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.
· Designed and implemented a high-performance **sensor fusion** middleware in **C++**, seamlessly integrating GPS, magnetometer, accelerometer, thermometer and gyroscope data to deliver precise real-time positioning and navigation in GPS-denied environments.
· Integrated a Non-GPS Dismounted Soldier Tracker into the Android Team Awareness Kit (ATAK) platform using **Java** and **Kotlin**.
· Engineered robust and memory safe **encoders/decoders** in **C++** and **Rust** for sensor data streams, designed for high reliability and compatibility with **Sensor Hardware Abstraction Layer** implementations across Android-based systems.

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.
· Implemented a **Gale-Shapley** based matching algorithm with **LLM-powered embeddings** to quantify subjective preferences such as personality, cleanliness, and lifestyle compatibility.

Undergraduate Research Assistant — Oct 2023 - Aug 2024
C-square lab (Computational Communication Research Lab) — *Davis, CA*

· Studied governance policies within open-source repositories and sustainability of **open-source software model**, under Dr. Seth Frey.
· **Fine tuned LLMs** to improve model performance in understanding governance text using the institutional grammar framework.
· Designed and developed data pipelines to process institutional texts and **hierarchical clustering** algorithms to visualize word clusters.
· Developed validation methods to determine efficacy of LLMs for **NLP** tasks such as co-reference resolution and semantic role labeling.

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.

Place Kittens

· Developed a robust web API in **Go** that dynamically generates and serves kitten images, supporting width and height parameters.
· Implemented **concurrent** request handling using Go's threading model (Go routines) to support multiple simultaneous API requests.

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.