Umar Ghani

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Education

University of California, Berkeley — Berkeley, CA

Bachelors in Data Science — *Expected May 2028*

Relevant Coursework: CS 61A (Programming paradigms and data structures in Python), Data 8 (Data wrangling, visualization, and statistical analysis in Python), Math 53 (Multivariable calculus, optimization, and vector analysis), Cog Sci 1 (Perception, memory, and AI in cognitive science).

Experience

Software Engineer — June 2025 – Aug. 2025

Polygon Capital Management — *Remote*

- Built backend systems for a Kalshi arbitrage platform, including a REST API and supporting data pipelines.
- Developed a Python client and Java server to handle cross-platform requests and data flow.
- Integrated pipelines between Kalshi markets and ML analysis programs, enabling real-time trading insights.
- Contributed to an inventory manager for tracking financial holdings and portfolio data.

Software Engineering Intern — June 2024 – Sep. 2024

HyperPlanar — *San Diego, CA*

- Contributed to development of a quantitative trading platform, focusing on system architecture and scalability.
- Designed architecture diagrams to streamline communication and technical planning.
- Integrated LLM APIs into trading workflows, enabling natural language-driven analysis.
- Researched techniques for fine-tuning and optimizing LLMs for financial trading applications.

Student Researcher — Summer 2023 & 2024

USC Biomechanics Lab — *Los Angeles, CA*

- Built software tools to analyze biomechanical data from a force-measuring device and visualize results as vectors.
- Developed Python programs to preprocess and synchronize video with force data for motion analysis.
- Utilized OpenCV, NumPy, Pandas, and Matplotlib to process data, edit video, and display quantitative results.

Code Instructor — Feb. 2023 – Oct. 2023

Code Ninjas — *San Diego, CA*

- Opened and organized the code dojo, setting up equipment and curriculum to run engaging summer camps.
- Led a bootcamp for 15 children aged 7-15, teaching C# game development fundamentals using the Unity Engine.
- Instructed students in JavaScript and Scratch to foster creative learning.

Projects

DrystAI | *MongoDB Atlas, Google Gemini, WebRTC, Web Speech API, Fetch.ai, Next.js* — October 2025

- Built a networking assistant for AR glasses that identifies people from webcam screenshots, transcribes conversations, and recalls past interactions by matching face and conversation embeddings.
- Used Gemini Vision to generate semantic facial descriptions, embedded with text-embedding-004 and stored in MongoDB Atlas for similarity search using vector queries.
- Integrated Web Speech API for live transcription and Gemini NLP for extracting names, interests, and career info from conversations, enriched further via LinkedIn data from Fetch.ai agents.
- Finalist (Top 6 out of 59 teams) at the Google Gemini Hackathon @ Shack15, recognized for practical application of multimodal AI agents.

TruthStake | *Next.js, Tailwind CSS, Prisma ORM, Gemini API, EigenCompute* — October 2025

- Developed a blockchain-based fact-checking and staking platform where users back claims with ETH, using smart contracts for stake management and generating SHA-256 verification tokens on resolution.
- Implemented AI result verification via EigenCompute to produce cryptographic proof tokens; managed user reputation with SuperMemory API and stored platform data using Prisma ORM with SQLite.
- Built a performant Next.js 14 frontend with Tailwind CSS and server-side rendering; integrated Gemini API for LLM-driven claim analysis and fact verification.

Telemetry Data Analysis Website | *Next.js, TailwindCSS, PapaParse, Chart.js, Gemini API* Sept 2025

- Built a fully client-side telemetry analysis platform that transforms raw racecar CSV sensor data into dynamic, interactive dashboards with no backend dependencies.
- Implemented high-throughput parsing pipelines with PapaParse to stream and preprocess large-scale time-series datasets for low-latency visualization.
- Designed modular, responsive visualizations with Chart.js (line, scatter, and time-series graphs) within a polished Next.js + shadcn/ui interface.
- Integrated Gemini API to deliver LLM-powered insights, anomaly detection, and context-aware visualization recommendations, enabling deeper interpretation of race telemetry.

O Positive | *PHP, MySQL, Bootstrap* Dec 2023

- Engineered a mobile-first full-stack application enabling real-time connection between blood donors and recipients, with a robust backend for secure data management.
- Implemented end-to-end CRUD workflows for donor registration, recipient requests, and profile management, backed by a normalized MySQL database.
- Presented the application live to judges, demonstrating its scalability and social impact, and earned recognition as winner of the Congressional App Challenge.

Publications

Sep 2024 **AI-Driven Diagnostic Tool for Eye Diseases: Enhancing Early Detection in Remote Areas Through Portable Retinal Imaging**

This paper introduces PAIRE, a portable AI tool for early detection of eye diseases using smartphone-based retinal imaging, designed for remote and underserved areas. It combines Convolutional Neural Networks, Feedforward Neural Networks, and transfer learning, trained on diverse datasets for robust performance.

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10.5281/zenodo.13837217

Awards

Oct 2025 **Google Gemini Hackathon Finalist (Top 6 of 59 teams) @ Shack15 by Cerebral Valley**

Recognized as a top finalist for DrystAI, an AI-powered networking assistant leveraging Google Gemini's multimodal AI for semantic facial recognition and conversation recall to enhance human memory during networking events.

Dec 2023 **Congressional App Challenge Winner: O Positive - Connecting Blood Donors and Recipients**

This recognition was awarded for O Positive, a platform that connects blood donors and recipients. The app was selected as the winner of the Congressional App Challenge for my district, and I was invited to participate in the House of Code event at the U.S. Capitol.

Technical Skills

Languages: Java, Python, C++, SQL, JavaScript, HTML/CSS, PHP, C#
Frameworks: React, Node.js, Next.js, Flask, Bootstrap
Developer Tools: Git, Docker, Google Cloud Platform, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse
Libraries: pandas, NumPy, Matplotlib, Scikit-learn, PyTorch
Additional Technologies: TypeScript, Tailwind CSS, WebRTC, Web Speech API, MongoDB Atlas (Vector Search), Google Gemini AI, Fetch.ai uAgents