

Randall Long

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Senior Software Engineer

C# | .NET | AWS | Azure | Distributed Systems | Microservices | PostgreSQL | Terraform | Python | Docker | Kafka | CI/CD | Observability | LLMs | Lambda | EC2 | CloudFormation | Auth0 | Grafana | Angular | SQL | Node | Migrations

Professional Summary

Senior software engineer with more than twenty years of experience designing scalable backend systems, distributed service architectures, and cloud-hosted platforms. Extensive experience building REST APIs, microservice ecosystems, and high reliability production systems supporting large-scale applications. Background includes financial services platforms, logistics optimization systems, patented medical imaging technology, and enterprise cloud migrations.

Key Systems Delivered

- Designed microservice orchestration framework coordinating complex business workflows across distributed services with rollback capability and centralized logging.
- Contributed to backend infrastructure supporting mortgage application platforms serving hundreds of thousands of users.
- Developed Python logistics optimization services deployed on AWS Elastic Beanstalk using Docker containers.
- Co-invented patented medical image processing system producing flattened medication bottle imagery from video streams.
- Developed toxic exposure management platform supporting toxicology call center operations.
- Improved C++ CPU validation testing suites used in processor development, reducing execution time by approximately twenty five percent.

Core Technical Skills

- C#, .NET / ASP.NET Core, Python, SQL, JavaScript, TypeScript, C++
- AWS including EC2, Aurora, and Elastic Beanstalk
- Azure including GitHub, Azure DevOps, and Azure Pipelines
- Docker containerization and Terraform infrastructure automation
- REST APIs, distributed systems design, microservices architecture, event sourcing patterns
- PostgreSQL, Amazon Aurora, SQL Server, DynamoDB
- CI/CD pipelines, feature flag systems, cloud migration strategies

Professional Experience

X86 Consulting — Architect / Development Consultant 2023–Present

Design and deliver **cloud-based backend systems**, analytics platforms, and modernization initiatives across **logistics, healthcare, and AI-driven domains**.

- Architected and implemented **backend analytical services supporting logistics planning** and order-processing workflows, improving data-driven decision-making and operational efficiency.
- Developed **Python-based optimization services** containerized with **Docker** and deployed on **AWS Elastic Beanstalk**, enabling scalable and reliable cloud-hosted solutions.

- Automated cloud provisioning and deployment using **AWS CLI** and **EB CLI**, streamlining infrastructure management and reducing manual overhead.
- Evaluated and deployed locally hosted large language models (**LLMs**) on **Linux** environments for analytical workloads, conducting scalability testing and operational validation.
- Led architecture and development of an Environmental Health and Safety (**EHS**) patient intake system, incorporating **voice-to-text** capabilities for clinical documentation.
- Established a secure **Azure deployment environment**, implementing **CI/CD** pipelines using **GitHub**, **Azure DevOps**, and **Azure Pipelines**.
- Designed and validated scalable, production-ready cloud architectures across **AWS and Azure**, ensuring reliability, performance, and cost efficiency.
- Collaborated with stakeholders to translate **business requirements into technical solutions** aligned with best practices.

KBX Logistics — Tech Lead / Senior Software Engineer (2022–2023)

Led an 8-engineer team delivering a distributed logistics platform supporting shipment planning, optimization, and operational analytics across enterprise workflows.

- Architected backend systems integrating **PostgreSQL**, **AWS Aurora**, and **DynamoDB**, enabling scalable data access patterns across transactional and analytical workloads
- Designed and implemented **RESTful APIs** supporting complex logistics workflows, including shipment planning, routing, and real-time operational insights
- Led cross-functional collaboration with product, UI, and DevOps teams to deliver production-ready features in a cloud-native AWS environment
- Acted as technical lead for integration of externally developed **Python-based machine learning systems**, defining service contracts and data exchange models for seamless interoperability
- Designed **data transformation pipelines and canonical data models** to support bidirectional integration between core platform services and ML optimization engines
- Conducted proof-of-concept work evaluating migration of ML services to **C# and gRPC**, improving performance, type safety, and alignment with internal platform architecture
- Drove architectural decisions around system scalability, service boundaries, and integration patterns, ensuring long-term maintainability and extensibility
- Mentored engineers and guided implementation standards, improving code quality and consistency across the team

Rocket Mortgage - Senior Software Engineer (2018-2021)

Led design and development of a .NET Core–based orchestration platform coordinating distributed microservices to support end-to-end mortgage application workflows across enterprise systems.

- Architected and implemented an **event-driven orchestration layer** using Kafka, enabling reliable coordination of multi-step business processes across independently deployed services
- Designed and enforced **service boundaries and API contracts**, improving system modularity and enabling parallel development across teams
- Built high-throughput backend services in **C# / .NET Core**, handling complex business logic, state transitions, and failure recovery scenarios
- Partnered with DevOps to support **AWS-based infrastructure**, contributing to deployment strategies, system observability, and production stability
- Implemented resiliency patterns including **idempotency**, **retry strategies**, and **fault isolation**, reducing failure impact in distributed workflows

- Improved system visibility using **structured logging and monitoring tools (including Datadog)**, enabling faster diagnosis of production issues
- Collaborated cross-functionally with product and engineering teams to translate business requirements into scalable technical solutions
- Provided technical leadership and mentorship, raising standards in code quality, system design, and operational ownership

VersaImage Software — Senior Software Engineer 2010–2018 | Brighton, Michigan

Architected and delivered a **HIPAA-compliant** medical imaging and prescription verification platform, integrating advanced **image processing, OCR technologies, and custom hardware** to support regulated healthcare workflows.

- Designed and implemented a secure medical imaging and prescription verification system using **C#, ASP.NET, and SQL Server**, ensuring compliance with HIPAA standards.
- Integrated **Tesseract OCR** to automate recognition of prescription labels, improving accuracy and reducing manual data entry.
- Developed **proprietary image-processing algorithms** to generate flattened bottle imagery from video streams, contributing to patent-related innovations.
- Collaborated with hardware engineering teams to integrate custom scanning devices, enabling seamless image acquisition and processing.
- Migrated infrastructure to **AWS EC2**, enhancing scalability, reliability, and operational efficiency.
- Built web applications and tools for searching, reviewing, editing, and exporting medical data and imagery.
- **Enhanced and modernized legacy products** through development in **C# and VB6**, extending system longevity and performance.
- Optimized database performance and ensured data integrity through **advanced SQL Server design and tuning**.

Software Engineer / Consultant – Various Clients (1994–2010)

Designed and delivered enterprise software solutions across **financial services, healthcare, insurance, and energy sectors**. Provided **full lifecycle development, modernization, and systems integration** services for commercial clients and Fortune 500 organizations, translating complex business requirements into scalable and reliable technical solutions.

- Developed web and enterprise applications using **ASP, C#, .NET, SQL Server, VB6, and JavaScript**, supporting data-intensive and mission-critical operations.
- Architected and implemented systems for **enterprise data migration, reporting, and business process automation**, improving operational efficiency and data accuracy.
- Delivered custom solutions for organizations including **IBM, Coldwell Banker, and Amway**, contributing to initiatives spanning infrastructure consolidation, performance optimization, and workflow modernization.
- Built **financial and insurance processing platforms, petroleum pricing systems, and healthcare applications**, demonstrating versatility across regulated and data-driven industries.
- Designed **relational database schemas, optimized queries, and integrated systems** using **SOAP, XML, and SQL-based** technologies.
- Supported **modernization and re-engineering initiatives**, transitioning legacy platforms into scalable web-based solutions.
- Collaborated directly with stakeholders and cross-functional teams to **define requirements, deliver solutions**, and ensure long-term maintainability.

Patents

Co-inventor on two patents in the image analysis domain related to automated recognition and processing of medical imagery.

Education

Completed undergraduate coursework in Computer Science (three years) and Liberal Arts (two years). Professional expertise developed through extensive industry experience delivering production software systems.

Portfolio

Please see my portfolio site at portfolio.emberdrift.com for additional information.