

Kushagra Kartik

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EXPERIENCE

Founding Engineer · 1Sphere AI

San Francisco, CA · Jan 2026 — Present

- Built the entire frontend from founder wireframes to production React UI, plus Block Kit Slack surface with inline charts and structured tool-result splitting
- Shipped end-to-end agentic pipeline: Slack message → LLM orchestration → Firecracker VM boots → Claude agent executes tools in sandbox → rendered .pptx streams back to thread
- Implemented multi-provider LLM routing with SigV4-signed Bedrock connector, cross-region inference profiles, and SSE streaming with tool-call accumulation across OpenAI, Bedrock, and Claude
- Built Firecracker microVM orchestration for sandboxed agent execution — ephemeral VMs with tap networking, iptables NAT, read-only Alpine rootfs with per-run overlay, and vsock broker for host↔guest RPC
- Designed zero-trust integration proxy so sandboxed VM guests invoke tenant APIs without holding credentials — tenant identity derived from HMAC-SHA256 JWT signed by the host
- Built async job pipeline with SQS-driven completion, stale-job reaper for dead-worker recovery, per-tenant throttling, and read-after-write lag absorption under production load
- Collapsed 4 integration patterns into one typed gRPC surface with multi-tenant connector resolution and OAuth bridge — new connectors ship as config files, not bespoke services

Research Assistant · Health Engineering Applications Lab (HEAL), ASU

Remote (US) · Jun 2025 — Jan 2026

- Built Java Shannon entropy service for DARPA VR training, computing real-time behavioral competency scores across 4 dimensions from 1GB simulation datasets
- Designed Kafka-based pipeline ingesting VR telemetry from 3 sources, normalizing data for 500+ sessions with zero packet loss
- Architected REST API with MongoDB caching, reducing query response from 5 minutes to instant retrieval

Software Engineer · WP Carey Seidman Research Institute, ASU

Tempe, AZ · Jan 2024 — May 2025

- Built WordPress plugin with D3.js interactive visualizations (line, treemap, bubble, bar charts) for BLS employment data, serving 1,000+ users across 50 states and 400+ MSAs
- Reduced MySQL query times from 20s to 100ms via indexing on 1GB+ tables; optimized Python ETL from 60 to 20 minutes using multithreaded writes for 2GB monthly datasets
- Automated data cleaning workflows with AWS RDS integration, achieving 99% reliability across monthly BLS releases

SKILLS

Languages: Python, TypeScript, JavaScript, Go, Java, C++, SQL

Frontend: React, Next.js, Vue.js, D3.js, Block Kit, responsive UI/UX implementation

Backend & Infra: FastAPI, Node.js, Flask, gRPC, Protocol Buffers, GraphQL, REST APIs, Docker, Linux networking

AI / Agent: LLM orchestration, multi-provider routing (OpenAI, Bedrock, Claude), sandboxed agent runtimes, tool-call accumulation, MCP

Cloud & Data: AWS (ECS, S3, KMS, RDS, SQS, SecretsManager), PostgreSQL, MongoDB, MySQL, Kafka

Tools: Git, GitHub Actions, CI/CD

PROJECTS

WordWeave — words-weave.com

- Word game with Go backend + embedded React frontend deployed as single binary, OpenAI API for paragraph generation with lemmatization-based fuzzy matching. GitHub Actions CI/CD

CAssess — heal2.poly.asu.edu/cassess

- Vue.js Agile process tracking tool with dashboards visualizing burndown, cycle time, and lead time from Kanban, GitHub, and Slack. Led UI/UX design in Figma for FERPA-compliant multi-tenant web app

CodeVis

- AI pipeline integrating LLM APIs to transform code into structured Mermaid diagrams for codebases up to 600 lines, React frontend + Railway backend

EDUCATION

Arizona State University · M.S. Software Engineering, GPA: 3.83/4.00 · Aug 2023 — May 2025

Netaji Subhas University of Technology · B.S. Computer Science, GPA: 3.70/4.00 · Aug 2019 — May 2023