Siddharth Sivalanka

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Education

University of California, San Diego — La Jolla
Bachelor of Science in Biology with Specialization in Bioinformatics — Expected Grad: 2028
Relevant coursework: Introduction to OOP, Data Structures, Algorithms, Systems Programming and Computer Organization, Assembly Programming, Discrete Mathematics, Advanced R Programming, Linear Algebra, Multivariable Calculus, Probability and Statistics

Experience

Software Intern
WildGenomics — La Jolla
03/2025 - Present
- Built a Python pipeline to analyze plant-related airborne genetic data
- Reduced sequencing data loss with a custom demultiplexing script
- Created a local FASTQ/BLAST file parser and species-tracking ML model
- Aimed to minimize fertilizer use by targeting infested farmland zones
- Tools: Python, ONT Barcoder, OpenCV, Pandas, NumPy, Seaborn

Projects

NebulaDB | C++, Crow, Linux
- Built a modular in-memory database engine with SQL-like shell and B+ Tree indexing
- Implemented ACID-style transaction scaffolding, lock manager, and thread pool concurrency
- Integrated optional REST API using Crow to accept raw SQL over HTTP
- Designed clean separation of engine, parser, and storage layers with unit testing and benchmarking

ClimateLens | R, Shiny, ggplot2, Leaflet
- Developed an interactive R Shiny dashboard to visualize global climate change data
- Included modules for CO_2 emissions, sea level rise, deforestation, and polar ice mass loss
- Integrated map-based and trend visualizations with regression forecasting for climate metrics
- Designed a modular plotting system for extensibility and user interaction

StudySync | React, Node.js, TypeScript, Claude API
- Built a full-stack AI flashcard app that generates quizzes from the Claude API based on user category
- Implemented quiz modes including timer, stopwatch, and difficulty filters
- Allowed users to create cards or upload notes for batch flashcard generation manually
- Designed a clean tab-based UI for quiz, card creation, and document upload

OpenLabel | Python, OpenCV, CustomTkinter, Gemini API
- Created a desktop app that identifies grocery items and analyzes ingredients from images
- Used OpenCV for live image capture and Gemini API for brand detection and health verdicts
- Generated personalized nutrition summaries and recommended safer alternatives
- Avoided barcode dependency by leveraging visual packaging recognition

Mini Shell | C, Linux, POSIX, GNU Readline
- Developed a custom command-line shell with support for piping, redirection, and job control
- Added alias persistence, tab completion, command substitution, and environment variable expansion
- Supported script execution, command chaining, runtime timers, and colored prompts
- Implemented background job handling (fg, bg, kill) and .rc file-based customization

Aletheia | Python, Streamlit, Gemini API, Slack API
- Designed a multi-agent health assistant that parses medical docs and identifies pills from images
- Implemented an insurance trust index and AI chat assistant with transparent reasoning
- Integrated FDA datasets and Slack escalation for urgent medical cases
- Built a secure, Streamlit-based UI with real-time uploads and agent feedback

Technical Skills

Languages: Java, Python, R, Typescript, HTML/CSS, Javascript, C, C++
Frameworks: React, Node.js, JUnit, Express.js, Pandas, Numpy, MatplotLib, OpenCV, ggplot2, leaflet, crow
Developer Tools: Git, VSCode, Github, Streamlit