Dhruv Sangamwar

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EDUCATION

University of California, Davis   Jul 2021 - Jun 2024
B.S. Computer Science
Relevant Coursework: Operating Systems, Computer Architecture, Data Structures, Algorithms, Object Oriented Programming, Distributed Computing, Bio-informatics, Human-Computer Interaction, iOS Development, Computer Vision, Machine Learning.

EXPERIENCE

Software Engineer   Dec 2024 - Present
PNI Sensor   Santa Rosa, CA
· Developed **GPS/GNSS-Denied Position Navigation and Timing Software** leveraging Magnetometers and Accelerometers.
· Integrated a Non-GPS Dismounted Soldier Tracker into the Android Team Awareness Kit (ATAK) platform using **Kotlin** and **Java**.
· Designed and implemented **sensor fusion** middleware in **Rust**, minimizing integration time and code duplication across platforms.

Software Engineer   Mar 2024 - Nov 2024
Davis Housing Services   Davis, CA
· A local business providing housing services to exchange students from all across 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 **Firebase auth** and **JWT** based session management ensuring stateless, scalable user sessions and enhanced security.
· Developed **REST**ful back-end APIs using **Java Spring Framework**, implementing CRUD services that interfaced with PostgreSQL.

Software Engineer - Undergraduate Research   Oct 2023 - Aug 2024
C-square lab (Computational Communication Research Lab)   Davis, CA
· Engineered an **ETL** pipeline using **Python**, **Pandas**, and **SQL** to efficiently extract, transform, and load institutional text data.
· Fine-tuned Large Language Models (**LoRA**) over governance texts and implemented retrieval augmented generation (**RAG**) workflows.
· Applied hierarchical clustering algorithms using **SciPy** and **Matplotlib** to visualize and aid the analysis of text and linguistic patterns.
· Developed validation for LLMs using **spaCy** and **NLTK** for co-reference resolution and semantic role labeling to ensure high accuracy.

Product Engineering Intern   Jun 2022 - Jun 2023
Solidigm (Previously Intel NAND Solutions Group)   Sacramento, CA
· Developed firmware for the **P4512 ASIC**, working with **C** to implement new features and optimize performance on **QLC SSDs**.
· Implemented **Block-by-Deck** programming and deck-specific write techniques to reduce write amplification and extending lifetime.
· Designed and automated **30+** rigorous firmware **regression** test to ensure consistent performance and reliability in intense workloads.
· Modernized legacy test framework by migrating **100+** tests from **Python 2.7** to **Python 3** improving performance and security.

Software Engineer   Mar 2021 - Dec 2021
NOMAD (acquired by WISH STR Enterprises)   Los Angeles, CA
· A startup with over **$50,000** in funding offering budget friendly short term property rentals. Completed UCLA's Venture Accelerator.
· Developed a database seeding script using **JavaScript** to interface with **MongoDB**, improving database initialization and load testing.
· Implemented caching using **Redis** to improve geo-spatial indexing for property listings enhancing proximity based search performance.
· Developed containerized micro-services using **Docker** and scaled using **Kubernetes**, deployed applications on **AWS** and **Firebase**.

PROJECTS

Rust Software Development Kit
· A SDK for **ResilientDB**, an open source distributed blockchain database that is currently going through **Apache** incubation.
· Built using **Rust** providing database specific and **GraphQL** APIs and interfaces for UTXO, KV and Smart Contract Applications.

LLM-Aided Flashcard Generation
· Automated flashcard generation using **GPT-4**, allowing students and teachers to create personalized quizzes from PDF notes/textbooks.
· Developed a full-stack application using **Next.js** and **TypeScript** front-end, and a **FastAPI** back-end, hosted on **AWS EC2**.

LEADERSHIP/CLUBS

Head of Projects   Jun 2023 - Jun 2024
Neurotech@Davis   Davis, CA
· Developed an **EEG-controlled robotic arm**, programming an Arduino in **C** to control servo motors based on EEG impulses.
· Spearheaded the first open-source **neurotech wiki**, curating articles on **OpenBCI**, **EEG**, and **signal analysis** using **Python**.

SKILLS

Programming	C#, C++, C, Java, JavaScript, TypeScript, Python, Rust, Go, SwiftUI, Ruby, Haskell, Erlang, Kotlin.
Technologies	HTML/CSS, React, Node.js, SQL/NoSQL, Linux/Bash, Git, AWS, Docker, NumPy, Pandas, Kubernetes.