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Principal Software Engineer | Distributed Systems, Platform & AI Infrastructure

CURRENT ROLE · CogniCluster LLC | Founding Engineer

Feb 2026 – Present

Principal-level backend and platform engineer with 15+ years building distributed systems, developer platforms, and production services. Turns complex architecture into adopted systems and coaches engineers through pragmatic technical standards.

SELECTED IMPACT

- **Shipped a production ML application highlighted to investors on an earnings call**, leading CarGurus's first non-data-science engineering team to deliver it with a full MLOps pipeline; training made ML delivery repeatable for other backend teams.
- **Cut First Republic deployments from days to minutes**, building the bank's continuous-delivery platform and driving adoption by hundreds of engineers; developed best-practices training that attracted 50+ VPs, directors, architects, and team leads.
- **Identified an estimated \$15 million/week revenue risk** as Cimpres's tax platform approached a failure state; built cross-team consensus and designed cached, horizontally scalable replacement microservices, then transferred ownership from 4+ senior engineers to a junior team that ran them without incident.
- **Cut client studios' server and development costs by 90%**, founding Apocoplay, leading a 20-person team, and building multiplayer infrastructure that saved hundreds of thousands of dollars per title annually.

PROFESSIONAL EXPERIENCE

CogniCluster LLC (AI developer-tools startup)

Feb 2026 – Present

Founding Engineer

- Building PlotWarden, a working prototype for durable orchestration of parallel coding agents, and applied it to the Black Skies development workflow with explicit human approval checkpoints
- Architected Black Skies, a real-time distributed-systems proving ground targeting 10,000-player battles without time dilation; used spatial partitioning and fenced ownership to avoid a global coordination bottleneck. Designed the core as strongly consistent hex-tile simulation cells stitched by a gossiped ownership mesh (H3, SWIM, epoch fencing, Redis Streams, Aurora Limitless), so worst-case load is bounded by the game rules themselves.
- Validated core coordination, authority promotion, and failure-handling behavior through 1,800+ automated tests and load-tested a single tile at full saturation; continuing full-system load validation.

A2A · AI Agents · ASP.NET Core · Authority Boundaries · AWS · C#/ .NET · DAX · Distributed Systems · DPSy · Durable Orchestration · DynamoDB · Epoch Fencing · Flink · Go · gRPC · H3 · Java · Kubernetes · Load Testing · MCP · OpenTelemetry · Parallel Coding Agents · PostgreSQL / Aurora PostgreSQL · Protobuf · Pub/Sub · RAG · Redis Functions · Redis Streams · REST · Serverless · SignalR/WebSockets · SWIM Gossip · Temporal · Terraform / OpenTofu

CarGurus

Jul 2023 – Feb 2026

Principal Software Engineer

- Led the first non-data-science engineering team to ship a production ML application with a full MLOps pipeline; the application was highlighted to investors during an earnings call.
- Authored ADRs and technical specifications for cross-team architecture decisions; led architecture reviews to improve system coherence, ownership boundaries, and scalability.
- Designed and built greenfield microservices and modernized dealer-side applications by moving monolithic workflows into service-based architecture.

ADRs · Architecture Reviews · AWS · FastAPI · Flink · Grafana · Honeycomb · Java · Kafka · Kubernetes · Microservices · MLOps · MongoDB · Monolith Decomposition · NumPy · Pandas · Production ML · Prometheus · PydanticAI · PySpark · RAG · REST · SageMaker · scikit-learn · SciPy · Service Modernization · Snowflake · Terraform / OpenTofu · TypeScript · XGBoost

CORE TECHNICAL STRENGTHS

Distributed Systems: microservices, event-driven architecture, CQRS/DDD, gRPC, SignalR/WebSockets, Protobuf, caching, high availability, REST, high-throughput scaling, operational burden reduction

Cloud & Platform: AWS, Docker, Kubernetes, Terraform/OpenTofu, Helm, PostgreSQL/Aurora, DynamoDB, Redis Functions/Streams/Pub/Sub, Kafka, Temporal, Serverless

ML & AI: SageMaker, scikit-learn, XGBoost, PySpark, AI agents (Claude Code, Codex, Devin, gsd-pi, CrewAI, PydanticAI), RAG

CI/CD & Observability: Jenkins, GitHub Actions, Prometheus, Grafana, Splunk, OpenTelemetry

Languages & Frameworks: C#, .NET 10/ASP.NET Core, Java, Python, Go, TypeScript/JavaScript, Node, React

Engineering Leadership: ADRs, architecture reviews, mentoring/training, TDD, contract testing, load testing, chaos testing, cross-team design

Domains: fintech, marketplaces, SaaS, ecommerce, game infrastructure

First Republic Bank**Aug 2018 – Jun 2023****Senior Software Engineer (Principal Scope)**

- **Built a scalable continuous-delivery platform** that cut deployments from days to minutes and reached hundreds of engineers; led core-infrastructure teams recognized as “a model of efficiency and communication.”
- **Created maintainability and delivery training** that grew by word of mouth to 50+ VPs, directors, architects, and team leads; introduced mission-critical optimizations that teams voluntarily adopted to improve productivity.

.NET · AWS · C# · Clean Architecture · Domain-Driven Design · Helm · Istio · Jenkins · Kafka · Kubernetes · Microservices · REST · Serverless · TypeScript

HubSpot**Dec 2017 – Jun 2018****Senior Software Engineer**

- Built REST services and integrated Kafka into a data pipeline for identity and user data workflows.

Data Pipelines · Java · Kafka · Microservices · MSSQL · OAuth · REST

Cimpress (Vistaprint)**Jan 2015 – Oct 2017****Lead Software Engineer**

- **Identified that tax lookup data**, queried multiple times per page load and growing multiplicatively with each acquisition, would soon outscale the platform and block sales into the EU; built cross-team consensus for a replacement.
- **Designed a C# business-rules engine** that computed tax outcomes instead of enumerating combinations, deployed as cached, horizontally scalable microservices sustaining thousands of queries per second.
- **Validated via A/B testing** against the legacy system, where every discrepancy proved to be a legacy bug; ownership passed from 4+ senior engineers to a junior team, who ran it without incident.

AWS · C# · Caching · Composition over Inheritance · Docker · Microservices · Monolith Decomposition · MSSQL · Multi-Tenant Systems · REST · Terraform / OpenTofu · TypeScript

Apocoplay (game modernization startup)**Apr 2012 – Jan 2015****Founder and CTO**

- **Led a team of 20** and designed a server-side engine for real-time routing and rule processing in large-scale multiplayer online games.
- **Improved performance, stability, and scalability** for games ported to the engine, reducing server and development costs by 90% and saving hundreds of thousands of dollars per game annually.

.NET · Angular · AWS · Azure · C# · Event Streaming · Internal Developer Platforms · Linux Server Management · Microservices · Multiplayer Infrastructure · MySQL · PHP · Redis · REST · TypeScript

EARLY CAREER**Allscripts | Software Engineer****Feb 2011 – Mar 2012**

Designed hospital financial software; mentored junior engineers on Agile and engineering practices.

Council for Logistics Research | Software Engineer**Mar 2006 – Feb 2011**

Built software for the Office of the Secretary of Defense to track trillions in defense spending; created performance algorithms and full-stack systems.

PRTM | Web Applications Designer**2005 – 2006**

Worked directly under the CTO of the umbrella company to create internal skunkworks projects; managed offshore developers and maintained internal infrastructure.

QScend Technologies | Senior Software Engineer**2001 – 2005**

Developed municipal web software; introduced practices that reduced average development time by 75% while improving stability.

Cost / Latency / Quality Optimization · Cross-Functional Influence · Microservices · Production Ownership · Technical Strategy

EDUCATION & PROFESSIONAL DEVELOPMENT**University of Hartford, B.S. Computer Science****MIT Start Smart** (Entrepreneurial program) · **MIT Invest Smart** (Angel investor program) · **MIT Certificate, Blockchain** · **MIT IDSS Certificate, Data Science****Interview Kickstart (2021–present):** Advanced Professional Development: backend engineering and system design; Machine Learning SwitchUp; Applied Agentic AI for Software Engineers; current work includes RAG and multi-agent systems, MCP/A2A, LLM evaluation, AI-system design, deployment, and capstone development.**SELECTED WORK & CURRENT PROJECTS****WORK · Highlighted engineering work.**[Read the Work page](#) for expanded problem, decision, and outcome case studies. [LinkedIn](#)**NOW · What I'm working on now.****CogniCluster LLC:** An AI developer-tools startup building durable orchestration for coding agents and distributed systems.**Black Skies:** The architecture series behind a distributed-systems proving ground targeting 10,000-player battles at full simulation speed without time dilation, from tile ownership to split-brain resolution.**PlotWarden:** The design writeup for a control layer that keeps intent, code, evidence, and active work aligned as projects change, reconciling work in flight instead of rebuilding the plan by hand.