

Josh Zirena

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Lead Backend Engineer | AI & Cloud-Native Systems

AI Tech Lead and Senior Backend Engineer with 9+ years of experience designing and operating distributed, cloud-native systems in production environments. Proven technical leader driving reliability, modernization, and operational stability across large-scale production systems. Specialized in microservices, event-driven architectures, and AI platform infrastructure supporting high-availability production systems.

CORE COMPETENCIES

Languages & Frameworks: TypeScript, JavaScript (ES6+), Python, Node.js, React, Next.js, Express, Golang

Cloud & DevOps: AWS (S3, ECS, SQS, Cognito, DynamoDB, CloudWatch), Docker, Kubernetes, CI/CD, Terraform

Data & APIs: Postgres, Redshift, GraphQL, REST, SQL, GRPC

AI & Tools: Langfuse, AI-SDK, OpenAI AI-SDK, Storybook, GitHub Actions, Rollup

Architecture & Process: Microservices, Distributed Systems, System Design, Technical Leadership, Agile/Scrum

PROJECT HIGHLIGHTS

- **AI Evaluation Pipeline:** Designed and implemented a Langfuse-powered evaluation framework supporting a RAG-based GenAI platform, integrating Weaviate vector search to deliver context-aware responses across 5+ external LLM workflows and improve model quality tracking.
- **QMIR Reporting Modernization:** Partnered with Centers for Medicare & Medicaid Services (CMS) to modernize national healthcare reporting systems in iQIES, enhancing data delivery to thousands of post-acute care providers and over 100 million beneficiaries.
- **Scalable Microservices Architecture:** Led initiatives to modernize monoliths into distributed, containerized services on **AWS** ECS, improving system performance and team velocity.

PROFESSIONAL EXPERIENCE

Eli Lilly (Consultant via Encora) - *AI Tech Lead*

Remote • 2025 – Present

- Support backend development and distributed system initiatives for **enterprise AI** platforms delivering production **Gen AI** capabilities in regulated healthcare environments..
- Led the end-to-end development of the Vibe Working project, coordinating implementation and ensuring alignment with platform standards and **enterprise requirements**.
- Design and implement scalable backend services and workflow orchestration components supporting **AI-driven applications**.
- Investigate and resolve cross-service request failures by correlating logs, tracing request

lifecycles across **Kubernetes-deployed services**, and identifying root causes in **API** and downstream service interactions.

- Strengthen system reliability through structured logging, monitoring, and fault-tolerant service patterns in Kubernetes-based environments.

ICF International - *Tech Lead / Senior Software Engineer*

Herndon, VA | Remote • July 2022 – Present

- **Led** a cross-functional team of **6+ engineers**, mentoring junior developers and driving clean architecture practices through code reviews and design discussions, improving delivery predictability and reducing technical debt.
- Designed and deployed scalable backend systems using **Node.js**, **TypeScript**, and **Postgres**, supporting real-time data integration for AI and healthcare applications.
- Built a daily AI evaluation pipeline using **Langfuse** and **Node.js** to support a RAG-based GenAI platform designed for HIV.gov, integrating a Weaviate vector database to enhance response accuracy and deliver context-aware results across external LLM applications.
- Developed reusable authentication UI components in **Storybook** using **TypeScript** and **Amplify**, streamlining onboarding for external AI platforms.

LL Flooring - *Software Engineer*

Richmond, VA | Remote • March 2022 – July 2022

- Improved e-commerce user experience by enhancing functionality, refactoring legacy code, and resolving performance issues within **Salesforce Commerce Cloud** using **JavaScript**, **jQuery**, and **Node.js**.

IPD Analytics - *Software Engineer*

Miami, FL | Remote • August 2020 – March 2022

- Designed and implemented internal and subscriber-facing tools for medical patent and healthcare analytics.
- Built data-driven platforms for insurers and hospitals using **Node.js**, **React**, **GraphQL**, and **Apollo**.

Finleap Connect - *Software Engineer*

Hamburg, Germany | Hybrid • September 2018 – August 2020

- Developed resilient, microservices-based applications using **Node.js**, **JavaScript**, and **CockroachDB**. Reduced error rates in web scraping services by 87% through **Puppeteer** automation enhancements. Led a team of 3 offshore engineers, delivering projects on time through agile coordination and sprint planning.

YOC AG - *Technical Support Manager*

Berlin, Germany | Onsite • June 2017 – August 2018

- Engineered **JavaScript** integrations for advertising clients.

EDUCATION

Florida International University - *Bachelor of Science in Information Technology*

Graduated: December 2015

Certifications

- AWS Developer Associate (In Progress)