Harsh Karia

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Education

University of California, Davis, B.S. in Computer Science — Sept 2022 – June 2026

- **Relevant Coursework:** UNIX Development, Machine Learning, Computer Networks(TCP/IP), Computer Vision, Algorithm Analysis, Data Structures, Statistics, Operating Systems(upcoming), Deep Learning(upcoming)

Skills

Technical: Python, C++, JavaScript, React, Machine Learning, Network Protocols, TCP/IP, Metasploit, AWS, Linux, MySQL, Data Modeling, Deep Learning, Network Security, Docker, Predictive Modeling, Pandas, NumPy

Experience

Generative AI Privacy Researcher, Zubair Research Lab — Jan 2025 – Present

- Using **network packet sniffing** to identify if Gen-AI browser extensions are storing sensitive data through personalization by **web crawling** and **MITMproxy analysis** in Python

Software Engineering Intern, Corgi AI (YC) — Sep 2024 - Oct 2024

- Introduced automations for insurance **data parsing** and email marketing using OpenAI's **LLM** models and built internal APIs for **financial data modeling** with **Python and React**, reducing employee requirements by **100x**
- Developed insurance policy pricing by building in-house risk management algorithms and **created databases** for property managers using **PostgreSQL and Python** for **backend**

Software Engineering Intern, American Wild Horse Campaign — June 2023 – Sept 2023

- Spearheaded end-to-end development of a **full-stack mobile application** (IOS and Android) using **React Native** and **JavaScript**, facilitating **data collection** for a nonprofit and successfully launching on App Store
- Designed and deployed frontend user interfaces using **React** and integrated **object detection models** with **95% accuracy** to automate wild horse identification in images using Azure Cloud and **TypeScript backend**

Software Engineering Intern, SchedGo — Nov 2022 – Mar 2023

- Revamped meeting type display on SchedGo's web application to allow students to optimize schedules based on class times using **TypeScript** and **React.js (JavaScript)**
- Enhanced app functionality for over **2500 monthly users** across **4 universities** by refining design and integration processes for schedule import/export and resolving outstanding bug issues

Projects

Transformer Chess AI (in progress) — GitHub

- Created **transformer-based chess AI**, improving move **prediction accuracy** and efficiency by integrating relative positional encoding, **DeepNorm stabilization**, and optimized policy/value heads.
- Built and **trained model** on Leela Chess Zero data, enhancing strategic decision-making by implementing an **efficient PyTorch pipeline** with **data augmentation** and performance monitoring

AVIA (Stanford University Hackathon Winner) — GitHub

- Implemented **full-stack** AI command center that consolidates **real-time biometric data for 11 vital metrics** using Terra API and PPG recordings, **predicting blackouts** and pilot failures, allowing leadership to make real time strategy decisions for deployments. Built with **Mistral AI's LLM, Python, React, JavaScript, and Tailwind**

CourtCheck — GitHub

- Engineered **machine learning based tennis analysis** tool using **Python, PyTorch, OpenCV**, and **Detectron2** to achieve **95% accuracy** in court and ball detection, **reducing human error** in line calls by **90%**
- Utilized **NVIDIA A100 GPUs** to train a Detectron2 ML model with a **ResNet-50 backbone**, processing over **10,000 annotated images** from tennis video film for keypoint detection with **React dashboard** for analytics

WebTrace — GitHub

- Developed **DNS client** using socket APIs to resolve domain names and extract DNS records, manually **constructing DNS and HTTP packets**, and measuring round-trip times for DNS resolution and HTTP requests.
- Automated web crawling and **HTTP traffic analysis** for 1,000 websites using Selenium with **BrowserMobProxy** utilizing **HAR files** to identify top 10 third-party domains and uncover **online privacy** practices

MeMonitor — GitHub

- Developed **TCP proxy server** and **UDP client-server architecture** and conducted **network monitoring using Python** and dpkt to sniff packets and facilatate message accurate routing; **optimizing network infrastracture performance** and reliability and adding modularity by using **Docker** containers and **Linux** VM