Aaron Buhr

Senior Software Engineer | Backend & Platform Systems | Applied AI

Gainesville, FL | (904) 338-3060 | aaron@aaronbuhr.com

aaronbuhr.com | linkedin.com/in/aaron-buhr | github.com/aaronmbuhr

SUMMARY

Senior software engineer with 15+ years building backend services, data pipelines, and enterprise software in Python, C#, and C++. Experience spans multiplayer game backends, observability and log ingestion, AWS application development, and regulated document processing. Recent work includes a live civic-data platform, semantic retrieval, MCP servers, and LLM-assisted code generation with deterministic validation. Hands-on experience across architecture, implementation, deployment, and production troubleshooting.

TECHNICAL SKILLS

- **Languages:** Python, C#, C++, SQL/T-SQL, Lua, Bash, PowerShell
- **Backend:** .NET 10, ASP.NET Core, ASP.NET MVC/WebAPI, Entity Framework Core, FastAPI, Django, asyncio, aiohttp, SQLAlchemy, Pydantic, REST APIs, Windows services
- **Data:** PostgreSQL, SQL Server, pgvector, FAISS, Memcached, schema design, query optimization, ingestion pipelines, parsing, validation, retry/replay, backpressure
- **Cloud & Infrastructure:** AWS EC2, RDS, S3, SQS, Elastic Beanstalk, CloudWatch, VPC, IAM, load balancers; DigitalOcean App Platform; Docker, Docker Compose, Linux, Nginx
- **Applied AI:** Model Context Protocol (MCP), retrieval-augmented generation (RAG), hybrid search, embeddings, context budgeting, OpenAI/Anthropic/Gemini APIs, Ollama, AI-assisted development
- **Engineering:** System design, concurrency, TCP/IP, TLS, production debugging, root cause analysis, unit testing, pytest, code review, technical documentation, Git, Bamboo CI/CD

PROFESSIONAL EXPERIENCE

Involvant LLC | Gainesville, FL 2026–Present

Principal Software Architect / Engineer, Founder

Building Involvant Signal (involvant.org), a live civic-data platform for discovering public events and associated documents.

- Designed and built the C#/.NET 10 ingestion architecture for source discovery, event-list and detail extraction, attachment metadata, and normalized persistence using EF Core and PostgreSQL.
- Implemented LLM-assisted parser generation: model output becomes an inspectable parser specification, while deterministic code performs extraction and persistence.
- Designed PostgreSQL schemas and optimized queries for sources, runs, events, items, and attachments; implemented run status and progress tracking.
- Built the ASP.NET Core API and scrape-run controls, with AngleSharp and Playwright for extraction; deployed a Docker container to DigitalOcean App Platform with managed PostgreSQL.

LogZilla Corp. | Remote 2020–2025

Senior Software Engineer

Developed collection, ingestion, parsing, and retrieval components for an observability and log management platform.

- Built a Python integration correlating Cisco CallManager CDR/CMR records across files into assembled call records. Used three asynchronous queues for file settlement, time-bounded call assembly, and batched delivery, with asyncio/aiohttp, bounded buffering, retries, idempotent processing, ordered replay, and graceful shutdown.
- Authored the C++/C# Windows Event Log Agent through extensive modernization: push ingestion via `EvtSubscribe()`, a thread-safe producer/consumer queue, count/age batching, and at-least-once delivery with bookmark persistence. Achieved approximately 5,000–10,000 events/second and resolved heap thrashing with a reusable bitmap-tracked buffer pool.
- Built and containerized a Python/FastAPI semantic search service using FAISS, exposed through an MCP server and deployed as the retrieval source for LogZilla's live support chatbot.
- Built a provider-agnostic LLM-assisted pipeline translating roughly 80 regex parsing rules into Lua LPeg. Deterministically validated generated samples against source regexes, then checked translated parsers for matching captures on those samples.
- Developed 40+ app store integrations combining Lua parsing and normalization rules, dashboards, and usage documentation for diverse network and security products.
- Rewrote the product's Simple Event Correlator rules for compatibility with the updated platform.

- Owned the product documentation overhaul, validating procedures against actual behavior and correcting failures; the verified documentation became the semantic retrieval corpus.

Trendy Entertainment | Gainesville, FL 2017–2020

Senior Software Backend and DevOps Engineer

Sole backend engineer supporting cross-platform multiplayer games across PC, Xbox, PlayStation, and Switch, with tens of thousands of concurrent users.

- Built and maintained C#/ASP.NET REST services for matchmaking, instance management, server control, authentication, inventory, player profiles, and shared core libraries.
- Developed services for Windows EC2/IIS and Elastic Beanstalk, integrating SQS event queues, RDS PostgreSQL and Memcached through a service-layer data-access implementation, and S3/CloudWatch from application code.
- Built the backend for Dungeon Defenders: Awakened, integrating PlayFab matchmaking and a separate process to assemble four-player cooperative groups; maintained the inherited Dungeon Defenders II backend.
- Shared AWS production responsibility with a network operations engineer, investigated service/cache/database incidents under 24/7 availability requirements, and migrated the game-server fleet from AWS to Linode.
- Eliminated visible character-save stutters in the C++ Unreal Engine client by capturing binary snapshots and moving JSON serialization off the game thread before cloud persistence.

EARLIER EXPERIENCE

Oceanside Ten | Jacksonville, FL

Senior Software Engineer

Built a C# ad-hoc query engine that translated customer-defined relational queries into optimized T-SQL. Redesigned aggregation systems, integrated SQL Server Analysis Services, diagnosed production data-integrity issues, and modernized significant portions of a WebForms application to MVC and jQuery.

Fidelity Information Services / DocX / Lender Processing Services | Jacksonville, FL / Alpharetta, GA (Remote)

.NET Developer → Application Architect → Systems Architect

Progressed into architecture roles for regulated mortgage and title-document processing, designing a .NET framework adopted across the engineering department and writing specifications for modular services. Designed distributed PDF rendering that assigned jobs by estimated completion time, and resolved a vendor memory leak by replacing its .NET wrapper around a native C++ engine.

SELECTED PROJECTS

MailLens — Self-Hosted Email Intelligence

Status: Feature-complete; in daily personal use.

- Built a Python/FastAPI application combining pgvector and keyword retrieval, overlapping message chunks, conversation-thread expansion, context budgeting, and streamed answers with citations.
- Implemented asynchronous ingestion and local embeddings through Ollama, with Claude, OpenAI, Gemini, and local-model backends; tested against approximately 66,000 messages across four accounts.

AI MCP Server — Multi-Provider LLM Routing

Status: Complete; in personal use.

- Built a reusable Python MCP server that renders caller-supplied prompt templates and routes requests to OpenAI, Anthropic, or Gemini over stdio, HTTP, and HTTPS.
- Implemented provider configuration, tiered model selection, request/response contracts, content validation, audit logging, and an 11-module pytest suite.

EDUCATION

B.S. Electrical & Computer Engineering — Rice University, Houston, TX