Justin Lang

2907 Vista Creek Drive • San Jose, 95133 • jlang61@ucsb.edu • (408)-466-7675

EDUCATION

UNIVERSITY OF CALIFORNIA - SANTA BARBARA   Santa Barbara, CA
Pursuing B.S. Degree in Computer Science
With A Minor in Statistics and Applied Probability GPA: 3.94   Graduating: 2025
Coursework: Algorithms and Data Structures, Discrete Mathematics, Object Oriented Design, Computer Organization,
Computer Architecture, Machine Learning, Deep Learning, Dynamic Programming,
College of Engineering Program and Dean's Honors

LYNBROOK HIGH SCHOOL
Valedictorian, ACT: 34/36   Cupertino, CA
8 AP Tests, Secretary of Team HBV Club   Graduated: 2021

INTERNSHIP

HUUPE   San Diego, CA
Software Engineer Intern   July 2023 - September 2023
- Contributed to the development of a backend API for a smart basketball hoop, enabling seamless data integration and user interaction.
- Improved codebase quality by refactoring unit tests and implementing a code formatting solution using Husky pre-commit hooks.
- Enhanced debugging capabilities by generating unique IDs for all incoming and outgoing requests and responses.

HUUPE   San Diego, CA
Software Engineer Intern   July 2024 - September 2024
- Developed a distributed WebSocket system using Redis PubSub for real-time, cross-instance communication, enabling seamless message broadcasting between clients on separate servers.
- Designed and implemented Node.js servers with WebSocket support, maintaining a dynamic list of connected clients and broadcasting connection updates.
- Integrated Redis as a mediator to handle inter-process communication, ensuring scalability across multiple API instances.
- Dockerized the application with docker-compose.yml for streamlined deployment of Redis, Node.js servers, and WebSocket clients.
- Conducted testing with tools like wscat to validate system performance and ensure reliability under load.

PERSONAL PROJECTS

AVALUTION: Redefining BlockChain Merkle Trees
In Association with Ava Labs

- Enhanced blockchain state management by minimizing storage overhead and reducing tail-latency through on-disk serialization, efficient free list management, and a revision manager.
- Benchmarked performance across database sizes (1GB to 1TB), identifying optimization opportunities to enhance memory efficiency and write strategies.
- Integrated advanced concepts from Firewood, Avalanche MerkleDB, and LSM/B+ tree structures to surpass traditional storage approaches.
- Implemented power-of-2 memory allocation algorithms, enabling rapid index lookups and improved data organization efficiency.
- Delivered trustless state syncing and proof capabilities, improving state reconciliation in decentralized networks.

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CODE & GROW:

- Developed and implemented UI/UX enhancements for a multi-language code learning platform, including revamping code editor layout, integrating language switcher, and optimizing sidebar navigation.
- Collaborated with team members to integrate code compiler functionality using Ace Editor and Google Gemini AI, enhancing user experience and enabling real-time code execution and analysis.
- Designed and implemented essential website features, including lesson pages, about us, contact page with email functionality, and footer navigation, ensuring seamless user interaction and engagement.
- Website can be found at project-05-codegrow.vercel.app

INTERACTIVE WEB PLATFORM FOR TAIWANESE AMERICAN STUDENT ASSOCIATION

- Utilized React.js for front-end development, optimizing user experience and accessibility while ensuring real-time event updates for the association's members.
- Designed and developed a dynamic website for the Taiwanese American Student Association, leveraging Google Cloud services to seamlessly integrate events directly into the website.
- Implemented automated updates using Google Sheets and Photos API with Python scripts and GitHub Actions to ensure real-time event information and dynamic photo galleries on the website.
- Website can be found at https://ucsbtasa.github.io/

LEADERSHIP & ACTIVITIES

TAIWANESE AMERICAN STUDENT ASSOCIATION   Santa Barbara, CA
Website Head, Website Developer, Historian, General Staff and Officer Intern   January 2022 - Present
- Planned several activities and events to foster an inclusive community consisting of 200+ members
- Informed team members of issues and solutions to work towards during discussions
- Maximized member connection through continuous use of technology in Sheets/Forms to promote member input
- Capturing and preserving moments through photography, documenting the club's activities
- Streamlining information through website design and currently programming front-end for club website

INTRAMURAL VOLLEYBALL TEAM   Santa Barbara, CA
Captain + Co-Founder   January 2022 - Present
- Introduced and oversaw the volleyball team's creation within the club
- Guided team of 30 individuals during weekly practices and games for three consecutive quarters
- Led the team to become league champions in previous season

PREVIOUS EMPLOYMENT

J. CREW - WESTFIELD VALLEY FAIR   San Jose, CA
Sales Associate   July 2021 - September 2021
- Assisted customers to find clothing that best fit their interests
- Promoted company goals of prioritizing quality and ensuring customer satisfaction

SKILLS & LANGUAGES

Technical: C++, Python, R, React, Javascript, Typescript, Golang, Google Cloud, AWS, Excel, Sheets,
Languages: English, Chinese