



Gurinder Singh

Staff Software Engineer · Applied AI/ML & Mobile iOS
Building the nervous system for agentic engineering.

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SCAN FOR PORTFOLIO

Claude MCP OTel n8n RAG

90M+
USERS IMPACTED

28+
HACKATHONS

2×
1ST PLACE WINS

PATENT HOLDER

SUMMARY

For over a decade I've turned prototypes into products millions of people rely on. I came up through iOS — architecting consumer and payments experiences at PayPal/Venmo — and grew into applied AI, where I now build the infrastructure that keeps agents dependable in production. USPTO patent holder, and the engineer teams pull in when an idea has to survive real scale.

This year I built the platform Venmo's agents run on. MAIA takes a merchant from cold start to live in under 20 minutes. Vireo is the flight recorder for every agent in production — nothing ships blind. Darwin lets skills improve themselves and open their own pull request. Mac-in-a-Mac runs our iOS test suites 3× faster inside nested macOS VMs. And Claude Cosmos is the safe gateway every model call flows through, PII scrubbed. Five different problems, one throughline: make AI trustworthy enough to actually ship.

I build AI that makes people sharper, not smaller — and that conviction shows up on both sides of the screen: in careful system design and real guardrails, and in mentoring engineers, judging hackathons, and volunteering with NYC high schools and nonprofits. Technology at this scale should still feel like a human made it.

TECHNICAL SKILLS PORTFOLIO * Condensed overview — full technical depth available on portfolio

CATEGORY	SPECIALIZED DOMAINS	TOOLS & TECHNOLOGIES	KEY TECH
Mobile	iOS Core Spatial & Hardware Cross-Platform	Swift, Objective-C, SwiftUI, UIKit, SwiftData, Core Data, ARKit, RoomPlan, BLE, NFC, MapKit, CoreML, MLX, RxSwift, Combine, Flutter & Dart	
AI/ML	Models & LLMs Orchestration Media & Vision	Python, PyTorch, OpenAI, Anthropic, Gemini, Llama LangChain, LlamaIndex, CrewAI, N8N, MCP Servers Stable Diffusion, YOLO, OpenCV, Whisper, ElevenLabs	
Cloud & DevOps	Infrastructure BaaS & CI/CD	AWS (Lambda/EC2), GCP (Vertex AI), Azure, Docker Supabase, Firebase, GitHub Actions, Jenkins, Fastlane, Datadog	
Data & Tools	Databases API & Search Workflow	PostgreSQL, MongoDB, Pinecone, ChromaDB, Redis, GraphQL, Figma, Jira, TDD, Agile, Cursor, Xcode	

PROFESSIONAL EXPERIENCE



PayPal / Venmo

2020 – Present

Staff iOS Engineer → Applied AI/ML Engineer

H1 FY2026 — AI Platform & Infrastructure Builds

- ▶ **Vireo v3:** Architected the observability + memory engine behind the agentic stack: RAG over engineering memory, per-sub-agent telemetry on OpenTelemetry, Python + Swift memory surfaces, and a 100%-capture reference run.
- ▶ **Darwin:** Built a governed self-evolution engine for agent tooling: three invoke modes, CI score-delta gating, automated improvement PRs ("Bloom"), validated across ~120 real-repository runs.
- ▶ **MAIA × Venmo (2026):** Core builder of MAIA, the merchant-facing agentic assistant: consolidated four command / sub-agent / skill tracks into **four loops under one workflow**, instrumented end-to-end with Vireo telemetry. Drove it from cold-start through leadership demo, the Migration & Upgrade motion, and merchant cohort pilots.
- ▶ **Devmo:** Built Venmo's internal agent — the org-facing counterpart to MAIA — turning the signals Vireo captures into an engineering hive mind. Runs on the Vireo + Darwin engine and reaches across the whole internal surface of how the team ships.

AI Enablement — Org-Wide Leverage

- ▷ **Claude Cosmos**
Anthropic-shape proxy adding PII scrubbing, sanitization & telemetry — one safe Claude/Vertex harness for every team.
- ▷ **Prompt Enhancer + Guardrails**
Prompt-hardening layer (~90-test suite incl. an injection battery) now reused across multiple internal agent surfaces.
- ▷ **AI Video Toolkit**
Remotion + Veo/Chirp3 pipelines on GitHub Actions — narrated launch explainers stay current, zero manual video work.
- ▷ **Mac-in-a-Mac**
Nested-macOS agent sandbox (Virtualization.framework + Tart) — cut UI-test cycles 3×; the substrate for parallel agent fleets.

iOS Engineering Excellence & Business Impact

Major Product Launches & Partnerships

- ▷ **Pay With Venmo Checkout 2024–Present**
Cut end-to-end pay-sheet render latency by ~2s.
- ▷ **Pay With Venmo × JetBlue 2023**
Shipped the partnership integration into airline checkout.
- ▷ **QR Touch-Free Payments 2021**
Led the moonshot that won a **\$60M CVS contract**.
- ▷ **Venmo Gift Cards 2023**
Led iOS architecture & delivery — Amazon, Starbucks, Target, DoorDash, Uber, Airbnb.
- ▷ **Venmo × Amazon 2022**
Built the sandbox/integration app in two days for launch.
- ▷ **Amex Partnership 2020**
Built payment-splitting for a **\$400M partnership deal**.

iOS Innovation & Patents

- ▶ **QR Widget Patent (granted 2026):** Awarded U.S. Patent No. 12,675,787, "Interface Widget Tool for Automatic QR Code Generation." First team to use SwiftUI for iOS widgets at Venmo. **Reduced user friction by 66%**
- ▶ **Dynamic Island / Live Activities / App Clip:** Built end-to-end infrastructure including HLDs, LLDs, and APNS notification systems
- ▶ **Visual Snapshot Testing:** Built comprehensive visual snapshot testing suite using XCTest for UI regression testing



Google Stadia

2019 – 2020

iOS Developer/Consultant

- ▶ Worked on Google Stadia for mobile platforms using Flutter/Dart and native iOS plugins
- ▶ Implemented Core Bluetooth integration for Stadia controller connectivity and low-latency communication
- ▶ Utilized Xcode Instruments for performance profiling and CPU/GPU optimization



Morgan Stanley

2018 – 2019

iOS Developer/Consultant

- ▶ Worked on Hybrid (Cordova + Native) Banking and Wealth Management apps for iOS

- ▶ Developed key features: check-deposit, biometric authentication, certificate-pinning, jailbreak detection, push authentication
- ▶ Migrated codebase from 98% Objective-C to 80% Objective-C / 20% Swift

HACKATHON ACHIEVEMENTS & INNOVATION * Featured highlights — full hackathon history on portfolio

28+ hackathons attended across **6+ countries** as participant, mentor, and judge. Earned **2 first-place wins** and served as judge at Yale (2×). Recognized globally for innovation and technical excellence.

1ST PLACE

MLH @ Bloomberg London (2017)
 Automated Search & Rescue System. Featured in BBC documentary.

1ST PLACE

Devcamp NYC (2016)
 Talent Management App. Won among 300+ participants at Google NYC.

FINALIST

HackZurich (2018)
 AR Car Buying Tool. Finalist among 400+ participants.

Hack Yale – Judge (2×) Yale University

PenApps – Mentor University of Pennsylvania

SELECT PERSONAL PROJECTS * Curated highlights — explore 20+ projects on portfolio

Ethereal Dimension
 AI/ML & Spatial Computing

Austin Barricades:
 Computer vision on Austin streets — real-time barricade detection & DoT compliance.

Hylios — Magical Space Intelligence:
 AR + ML room scanning with precise 3D models.

[Live on the App Store ↗](#)

Computer Vision YOLO ARKit RoomPlan
 CoreML

VectorVerse Evolve
 AI Automation & SEO

Content Pipeline:
 AI content-automation engine — 18 n8n workflows from intelligence to publish, with a human approval gate. Live at [vectorverseevolve.ai](#).

Agentic SEO:
 AI-powered SEO strategist with keyword research, geographic targeting & magic reports.

Open-WebUI:
 Built custom deployment for Azure AI Foundry integration.

n8n Strapi Next.js Azure AI
 Open-WebUI

Rosicrucian Knowledge Explorer
 AI Search & Media Platform

Full-stack RAG search engine for 73K+ vectors from digests, books, symposiums, podcasts, YouTube videos.

PDF viewer with page-jump & highlighting, video and podcast player with timestamp seeking. Qdrant + OpenAI + R2. 60-test suite. Amplitude analytics.

Next.js Qdrant R2 OpenAI Supabase

EDUCATION

BS in Computer Systems (Deferred)
 New York City College of Technology, Brooklyn

2012 – 2015

LEADERSHIP & COMMUNITY

- ▶ **Interfaith ERG Chapter Lead**
Grew the Sikh community ERG to **150+ members globally** — events, speakers, cultural programming.
- ▶ **Hackathon Leadership**
Hack Yale judge (2×) · PennApps mentor.
- ▶ **Gurduwara Langar Game**
Community-built game teaching Sikh heritage & seva through play. Open source at github.com/Ripnrip/GurduwaraLangarGame.
- ▶ **Startup Advisory Board Member**
Advised multiple tech startups on iOS architecture & AI/ML implementation.
- ▶ **Bayside High School + Queens College**
CTE advisory board, mentoring & keynote; represented Venmo across NYC tech-education initiatives.
- ▶ **Workshops & Interviews**
Led SwiftUI / State Machines / AI-image / Datadog workshops; conducted **500+ technical interviews**.