KAIJI FU

kaiji@unc.edu | (252) 267-0412 | Github/Linkedin: kaijif | US Citizen | Experienced software engineer searching for internships

EDUCATION

University of North Carolina at Chapel Hill – Chapel Hill, NC — Expected Jun 2026

Computer Science, B.S.

GPA: 4.0 | Carolina Scholar (full scholarship, top 1%) | Honors (top 10%) | Information Science Assured Admit

WORK EXPERIENCE

Mozilla – San Francisco, CA (Remote) – Open-Source Contributor — Dec. 2023 - present

Collaborating with core maintainers to contribute to Mozilla's bugbug project by implementing critical type checking fixes

- Actively contributed to Mozilla's bugbug project, an AI-powered bug classification system that uses machine learning to automate bug triage across Firefox repositories
- Collaborated with core project maintainers through GitHub issues and code reviews, iteratively refining the solution based on feedback from senior Mozilla engineers and merged a 200+ line commit that fixed an issue related to type checking

Pitt Pirates Robotics Club – Chapel Hill, NC - Software Engineer — Aug 2022 – Present

Led robotics club's AI development, creating and deploying a high-accuracy computer vision system for autonomous navigation.

- Designed and trained a custom YOLOv7 AI deep neural network using PyTorch, achieving 95% accurate real-time object detection for competition elements such as game pieces and field markers
- Collaborated with engineering team to successfully deploy the object detection model on an NVIDIA Jetson, configuring an Ubuntu Linux environment and optimizing CUDA acceleration for real-time performance
- Implemented a MQTT communication protocol between the Jetson and the robot's main controller for reliable, low-latency data transfer in competition environments

PERSONAL PROJECTS

Nolyn – Greenville, N.C. — May 2023 - present

Developed a smarter stop-arm camera with a 5-person team, cutting costs by 100x ($30 vs. $3,000) - https://nolyn.co/

- Built an IoT camera on the ESP32 platform with C++/RTOS, during which I implemented a custom HTTP client from scratch to interface with the cloud because public implementations didn't suit the project's needs
- Designed and built AWS cloud infrastructure using DynamoDB for metadata storage, S3 for video storage, API Gateway and Lambda for secure REST endpoints, and an MQTT broker for reliable real-time camera communication
- Implemented cloud-based image processing motion detection algorithms to detect and document school bus stop-arm violations with high accuracy in varying light conditions
- Designed and developed a responsive admin portal using Figma and ReactJS, enabling school officials to review violations, generate reports, and manage bus camera fleets.
- Established a CI/CD pipeline using GitHub Actions to automate testing and deployment of both firmware and web application updates, reducing deployment times by 100x
- Coordinated closely with stakeholders and working on deploying on Pitt County Schools' 200+ buses
- Received a $1,000 grant from Amazon in recognition of the value of the project's innovative approach to enhancing student safety while reducing costs for school districts

ACADEMIC RESEARCH

Machine Learning-Enhanced Electrocardiograms — Sep 2024 - present

Leveraging convolutional neural networks (CNNs) and transformers to detect cardiac anomalies with high accuracy.

Researcher

- Developed robust data preprocessing pipeline using Pandas and SciPy to normalize ECG waveforms
- Implemented convolutional neural networks (CNNs) and transformer architectures—the same technology powering modern AI LLMs like ChatGPT—to detect cardiac anomalies
- Leveraged high-performance Linux-based SLURM environments to train computationally intensive models on large-scale medical datasets
- Collaborated closely with UNC School of Medicine cardiologists to validate model outputs against expert clinical diagnoses

Implementing a Federated Learning System to Protect Patient Privacy — Feb 2020 - April 2023

Using federated machine learning to enhance privacy and security in healthcare data analysis.

Lead Author

- Used TensorFlow to train federated models and Pandas/NumPy to perform data processing.
- Demonstrated that federated modeling maintains >95% accuracy while eliminating the need for cross-institutional data sharing, making training robust models much easier and presented my findings at the ISS Symposium

SKILLS

Languages/Tools/Skills: Python, JavaScript, Java, Rust, C/C++, PyTorch, TensorFlow, Figma, Linux, Git, CI/CD, AWS, Docker, embedded applications, machine learning, AI, LLMs, and open-source software, RESTful API design, database design, web development, React, project management, cross-functional collaboration, growth mindset, enthusiastic learner