

# Mike Hall

## Founding Staff Engineer (0-to-1 Product & AI Systems)

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Hands-on Founding Staff Engineer who translates product ambiguity into robust, production-ready software. Combines full-stack web development (Rails, PostgreSQL, modern JS/TypeScript) with practical local-first AI engineering (pgvector embeddings, local LLM orchestration, prompt injection defense, and browser automation).

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## EXPERIENCE & LEADERSHIP

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### Associate Director, Staff Engineer

OneMain Financial | Remote | January 2021 - February 2026

**Target Focus:** Placed in two corporate hackathons (Rasa workflow bot and Bonsai Buckaroos schema inference tool), introduced local LLM orchestration and privacy-conscious AI workflows at Geekfest, and chartered ACQ Enablement for rapid platform modernization.

- **Originations IC Delivery & Team Realignment:** Led the Originations Verification squad through consecutive Exceeds Expectations ratings, architecting and shipping the Speedfunds instant loan disbursement pipeline (funding to debit cards in minutes vs multi-day ACH). Appointed Software Architect for the Acquisition Lane to resolve systemic fragility, consolidating two attrition-impacted teams into a unified, high-velocity delivery unit before converting to Associate Director, Staff Engineer upon corporate architecture track restructuring.
- **ACQ Enablement & Architecture Discovery:** Founded and technically led the ACQ Enablement team to establish end-to-end system mapping across seven heterogeneous acquisition channels spanning direct-to-consumer web/mobile funnels, direct mail campaigns, partner affiliate APIs, and authenticated renewal workflows. Architected an automated 5-phase PII Remediation deletion engine and data migration across 30+ tables, cataloging legacy clarity\_orphan data, eliminating multi-service state machine corruptions, and embedding automated compliance into production Rails code.
- **Enterprise Resilience & DynamoDB Session Remediation:** Architected and delivered the platform migration from client-side cookie storage to server-side DynamoDB session storage across all Rails applications, diagnosing and eliminating a critical CookieOverflow defect that silently dropped 4% of digital loan applications during late-stage offer selection and e-signing; coordinated cross-lane blue/green deployment with zero downtime and zero incidents.
- **Enterprise Trace & Operational Alignment:** Architected distributed telemetry across Rails distributed monoliths, MuleSoft APIs, and IBM mainframe backends. Partnered directly with Cybersecurity, the Enterprise Monitoring Center (EMC), SRE, and Incident Command to align immediate operational monitoring with long-term distributed tracing across end-to-end multi-tier lending workflows.
- **Sustained Community Enablement & SRE Handoff:** Drove a dedicated 3-year cultural and technical enablement initiative: founded Geekfest@OMF (weekly recorded technical brown-bag sessions across the enterprise for 1 year) before evolving the forum into the weekly OpenTelemetry Working Group (OTel WG), scaling voluntary attendance to 40+ cross-lane engineers. Mentored and partnered with SRE leads to transition ongoing operational facilitation, establishing a durable, self-sustaining community of practice while returning to Acquisition Lane architecture representation.
- **Applied AI & Innovation Leadership:** Placed in two corporate hackathons (building early conversational agents with Rasa and automated schema inference tools with Bonsai Buckaroos). Introduced local LLM orchestration and privacy-conscious AI developer workflows at Geekfest@OMF, establishing early evidence-based patterns for legacy code discovery and developer productivity.

### Principal Architect

Phalanx Duel | Independent Project | 2022 - Present

**Target Focus:** Built a server-authoritative deterministic game platform in TypeScript and Node.js: pure rules engine, append-only action ledger, WebSocket real-time sync, and property-based Truth Gate verification gates across the full state lifecycle.

- Designed a deterministic engine with replayable action logs and server-authoritative state transitions, making complex outcomes reproducible and independently verifiable.
- Built replay validation, adversarial coverage, and CI verification gates so state transitions can be checked across the complete lifecycle.
- Uses controlled agent workflows with bounded tasks, acceptance criteria, automated checks, and human-reviewed outputs rather than treating model output as authority.

### Principal Architect

WWWorkRemote | Independent Project | 2021 - Present

**Target Focus:** Architected multi-source Rails ingestion pipeline, pgvector semantic search, local-first YAML model registry, 4-stage prompt injection defense, and 16-adapter MV3 Chrome extension.

- **Data Ingestion & Normalization:** Built a multi-source Rails ingestion pipeline and PostgreSQL storage schema, unifying fragmented job market datasets for structured downstream analysis.
- **Semantic Search & Matching:** Implemented vector search embeddings via pgvector, enabling high-precision semantic matching between complex candidate profiles and job requirements.
- **Local-First AI Orchestration:** Designed a provider-agnostic LLM orchestration layer behind a YAML-driven model registry, local-first by default (llama.cpp/Ollama primary, hosted Claude as fallback), so routine inference never leaves the machine while a stronger hosted model can be selected per call site.
- **Prompt Injection Defense:** Built a four-stage guardrails pipeline (normalize, weighted heuristic scan, risk classify, output validate) screening every untrusted scraped document before it reaches a model, scoring known injection patterns plus an instruction-density heuristic to secure ingestion against hostile inputs.
- **Browser Extension & Lifecycle Capture:** Built an MV3 Chrome extension with 16 provider adapters that extracts postings from live ATS pages and captures the full application lifecycle (questions asked and answers given) back into the platform.
- **Static Signal Integration:** Injected static analysis rules and architectural constraints into model context windows, preventing drift between generated outputs and system security contracts.

### Principal Engineer & Curator

Technical Conversation Archive | Independent Project | 2011 - Present

**Target Focus:** Built local-only Whisper transcription pipeline, semantic taxonomy cross-linking, and build-time schema enforcement gates for a multi-decade tech interview media corpus.

- **Local-Only AI Restoration Pipeline:** Built a Whisper and local-LLM pipeline that transcribes, diarizes, and structures long-form interview audio entirely on-device, keeping a large private media corpus off third-party inference services.
- **Schema-Validated Content Platform:** Runs on a contract-validated data layer: every interview, asset, and transcript is checked against an explicit schema at build time, with referential-integrity checks that fail the build rather than publishing broken data.
- **Semantic Cross-Linking & Taxonomy Generation:** Generates a topic taxonomy, knowledge graph, and semantic cross-links across the corpus, turning an unstructured media archive into navigable, individually indexed pages.
- **Primary-Source Capture:** Conducted the original interviews on-site at GOTO Conference, Software Craftsmanship North America, RailsConf, and WindyCityRails, with practitioners including Dave Thomas, Stuart Halloway, Corey Haines, Sandro Mancuso, and Micah Martin.
- **Digital Archaeology:** Recovered and reconstructed material from defunct platforms and web archives, reconciling incomplete metadata across sources to restore provenance for recordings that would otherwise have been lost.

SELECTED PRODUCTION PROJECTS

Principal Architect

Local AI Orchestration & Developer Runtime | Independent Project | 2026 - Present

Built and operate three MCP (Model Context Protocol) servers that expose live system state as callable tools to any MCP client, alongside the Claude Code skills, context-isolated subagents, and commit-time checks that keep agent work bounded and reviewable.

- **Bidirectional Knowledge Server:** Built ctx-mcp, an MCP server fronting a PostgreSQL knowledge suite that agents both query and write back to, so methodologies and lessons learned in one session are retrievable in the next rather than re-derived.
- **Telemetry-Driven Diagnosis:** Built o2-mcp, exposing on-demand OpenObserve telemetry (errors, slow spans, failed jobs, distributed traces) as agent-callable tools, so an agent diagnoses a running system from observed behavior instead of inferring from source.
- **Context as a Budgeted Resource:** Designed context-isolated subagents that keep high-volume audit work out of the main conversation's context window, with per-client registration tooling and pre-commit hooks that reject any agent asset that isn't self-describing.

CORE SKILLS & COMPETENCIES

|                                                                 |                                                                     |                                                             |                                                     |
|-----------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------|
| 01                                                              | 02                                                                  | 03                                                          | 04                                                  |
| • 0-to-1 Full-Stack Architecture & Rapid Prototyping            | • Local-First AI Orchestration (llama.cpp, whisper.cpp, Claude API) | • Vector Embeddings & Semantic Search (PostgreSQL pgvector) | • Prompt Injection Defense & Multi-Stage Guardrails |
| 05                                                              | 06                                                                  | 07                                                          | 08                                                  |
| • AI Agent Workflows & MCP Server Integration (Python, Node.js) | • Automated Schema Inference & Dynamic JSON Pipelines               | • Ruby on Rails, Node.js, WebSockets & Real-Time Sync       | • High Agency, Autonomous Problem Solving           |

ADDITIONAL EXPERIENCE

- **Open-Source Transition Lead, Coderwall** | January 2014 - December 2014 | Remote: Hired as a contractor by the founder to lead the open-source transition of the Coderwall developer reputation platform, a Y Combinator-backed professional network for software engineers (856 GitHub stars, 304 forks). Delivered security hardening, proprietary service extraction, infrastructure modernization, and community leadership as the top contributor to the open-source codebase.
- **Senior Software Developer, ReachLocal** | March 2015 - November 2016 | Remote: Owned API design and modernization strategy, leading incremental legacy migration for a high-volume digital marketing platform.
- **Senior Backend Developer, SK Holdings, Inc.** | January 2019 - December 2020 | Chicago, IL: Led backend stability, performance, and modernization for high-traffic Rails products, improving full-text search, campaign delivery pipelines, and data layer reliability while systems remained under production load.
- **Software Engineer & Technical Onboarding Lead (Fraud & Taxonomy Systems), Groupon** | July 2011 - May 2013 | Chicago, IL: Owned core backend systems for fraud and taxonomy, leading global engineering enablement during hyper-growth.
- **Senior .NET Developer, TicketsNow** | November 2005 - March 2007 | Crystal Lake, IL: Owned real-time inventory systems, leading transactional integrity and iterative delivery for revenue-critical operations.

CAREER FOUNDATIONS

1999 - 2011

Built and operated enterprise integrations, transactional systems, and early web products across consulting and product organizations, establishing the production discipline and community-centered craftsmanship that still shape my leadership.

- **Revenue-critical commerce:** Designed real-time inventory, locking, and fulfillment services for a high-volume ticket marketplace later acquired by a major industry operator.
- **Consulting and software craftsmanship:** Delivered systems across client environments while mentoring engineers, adopting Ruby and Rails, and helping build Chicago's craftsmanship community.
- **Enterprise and operational systems:** Built integration and operational software across large organizations, grounded in .NET, SQL, messaging, production support, and direct user needs.