

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, Artificial Intelligence, Machine Learning

EXPERIENCE

Undergraduate Researcher

Sep 2024 - Present

Berkeley Artificial Intelligence Research (BAIR)

Berkeley, CA

- Using PyTorch for Deep Learning Speech Synthesis models focused on the intersection of neuroscience and speech processing AI for assistive technologies. Model is trained on all physical aspects of a human speech and should mimic that system through signals or recreation with an original mimicked voice.

Undergraduate Researcher

Sep 2024 - Present

Berkeley Architecture Research

Berkeley, CA

- Developing CI Infrastructure for FireSim and Chipyard for SSH server simulation.
- FireSim simulates large-scale data centers at very low cost and high accuracy through FPGA-based simulation hosted on Amazon EC2 F1 instances while emulating real hardware to the exact clock cycle. Chipyard is an integrated framework for developing specialized SoCs supporting RISC-V cores, accelerators, and FireSim.

Software Engineering Intern

June 2024 - August 2024

UnitedHealth Group - 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.

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, PyTorch

- Developed a Pacman AI using the A* algorithm on the following heuristics: Euclidean distance, Manhattan distance, food locations, and corners for the primary objective of calculating 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, Node.js, Express.js

- 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

TECHNICAL SKILLS

Languages: Python, Java, JavaScript, C, SQL x86, RISC-V

Developer Tools: Playwright, Selenium, OpenAI API, YOLO, Langchain, Tenacity, GDB, Nest.js, Node.js, Express.js, NoSQL, XCode, SwiftUI, PyTorch