass

Nov 2022 - Dec 2022

- Implemented custom optimization pass in LLVM's MLIR project using an algorithm selected from compiler literature, resulting in up to **16x fewer cache misses** on large matrix operations compared to MLIR's default loop tiling method

Virtual memory simulator

Nov 2021

- Developed a virtual memory pager to allocate, manage, and free virtual memory pages, implemented UNIX fork and exec functions and generated test cases to verify pager and function implementations

Threading library

Oct 2021 - Nov 2021

- Implemented concurrency primitives on single-processor and multiprocessor CPUs, including thread objects, mutexes, condition variables, and the OS-level infrastructure and logic for thread creation, queueing, and deletion

Mys-Query C++ search engine

Jan 2021 - May 2021

- Created a **distributed, multithreaded** search engine from scratch **indexing 3 TB of site** data split across 30+ data servers
- Designed **serialization algorithm** to efficiently store crawled site data in format quickly accessible by query client
- Led creation of novel feature to collect **anchor text for ranking**, improving search results for frequently referenced pages

Adversarial attacks on brain tumor segmentation data

Apr 2021

- Demonstrated viability of adversarial attacks on machine learning models for cancer diagnosis and tumor segmentation
- Created novel attack with **decreased perturbation visibility** and **increased success rate** on state-of-the-art medical models

Volunteering and outreach

AI4All

Graduate student instructor

Jul 2022

- Facilitated technical programming lessons for AI bootcamp targeting underrepresented high school students

Brilliant Little Fires

Principal investigator

May 2022 - Jul 2022

- Conducted 40 online interviews with students and alumni at the University of Michigan about their experiences with burnout and imposter syndrome in school, then analyzed, summarized, and published results online

University of Michigan Machine Learning Theory Reading Group

Founder, main host

Jan 2022 - Apr 2022

- Created a weekly reading group to discuss and analyze contemporary machine learning theory research and literature

Michigan Student Artificial Intelligence Lab (MSAIL)

Education initiative lead

Aug 2020 - May 2021

- Created and taught lessons on selected topics in AI and machine learning to help acclimate newcomers to the organization
- Redesigned curriculum to more clearly communicate concepts, resulting in **improved student retention** and progress

Education

University of Michigan-Ann Arbor, MSE Computer Science and Engineering

Aug 2023

University of Michigan-Ann Arbor, BSE Computer Science and Engineering

Dec 2021

Summa cum laude, minor in music

Selected coursework: Compilers • Network Security • Operating Systems • Database Management Systems • System Design of a Search Engine • Machine Learning • Natural Language Processing • Design and Analysis of Algorithms • Category Theory • Hardware and Software Verification • Ethics for Artificial Intelligence