

Pranav Khatri

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Education

University of Maryland, College Park

College Park, MD

Bachelor of Science, Computer Science

Jan 2024 – Dec 2025

Experience

SuperStack Technologies, LLC

Cockeysville, MD

Founder & Software Engineer

Jan 2026 – Present

- Built and launched CalMate and Ping Messenger, owning Flutter development, Firebase/GCP infrastructure, mobile releases, security, and production maintenance.
- Designed and shipped shared production services for authentication, real-time synchronization, push notifications, and mobile distribution across both applications.

University of Maryland, College Park

College Park, MD

Software Engineer – SEAM Lab

Aug 2025 – Dec 2025

- Developed a full-stack **neural modeling platform** in a 5-engineer team using React, FastAPI, Python, and NumPy, supporting **2,000+ neurons** and **5 Hebbian learning algorithms**.
- Optimized matrix-intensive neural network computations using **JAX**, reducing training latency by **68%** and enabling real-time simulation of **2,000+ neuron networks** compared with the baseline NumPy implementation.
- Engineered interactive visualization and experimentation tools using **React and Sigma.js**, rendering **2,000+ neuron network graphs** and real-time weight heatmaps, energy trajectories, memory-capacity tests, and noise-based recall simulations.

Projects

CalMate – AI Calorie Tracker | Flutter, Dart, Firebase, Google Cloud, Gemini 2.5 Flash

- Developed and deployed a cross-platform AI-powered nutrition application using **Flutter/Dart, Firebase, and Google Cloud**, integrating multimodal food recognition, barcode scanning, voice input, authentication, analytics, and premium subscriptions.
- Integrated **Gemini 2.5 Flash** for multimodal food analysis and optimized inference through client-side image resizing, JPEG compression, and request optimization, reducing image payload size by **85%** and AI inference costs by **75%**.
- Engineered a scalable **Firebase/Google Cloud backend** using Firestore, Authentication, and serverless Cloud Functions; implemented debouncing, rate limiting, and request throttling to reduce redundant API calls by **60%**.

Ping Messenger: Chat & Calls | Flutter, Dart, Firebase, Google Cloud, Agora, Google Maps API, Resend

- Engineered a cross-platform **real-time communication platform** using Flutter/Dart and Firebase, integrating instant messaging, friend networks, shared calendars, and live location sharing across iOS and Android.
- Built **low-latency audio/video calling** with Agora and implemented iOS **PushKit/CallKit** for VoIP notifications and native incoming-call handling, enabling calls to reach users while the application is backgrounded.
- Architected a **Firebase/Google Cloud backend** for authentication, real-time data synchronization, push notifications, and serverless functions; integrated Google Maps for location sharing and Resend for secure email verification.

Around the World | JavaScript, HTML/CSS, Node.js, WebSockets

- Developed a full-stack multiplayer strategy game using **JavaScript, Node.js, and WebSockets**, supporting local and real-time online matches for up to **4 players**, private rooms, and AI-controlled opponents.
- Engineered a **WebSocket-based synchronization and event-driven game engine**, coordinating game state, player actions, chat, transactions, turn progression, AI decision-making, and **30+ randomized game events** across connected clients.

Technical Skills

- Programming Languages:** Python, Dart, Java, JavaScript, HTML/CSS
- Frameworks/Libraries:** React, Node.js, Express.js, Flutter, FastAPI, NumPy, JAX, Sigma.js
- Tools/Platforms:** Git, GitHub, Docker, MongoDB, Firebase, Google Cloud (GCP), Xcode, Android Studio, VS Code