Karan Mehta

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SUMMARY

Software Engineer with 8+ years of experience delivering developer platforms, web applications, enterprise modernization, and AI-enabled systems. Builds responsive engineering workflows using React, JavaScript, TypeScript, HTML5, and CSS3; develops Java, Node.js, REST API, and SQL-based solutions supporting application processing and data integration. Experienced in JBoss replatforming, DTS-to-SSIS migration, AWS, Docker, automated testing, performance optimization, RAG, local LLM integration, and multi-agent orchestration across complex product and production environments.

TECHNICAL SKILLS

Programming Languages & Web: JavaScript, TypeScript, Java, C++, MATLAB, SQL, HTML5, CSS3

Front-End & UI Engineering: React, Next.js, Qt, CEF, DOM Optimization, Responsive Web Design, Accessibility, Code Editor Architecture, Syntax Highlighting

Backend & Enterprise Integration: Node.js, Spring Integration, REST APIs, Microservices, Mule ESB, Apache HTTP Server, JBoss, Zod, Application Replatforming

AI & Retrieval Engineering: RAG, LangGraph, LangChain, LlamaIndex, Ollama, OpenAI API, Qwen (Qwen2.5-Coder, Qwen3.6), LanceDB, Vector Embeddings, Semantic Search, Multi-Agent Systems, Document Ingestion

Databases, Cloud & DevOps: MySQL, SQL Server, DB2, SSIS (DTS, DTSX, ETL), AWS (EC2, S3, CloudWatch), Docker (Images, Containers, Docker Compose), Git, Database Migration

Engineering Platforms, Testing & Delivery: Simulink, Playwright, Karma, Unit Testing, System Testing, End-to-End Testing, QA Automation, Performance Profiling, Code Review, HP ALM, Incident Management, Vulnerability Remediation, Agile/Scrum

PROFESSIONAL EXPERIENCE

Senior Software Engineer, *MathWorks* Jul 2019 - Jan 2026 | MA, USA

- Architected the MATLAB Editor platform across browser-based and embedded surfaces, aligning UX, product, documentation, and infrastructure teams on scalable code-authoring capabilities for global engineering workflows.
- Evaluated three persistence formats across six design dimensions, selecting a custom markdown architecture for Plain Text Live Scripts that enabled reliable Git-friendly and external-editor workflows.
- Developed React and JavaScript editor capabilities for code analysis, syntax highlighting, source navigation, and responsive authoring across MATLAB's desktop, web, and embedded product surfaces used globally.
- Integrated the MATLAB Editor into Simulink using C++, Qt, and CEF, delivering inline execution, diagnostics, toolstrip controls, and code intelligence within MATLAB Function Block engineering workflows.
- Profiled extreme-line editing workloads and optimized DOM splitting, word wrapping, string copying, and accessibility paths, achieving 10x responsiveness and eliminating a top-five customer escalation source.
- Validated editor changes with Karma unit tests and Playwright end-to-end suites, supporting live-script adoption growth from below 8% to approximately 20% of monthly active users.

Software Engineer (Intern), *Humanscale* Jan 2019 - May 2019 | NY, USA

- Designed a React-based internal simulation application that translated engineering requirements into interactive workflows for product-development, analysis, and evaluation teams.
- Implemented reusable JavaScript, HTML5, and CSS3 components for simulation inputs, validation logic, calculation workflows, result presentation, and responsive browser interactions across the engineering application.
- Authored Karma-based automated tests covering calculations, user interactions, boundary conditions, and regression scenarios, reducing manual testing time by 60% while improving release confidence.
- Supported application validation, technical documentation, stakeholder demonstrations, and project handoff, contributing to a 20% reduction in expenses associated with the previous licensed commercial dependency.

Software Engineer, *Mavenir* Jun 2017 - Aug 2017 | Bengaluru, India

- Supported development of a VoLTE service-provisioning platform using Java, Spring Integration, REST APIs, and microservices to process subscriber activation, configuration, and service-status requests across operator environments.
- Implemented SQL and MySQL persistence for subscriber profiles, provisioning requests, processing states, and error records, strengthening validation, traceability, and exception handling across production-like integration workflows.
- Containerized application components with Docker and configured an AWS EC2 integration environment for repeatable deployments, service validation, log review, and controlled testing of provisioning workflows.
- Developed JavaScript, HTML5, and CSS3 operations screens, tested REST API responses, and managed Git changes through code reviews, defect correction, regression testing, and release verification.

Systems Engineer, *TCS* Jan 2015 - May 2017 | Gurugram, India

- Modernized Hilton Worldwide's InFocus application by upgrading Java, SQL Server, and JBoss components while coordinating production changes, client communications, incidents, and service requests within established SLAs.
- Assessed approximately 30 legacy DTS packages to document source dependencies, transformation rules, schedules, validation criteria, downstream reporting impacts, and rollback requirements before migration.
- Converted prioritized DTS workflows into SSIS DTSX packages, preserving business rules, data transformations, scheduling dependencies, error handling, and reporting continuity across SQL Server environments.
- Reduced recurring reporting-job processing time by approximately 30% by validating migrated ETL workflows through source-to-target reconciliation, defect resolution, client acceptance testing, and production monitoring.
- Lowered recurring middleware licensing costs by approximately 20% by supporting application-server replatforming onto JBoss through configuration updates, deployment validation, vulnerability remediation, and production stabilization.

CERTIFICATIONS

- **Ultimate AWS Certified Solutions Architect Associate - Udemy |** Issued Jul 2026 **(Link)**
- **Docker and Kubernetes: The complete guide - Udemy |** Issued Jul 2026 **(Link)**
- **Introduction to Next.js - Coursera |** Issued May 2026 **(Link)**
- **Build RAG Applications: Get Started - IBM |** Issued Apr 2026 **(Link)**
- **Generative AI: Foundation Models and Platforms - IBM |** Issued Apr 2026 **(Link)**
- **Advanced React - Meta |** Issued Feb 2026 **(Link)**
- **Java Web Services - Udemy |** Issued Jul 2021 **(Link)**

PROJECTS

Local Multi-Agent Developer | TypeScript, LangGraph, Ollama, Qwen2.5-Coder, Zod, Node.js **(GitHub)**

- Architected a five-node LangGraph workflow coordinating supervisor, architect, backend, frontend, and deployment agents through strongly typed TypeScript state and deterministic execution routing.
- Integrated Ollama with Qwen2.5-Coder 32B for fully local code generation, eliminating paid API usage while preserving agent reasoning, planning, and implementation workflows.
- Implemented Zod-validated architecture schemas, human approval gates, and automatic error rerouting, enabling failed agents to self-correct before safely executing terminal deployment commands.

Local Multi-Model RAG Chatbot | Next.js, JavaScript, Ollama, SQLite, Prisma, LanceDB, RAG **(GitHub)**

- Built a fully local Next.js chatbot with Ollama streaming, SQLite persistence, and per-session switching between two Qwen models without paid API dependencies.
- Implemented RAG ingestion for PDF, TXT, and CSV documents using LanceDB embeddings, local chunk storage, semantic retrieval, and accurate inline filename citations.
- Designed a responsive glassmorphic interface with Markdown rendering, code highlighting, intelligent autoscroll, and persistent SQLite chat history preserved across local application restarts.

Containerized Banking REST Service | Python, FastAPI, React, SQLAlchemy, SQLite, Docker, JWT, Pytest **(GitHub)**

- Engineered an asynchronous FastAPI banking backend with SQLAlchemy and SQLite, implementing double-entry ledger rules, account workflows, transfers, and transaction persistence across restarts.
- Secured REST APIs using JWT authentication with 15-minute expirations, bcrypt password hashing, authorization checks, and IDOR protections for account and transfer operations.
- Containerized React and FastAPI services with Docker Compose and Nginx, while a 23-assertion Pytest suite covered negative scenarios and end-to-end integration boundaries.

Oingo: Location-Aware Social Network | TypeScript, React, AWS Lambda, API Gateway, RDS Proxy, MySQL, AWS CDK, Google Maps **(GitHub)**

- Built a React and TypeScript location-aware social platform combining Google Maps, radius-based feeds, geotagged posts, friendship workflows, preferences, and responsive mobile interfaces.
- Designed serverless AWS architecture using API Gateway, Lambda, RDS Proxy, MySQL, Cognito, S3, CloudFront, and reproducible infrastructure defined entirely through AWS CDK.
- Implemented spatial feed filtering across 0.1-to-50-mile radii, O(1) friendship checks, and EventBridge-SNS notification fan-out for web, iOS, and Android while preventing duplicates.
- Validated shared visibility logic through 47 unit tests with 100% coverage, while CI automated linting, type checking, testing, and production build verification.

EDUCATION

Master of Science, *New York University* Sep 2017 - May 2019 | NY, USA
Computer Science | CGPA: 3.5/4.0

Bachelor of Engineering, Guru Nanak Dev University Jun 2010 - May 2014 | Punjab, India
Electronics and Communication Engineering | CGPA: 8.2/10