Pranav Banwasi

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Education

University of California, Berkeley — Berkeley, CA

BS in Electrical Engineering and Computer Science — GPA: 3.8 — *Expected Graduation: May 2026*

- Relevant Coursework: Operating Systems, Database Systems, Optimization Models, Data Structures and Algorithms, Computer Architecture, Full-Stack Web Development, Linear Algebra, Multivariable Calculus, Probability, Discrete Math, iOS Development

Experience

Software Engineering Intern — June 2024 - August 2024

Optum — *Eden Prairie, MN*

- Developed a FHIR converter API in Python to transform clinical PDF questionnaires into structured hierarchical FHIR-formatted JSON for downstream usage, integrating into a Boomi workflow with Azure's Document Intelligence for extraction and GPT-4o for data organization and translation.
- The API used an algorithm I designed utilizing vector strategies and asynchronous calls to optimize memory and runtime performance, leveraging Fast API, resulting in annual savings of over $10 million for the company.
- Developed an automated QA tool that fills out online forms using Playwright and Selenium, incorporating GPT-4o for generating input data, and verifying both frontend functionality and accurate backend reception.

Research Intern — Feb 2022 – May 2022

SELCO Foundation — *Bangalore, KA*

- Developed strategies for tackling sustaiability problems for rural/impoverished textile, farming, and food businesses. The strategies involved using solar technologies and government/NGO programs for rapid growth and sustinance.
- Crafted research papers analyzing case studies of how deprived businesses in rural Zimbabwe and India can utilize solar energy to combat poor, uncontrollable conditions such as climate, governmental policies, and lack of resources

Projects

Random World Generator | *Java*

- Developed a pseudo-random world generation algorithm that builds a connected room-hallway map based on seeds that can be navigated by a user's avatar and can be regenerated through saving and loading
- Program has encounter features that deploy a user into another world/frame for a particular purpose, timing for game use, and a NPC that chases the user following a path generated via BFS

Pacman AI | *Python*

- Developed a Pacman AI using the A* algorithm on the following heurisitcs: Euclidean distance, Manhattan distance, food locations, and corners for the primary objective of calcuating paths
- These distance heuristics were calculated using BFS and an agent that searches for the shortest and safest possible path, then sending it back to the AI to follow

Noteworthy A Cappella Website | *React, Figma, MongoDB*

- Developed a dynamic website for Noteworthy, an A Cappella group at UC Berkeley that has over 5 million views on various social platforms. A primary feature includes view and click tracking piped to a database cluster on MongoDB for engagement data.
- Website features a video carousel utilizing the React Slick library and member cards with popup overlays displaying member bios, roles, and information. The design was inspired by a modern take on Noteworthy's color themes

RISC-V CPU | *Logism, RISC-V, C*

- Created a CPU that handles every 32-bit RISC-V instruction and memory processes through a register file, branch instruction handler, DMEM, load/storing mechanisms, immediate generator, and control logic
- The control logic interprets various instructions and directs which procedures must occur through a ROM with several binary inputs such as instruction type, program counter manipulations through branching and jumping, writing to a register, and loading/storing to particular memory addresses

Technical Skills

Languages: Python, Java, JavaScript, HTML, CSS, Scheme, C, RISC-V, x86, SQL, Swift, Matlab
Developer Tools: VS Code, Eclipse, PyCharm, IntelliJ, Brackets, Poetry, Git, Jupyter Notebook, Playwright, Selenium, OpenAI API, YOLO, Langchain, Tenacity, GDB, Nest.js, Node.js, Express.js, NoSQL, XCode, SwiftUI