

Prakhar Sinha

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EDUCATION & SKILLS

University of California, Davis

Jul 2020 - Jun 2024

B.S. Computer Science

Relevant Coursework: Data Structures and Algorithms, Discrete Mathematics/Computation Theory, Development in Unix and C++, Abstract Mathematics, Real Analysis, Machine Dependent Programming, Introduction to Quantum Computing, Computer Vision, Computer Architecture, Calculus, Cryptography, Programming Languages, Operating Systems, Algorithm Design

Programming Technologies Python, C++, C, C#, Javascript, Typescript, CSS, Go, Lisp, Prolog, Embedded Systems (x86, ARM, PIC)
PyTorch, React, D3, Socket.io, Flask, Docker, Figma, OpenCV, Next.js, Git, GNU Make, GDB, Unix

EXPERIENCE

Software Engineer

Aug 2024 - Present

Davis Housing Services

Davis, CA

- A local business providing housing services to exchange students from all over the world, connecting students to **1000+** host families
- Created unique front-end interfaces and forms for exchange students, host families, and administrators using **Tailwind** and **React**
- Implemented **Firestore auth** and **JWT** based session management ensuring stateless, scalable user sessions and enhanced security.

Generative AI Product Engineering Intern

June 2024 - Present

VDart Inc.

Remote

- Deployed a product designed to automate early stages of the hiring process using **LLMs** like **Meta Llama 3.1** as full-stack engineer
- Wrote the entire front-end using **Figma**, **Next.js**, **Typescript**, **Tailwind CSS** and integrated **Firestore** and **AWS services**
- Developed prompt engineering techniques and integrated **RAG** into the LLM to focus model attention and reduce LLM hallucinations
- Designed **REST APIs** to manage user authentication, job posting management, and integration with external services like Google Calendar and LinkedIn. Authored the system design document to define and standardize API endpoints

Computer Vision Specialist/Machine Learning Researcher

June 2024 - Present

UC Davis Health (P.I. Farzad Fereidouni)

Sacramento, CA

- Wrote **image-to-image** translation algorithms to virtually stain live tissue samples using tools like **OpenCV**, **U-Nets** and **PyTorch**
- Optimized slow and inefficient image processing algorithms by over 75% using GPU acceleration through **Cupy** and **NVIDIA Rapids**
- Fine-tuned CV models like **Meta SAM**, using **Ultralytics**, to develop machine learning driven, image-processing pipelines that generated image segmentation masks in ~1000ms and integrated them into legacy **Visual Basic .NET** codebases using **C#** and **DLL**

PROJECTS

Neuro-Prosthetic EEG Controlled Robotic Arm

September 2023 – May 2024

Neurotech@Davis

[Project Link](#)

- Engineered a low-cost neuro-prosthetic that could be controlled through the use of mental imagery in the brain using EEG signals
- Integrated the EEG headset with Python software and developed software to train a machine learning model with EEG data
- Participated as the project manager as well as the lead software engineer for this project. Wrote multiple **Python** scripts to facilitate communication between the **Arduino** and the Emotiv EEG headset, and designed data pipelines

C Shell; Multi-Threading Library; Virtual FAT File System

September 2023 – May 2024

UC Davis

School Project

- Developed a **C shell** that was capable of managing multiple processes; Implemented **piping** and numerous built-in commands
- Wrote a user-level **multi-threading** library, capable of managing **>100** of threads with a complex thread-locking and queuing system
- Wrote a virtual file system inspired off of FAT that manipulated memory at the page level and did complex operations at **low-latency**

Colorizing Greyscale Images with Generative Adversarial Network

July 2022

Neuromatch Academy

[Project Link](#)

- Developed a **GAN machine learning** network to recolorize grayscale images that were **90%** accurate to the original image
- Utilized **ResNet-50** as a backbone for the model and developed a novel discriminator to enhance the model's performance by **45-50%**

LEADERSHIP/CLUBS

Head of Projects Division

September 2022 – June 2024

Neurotech@Davis

Davis, CA

- Managed a division of **>100 people**. Facilitated **communication** between different divisions and projects, oversaw the development of **>20**, and practiced **leadership** skills. Coordinated responsibilities amongst team members
- Placed **3rd** at the national 2023 NeurotechX BCI competition: *Maximizing Learning Potential: An EEG-based Haptic Feedback BCI Solution for Improving Student Focus*. **2nd** at the California Neurotech Conference: *Neuro-prosthetic EEG controlled Robotic Arm*