Mike Hall

Staff Software Engineer

PROFESSIONAL SUMMARY

I am a Staff Software Engineer who makes complex production systems easier to understand, safer to change, and easier for teams to own. I start by learning how people and business workflows use a system, then connect hands-on engineering to reliable outcomes. I coach engineers, make difficult technical ideas approachable, and build communities where knowledge can travel beyond one team. My work includes engineering onboarding at Groupon, Geekfest@OMF, OpenTelemetry leadership, leading Coderwall's open-source transition at Assembly, and preserving more than 200 interviews through UGtastic and WHOIS Tech Community.

CORE SKILLS

- Cross-Team Technical Leadership
- Platform Architecture & Legacy Modernization
- Production Systems & Reliability
- Architecture Discovery & Technical Debt Reduction
- Incident Response & Root Cause Analysis
- Observability & OpenTelemetry
- Distributed Systems & Async Processing
- Data Integrity & Performance
- Platform Enablement & Developer Productivity
- AI-Augmented Engineering & Automation
- Local LLM Orchestration, pgvector & MCP Tooling
- Ruby on Rails
- PostgreSQL & SQL
- TypeScript & Node.js
- Sidekiq, Solid Queue & Redis
- AWS, Kubernetes & Docker
- CI/CD

EXPERIENCE

Staff Software Engineer at just3ws (Independent)

February 2026 - Present | Chicago, IL

Architected and operating self-hosted production platforms across Ruby on Rails 8, PostgreSQL 18 (pgvector), TypeScript, and local Metal GPU AI inference runtimes, combining deterministic state engines, autonomous media processing pipelines, and distributed OpenTelemetry observability.

Key Outcomes:

- Autonomous Media Pipeline & Local AI RAG Microservice: Architected a Rails 8, Solid Queue, and PostgreSQL 18 (pgvector) media ingestion and publishing platform with on-device Metal GPU Whisper transcription, hybrid lexical and vector semantic search via Reciprocal Rank Fusion (RRF), local LLaMA 3.1 RAG synthesis via RubyLLM, OpenTelemetry distributed tracing, Ahoy analytics, and PgHero query tuning across 270+ processed video masters.
- Forensic Audio DSP Restoration & Sovereign Verification (dehum): Engineered a deterministic 5-stage FFmpeg audio restoration and clock-drift synchronization pipeline (atempo, adeclick, highpass, afftdn, and 8-harmonic 60 Hz notch cascade) eliminating electromagnetic interference and corona discharge crackle recorded under 345,000-volt transmission lines while preserving lossless video streams.
- Technical Conversation Archive & Knowledge Graph: Built and curated a contract-validated oral history platform preserving 218 technical interviews with Software Craftsmanship, Ruby, and JVM practitioners, enforcing build-time schema verification, speaker diarization, and semantic knowledge graph cross-linking across 500+ indexed pages.
- Deterministic State Engine & Verification Platform (Phalanx Duel): Engineered a server-authoritative real-time tactical game platform in TypeScript, Node.js, PostgreSQL, and WebSockets featuring a pure deterministic rules engine, append-only replayable action ledger, OpenTelemetry trace propagation, and property-based CI verification gates across the complete state lifecycle.
- Multi-Source Ingestion & Prompt-Injection Defense (WWWorkRemote): Designed a Rails 8 and pgvector semantic matching platform with a Manifest V3 Chrome extension across 16 ATS adapters and a 4-stage prompt-injection guardrails pipeline screening untrusted scraped text before local LLM evaluation.

Skills: Ruby on Rails, PostgreSQL, pgvector, Solid Queue, RubyLLM, Local-First AI Inference, Whisper & Speech-to-Text, FFmpeg & Audio DSP, OpenTelemetry, TypeScript, Node.js, WebSockets, Deterministic Simulation, Prompt Injection Defense, Chrome Extensions (MV3), CI/CD

Associate Director, Staff Engineer at OneMain Financial
January 2021 - February 2026 | Remote

Appointed as Senior Technical IC and Software Architecture Lead for the Acquisition lane of a regulated financial enterprise. Mapped the entire loan acquisition and origination pipeline end-to-end from visit to booked loan using the Panoramic View technique of longitudinal and latitudinal analysis from desktop browser to mainframe and back again at each step, and applied the same depth to the Affiliate API. Engineered an automated 5-phase PII deletion engine across 30+ tables, deployed enterprise distributed observability, and guided cross-team platform reliability.

Key Outcomes:

- Originations IC Delivery & Instant Disbursement: Led the Originations Verification squad through consecutive Exceeds Expectations ratings, architecting and shipping an instant loan disbursement pipeline (funding to debit cards in minutes). Appointed Software Architect for the Acquisition Lane, later converting to Associate Director, Staff Engineer.
- Acquisition Workflow Enablement & Architecture Discovery: Founded the Acquisition Lane enablement team; mapped the loan acquisition and origination pipeline end-to-end from visit to booked loan (desktop browser to mainframe and back again at each step) and the Affiliate API at the same depth, identifying seven distinct lending funnels with a tracking initiative; architected an automated 5-phase PII remediation deletion engine across 30+ tables.
- Enterprise Resilience & DynamoDB Session Remediation: Diagnosed and eliminated a critical session-cookie overflow defect that caused 4% silent traffic loss of digital loan applications during e-signing; architected zero-downtime blue/green migration to DynamoDB session store with zero incidents.
- Enterprise Trace & Operational Alignment: Architected distributed telemetry across Rails distributed monoliths, MuleSoft APIs, and IBM mainframe backends; partnered directly with Cybersecurity, EMC, SRE, and Incident Command to align monitoring with end-to-end distributed tracing.
- Community Enablement & Sustainable Handoff: Founded Geekfest@OMF and ran recurring peer-learning sessions for more than a year, coaching engineers across teams. Then founded and led the OpenTelemetry Working Group from 2024 through 2025, growing cross-lane participation to 40+ engineers and transferring ownership as dedicated observability capabilities were staffed.
- Applied AI & Innovation Leadership: Placed in two corporate hackathons building conversational agents with Rasa and a schema inference prototype; pioneered local LLM orchestration and privacy-conscious AI developer tooling at Geekfest@OMF.

Skills: Cross-Team Technical Leadership, Platform Architecture, Legacy Modernization, Architecture Discovery, Dependency Mapping, System Resilience, Incident Leadership, DynamoDB, Observability, OpenTelemetry, Distributed Systems, Ruby on Rails, PostgreSQL, AWS

Senior Backend Developer at 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.

Key Outcomes:

- Search Infrastructure Modernization: Eliminated external cluster failure modes and reduced operating footprint by migrating legacy Sphinx to optimized MySQL full-text search and relational indices under live production traffic.
- Zero-Downtime Rails Upgrades: Led Ruby and Rails framework upgrades across core applications, sequencing database migrations to ensure zero downtime during platform modernization.

Skills: Ruby on Rails, MySQL, Full-Text Search, Redis, Sidekiq, SendGrid Async Pipelines, Data Analytics & SQL, CI/CD, System Observability, Backend Architecture

Senior Software Developer at ActiveCampaign
September 2018 - December 2018 | Chicago, IL

Short-term senior contract on the Contacts team of a large-scale PHP/MySQL CRM platform. Focused on testability, performance, and change safety inside a tightly coupled legacy backend while extending the Ember.js frontend test suite.

Key Outcomes:

- Legacy Query Modernization: Replaced ad-hoc global data access with structured, cacheable query patterns in the PHP backend, enabling unit testability and sub-second query execution.
- Frontend Verification Gates: Hardened Ember.js automated test suites across core CRM contact workflows, creating safety gates that enabled non-breaking legacy PHP refactoring.

Skills: PHP, MySQL, Ember.js, JavaScript, Legacy System Modernization, Backend System Architecture, Automated Testing, Performance Optimization

Principal Consultant at Tandem
August 2018 - August 2018 | Chicago, IL

Conducted an on-site architectural and operational assessment for an at-risk federal software program (DoD MEPS), delivering viability analysis and risk mitigation recommendations directly to executive leadership.

Key Outcomes:

- Federal Program Viability Assessment: Conducted on-site operational research at DoD military processing facilities (MEPS), identifying critical disconnects between enlistment workflows and proposed software models.
- Executive Architecture Advisory: Delivered architectural risk analysis directly to executive leadership, defining remediation paths to mitigate contractual and delivery liabilities.

Skills: System Resilience, Platform Architecture, Federal Software Assessment, Operational Field Research

Senior Software Developer at BenchPrep

March 2017 - February 2018 | Chicago, IL

Owned enterprise assessment workflows, leading correctness and platform security in a high-concurrency environment.

Key Outcomes:

- Assessment Query Optimization: Optimized complex PostgreSQL calculations across high-stakes exam scoring engines, eliminating calculation drift and reducing query latency.
- JWT Response Verification: Implemented JWT-based cryptographic payload signing and once-only processing, securing exam submission pipelines against client-side tampering.
- Secure Embedded Client APIs: Designed secure cross-origin API boundaries for embedded enterprise assessment clients, establishing explicit authentication and trust contracts.

Skills: Ruby, Ruby on Rails, PostgreSQL, JWT Authentication, Backend System Architecture, Secure API Design, Database Performance Optimization, Observability and Logging

Senior Software Developer at ReachLocal

March 2015 - November 2016 | Remote

Owned API design and modernization strategy, leading incremental legacy migration for a high-volume digital marketing platform.

Key Outcomes:

- Strangler-Fig Modernization: Architected incremental modernization roadmap, replacing a high-risk full rewrite with a phased Strangler-Fig migration under production load.
- Internal API Gateway: Built internal API Gateway with standardized JSON contracts and token authentication, safely isolating legacy backend services.
- Automated CI/CD Verification: Introduced automated static analysis and security scanning into deployment pipelines, preventing regression and vulnerability drift.

Skills: Platform Architecture, API Gateway Design, Ruby on Rails, PostgreSQL, React, Redis, Legacy System Modernization, Secure API Design, Data Migration Strategy

CTO at KloboMedia

March 2014 - September 2016 | Remote

Owned end-to-end platform architecture, leading high-throughput data integration for an early-stage social media startup. The product, TheSocReport, ended when the upstream data taps closed: Twitter's firehose shutdown and the closing of Facebook's and Instagram's user-intelligence APIs removed the inputs the analytics depended on.

Key Outcomes:

- Architected a social analytics platform integrating Twitter, Facebook, and Instagram APIs, delivering unified audience engagement metrics.
- Designed an asynchronous ingestion pipeline using Sidekiq Enterprise and Redis, processing real-time social streams under burst traffic.
- Implemented a PostgreSQL JSONB document storage architecture, allowing fast schema evolution across heterogeneous third-party API payloads.
- Automated multi-cloud deployment pipelines across Heroku and AWS, establishing reproducible staging and production infrastructure.

Skills: Ruby, Ruby on Rails, PostgreSQL, Redis, Sidekiq, Amazon RDS, Heroku, DigitalOcean, Twitter API, Facebook Graph API, Instagram API

Open-Source Transition Lead at Coderwall

January 2014 - December 2014 | Remote

At Assembly, led 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.

Key Outcomes:

- Open-Source Transition & Security Hardening: Led open-source transition for a YC-backed developer network (856 GitHub stars, 304 forks), closing critical SQL injection, XSS, and Symbol DoS vulnerabilities before public release.

- Proprietary Service Decoupling: Extracted proprietary billing engines and scoring algorithms into isolated backend services with clean API stubs, safeguarding business logic.
- Database Migration & Sidekiq Modernization: Executed two-phase database migration from MongoDB to PostgreSQL and converted legacy Resque jobs to Sidekiq, cutting operational costs.

Skills: Ruby, Ruby on Rails, PostgreSQL, Redis, Sidekiq, ElasticSearch, AWS S3, Heroku, JavaScript, Backbone.js, MongoDB, Vagrant, Travis CI

Software Engineer & Technical Onboarding Lead (Fraud & Taxonomy Systems) at Groupon

July 2011 - May 2013 | Chicago, IL

Owned core backend systems for fraud and taxonomy, leading global engineering enablement during hyper-growth.

Key Outcomes:

- Centralized Taxonomy Service: Implemented merchant taxonomy service in Java and MySQL, eliminating categorization drift across distributed product teams during hypergrowth.
- Analytical Fraud Detection: Built analytical fraud detection queries in Vertica and conducted exploratory spikes on Hadoop and Clojure for transaction anomaly scoring.
- Merchant Analytics Pipelines: Built high-throughput merchant analytics tools in Ruby and CouchDB, surfacing market insights for global sales operations.
- Global Engineering Enablement: Redesigned technical onboarding curricula, standardizing engineering practices and shortening time-to-first-commit for 100+ global engineering hires.

Skills: Ruby, Java, Clojure, CouchDB, Vertica, Hadoop, MySQL, Redis, JavaScript, Bash

Software Engineer at Obtiva

August 2009 - July 2011 | Chicago, IL

Delivered backend systems and services as a consultant across multiple clients, including Sears, Leapfrog Online, and Groupon, supporting early-stage scaling and data-driven operations in high-growth environments.

Key Outcomes:

- Self-Service Analytics Platforms: Built reporting platforms for Leapfrog Online, enabling business stakeholders to query and export data warehouse analytics autonomously.
- Enterprise B2B Catalog Services: Developed commercial B2B sales and product catalog integration services for Sears, opening new enterprise revenue streams.
- Hypergrowth Transaction Pipelines: Engineered deal-processing services and fraud analysis pipelines at Groupon, stabilizing backend transaction infrastructure during extreme user growth.

Skills: C#, Ruby, Ruby on Rails, JavaScript, SQL Server, MySQL, Git, RSpec, Resque, NGINX

EARLIER CAREER EXPERIENCE

- **Senior Software Developer**, Upcity (October 2013 - February 2014, Remote): Integrated Chargify recurring billing and standardized multi-VM Vagrant development environments for a marketing platform.
- **Senior Software Developer**, Viewpoints (May 2013 - October 2013, Chicago, IL): Implemented custom analytics tracking, CI testing, and zero-downtime AWS deployment pipelines for consumer web products.
- **Principal Developer**, Business Decisions, Inc. (October 2008 - August 2009, Remote): Directed technical strategy, automated Subversion and CruiseControl.NET CI pipelines, and built VMware development environments across multi-firm consulting teams.
- **Assistant Vice President, Application Developer**, JPMorgan Chase & Co. (April 2008
  - October 2008, Chicago, IL): Resolved distributed SOAP web service integration failures and eliminated data desynchronization between .NET services and mainframe accounting systems.
- **Senior .NET Developer**, Brightstar Corporation (March 2007 - April 2008, Libertyville, IL): Orchestrated enterprise BizTalk integrations unifying purchase orders, inventory, and Solomon accounting across global distribution centers.
- **Senior .NET Developer**, TicketsNow (November 2005 - March 2007, Crystal Lake, IL): Architected real-time inventory locking and transaction reconciliation on .NET 2.0 protecting $2M+ in concurrent ticket sales, and released the open-source NStun (RFC 3489) C# library.
- **Senior Software Developer**, BP (June 2005 - November 2005, Naperville, IL): Engineered industrial invoicing features in VB.NET and optimized SQL Server query execution plans for end-of-month billing cycles.
- **Senior Software Developer**, Motorola (August 2004 - May 2005, Libertyville, IL): Introduced Scrum agile practices and delivered retail portfolio features in C#, ASP.NET, and SQL Server.
- **Software Developer**, Riverpoint Group (July 2004 - August 2004, Des Plaines, IL): Developed reusable ASP.NET Web Forms components and optimized SQL Server queries for a patient health monitoring platform.
- **Programmer Analyst**, Integrated Performance Solutions, Inc. (November 2003 - July 2004, East Dundee, IL): Built a dynamic SQL report rules engine and migrated legacy classic ASP reporting components to ASP.NET Web Forms.
- **Programmer Analyst**, New Labor Strategies, Inc. (June 2002 - November 2003, Park Ridge, IL): Engineered factory floor touch-screen kiosk interfaces and refactored VBScript workflows with client-side JavaScript.

- **Software Developer**, Trippe Manufacturing, Inc. (October 2001 - December 2001, Chicago, IL): Built an automated sales lead ingestion and validation pipeline while serving as technical lead during a vendor transition.
- **Application Analyst**, Sentinel Technologies, Inc. (July 2000 - October 2001, Downers Grove, IL): Designed an early Unix shell OCR receipt parsing pipeline and delivered custom web and database integrations for enterprise clients including Harley-Davidson.
- **System Administrator**, C.H. Robinson (December 1999 - July 2000, Oakbrook, IL): Managed server infrastructure for 24/7 regional logistics operations and prototyped an automated shipment booking workflow.

TECHNICAL LEADERSHIP

- Founded and led the OpenTelemetry Working Group, setting shared observability practices and transferring ownership when the organization staffed a durable capability
- Founded Geekfest@OMF and ran peer-learning sessions for more than a year, coaching engineers and sharing practical technical knowledge across teams
- Built engineering onboarding and training at Groupon during hypergrowth, helping new engineers contribute and teams share practices
- Led Coderwall's open-source transition at Assembly, pairing security hardening and platform modernization with public stewardship
- Realigned Acquisition engineering around business ownership, then founded and technically led an enablement team for platform risk and remediation
- Lead co-founder of Software Craftsmanship McHenry County, building a public community of more than 820 members that continues to meet
- Created UGtastic, later WHOIS Tech Community, and recorded more than 200 interviews to preserve practitioner experience and community history