# Alex Bates

**Senior AI / Full-Stack Engineer**

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## PROFESSIONAL SUMMARY

Senior AI and Full-Stack Engineer with 10+ years of experience building cloud-native enterprise applications and production-grade generative AI platforms. Specializes in Python, FastAPI, React, TypeScript, RAG, vector search, agentic AI, AWS, and Azure. Experienced in designing end-to-end AI systems spanning document ingestion, retrieval, ranking, LLM orchestration, APIs, cloud infrastructure, and production observability. Improved enterprise retrieval accuracy by 25%, application performance by 15%, and release frequency by 25% through scalable architecture and engineering automation.

## TECHNICAL SKILLS

**Languages:** Python, TypeScript, JavaScript, Java, C#

**AI / Generative AI:** RAG, Generative AI, LLM Integration, AI Agents, Vector Search, Semantic Search, Hybrid Search, Embeddings, Prompt Engineering, Context Engineering, OpenAI, Azure OpenAI, Amazon Bedrock, Gemini, Azure AI Search, LangChain, LangGraph, Pinecone, MLflow, AI Observability

**Frontend:** React, Next.js, Angular, AngularJS, TanStack Query, Tailwind CSS

**Backend:** FastAPI, Spring Boot, ASP.NET Core, Node.js, REST APIs, Microservices

**Databases & Data:** PostgreSQL, MySQL, SQL Server, MongoDB, Redis, DynamoDB, ChromaDB, SQL, NoSQL, Databricks, dbt, Dagster, Apache Airflow

**Cloud & DevOps:** Azure, AWS, GCP, Docker, Kubernetes, Terraform, Git, GitHub, Jenkins, CI/CD, Prometheus

**Engineering:** System Design, API Design, Distributed Systems, Performance Optimization, Automated Testing, Code Review, Agile/Scrum, Production Support

## PROFESSIONAL EXPERIENCE

### Senior Software Engineer | Synechron

November 2023 – Present, New York, NY

- Deployed enterprise AI full-stack applications using Python, FastAPI, React, Next.js, TypeScript, Azure, and AWS, reducing client onboarding time by 20% while supporting scalable production workflows.
- Delivered production generative AI applications using Azure OpenAI, OpenAI, and Amazon Bedrock, delivering intelligent document search and conversational experiences that improved user query satisfaction by 30%.
- Architected end-to-end RAG pipelines for enterprise document repositories, including ingestion, metadata extraction, chunking, embedding generation, retrieval, ranking, and LLM response generation, improving retrieval accuracy from 62% to 87%.
- Accelerated Azure AI Search infrastructure using vector search, keyword search, semantic ranking, metadata filtering, and relevance tuning, reducing average search latency by 20% across large enterprise document collections.
- Engineered agentic AI workflows with LangChain, LangGraph, Python, FastAPI, and Azure Functions, integrating LLMs, enterprise APIs, tools, and automated decision-making workflows.
- Led technical design discussions, code reviews, production troubleshooting, and cloud platform improvements while delivering AI services with Docker, Kubernetes, Terraform, Databricks, MLflow, Jenkins, CI/CD, and Prometheus.

### Software Engineer | Broadridge

June 2021 – November 2023, Lake Success, NY

- Implemented enterprise full-stack applications using React, Next.js, TypeScript, Python, FastAPI, RESTful APIs, PostgreSQL, SQL Server, Redis, and ChromaDB, increasing system reliability.
- Built and deployed cloud-native backend services on AWS using Docker, Kubernetes, Terraform, and CI/CD pipelines, increasing release frequency by 25% and improving deployment consistency.

- Streamlined database queries and implemented Redis caching strategies to improve application performance and reduce end-user response times by 15%.
- Integrated generative AI capabilities using OpenAI, Amazon Bedrock, LangChain, embeddings, ChromaDB, and vector search to deliver intelligent search and automated data retrieval.
- Designed RAG workflows combining document ingestion, embeddings, vector retrieval, and LLM-generated responses to provide context-aware answers from enterprise knowledge sources.
- Created Python and FastAPI services connecting enterprise data sources with AI search and knowledge management workflows, reducing business information retrieval time by 30%.

### Full Stack Engineer | AdvancedMD

March 2020 – May 2021, South Jordan, UT

- Developed full-stack web applications using React and JavaScript on the frontend with C#, GraphQL, and ASP.NET Core on the backend, delivering scalable features for production healthcare applications.
- Established real-time communication capabilities using ASP.NET Core SignalR, enabling responsive, event-driven updates between clients and backend services to reduce latency by 10%.
- Enhanced database performance by analyzing inefficient queries, improving data-access patterns, and tuning backend operations to reduce response times by 30%.
- Integrated GraphQL APIs with C# services, streamlining data retrieval and reducing unnecessary frontend requests.
- Elevated application performance across frontend, backend, and database layers by identifying bottlenecks and implementing targeted code and query optimizations, reducing latency.
- Partnered with cross-functional Scrum teams to design, test, and deliver 10+ production features while maintaining application stability.

### Full Stack Developer | Asurion

June 2016 – February 2020, Nashville, TN

- Constructed enterprise applications using Angular, AngularJS, TypeScript, ASP.NET Core, MySQL, and Redis across frontend, backend, and integration layers, improving performance by 20%.
- Built provider search capabilities for language, CME, location, and insurance coverage using Angular, ASP.NET Core, and Redis caching, improving search reliability.
- Refactored 36 VSource lookup models to support searches by last name and NPI while improving consistency across services.
- Tuned SQL queries and backend service calls to improve provider data retrieval and application responsiveness by 5%.
- Supported production applications used by 5,000+ users, resolving issues across frontend, backend, databases, APIs, and service integrations.
- Conducted code reviews, automated testing, Maven builds, and production support using Git and JIRA, helping maintain code quality and reduce production incidents.

## EDUCATION

### Bachelor of Science in Computer Science | University of Tennessee

August 2011 – May 2015, Chattanooga, TN

## CERTIFICATIONS

### MTA: Software Development Fundamentals | Microsoft

June 2019

### MTA: Database Fundamentals | Microsoft

June 2019

### Databricks Certified Associate Developer for Apache Spark 3.0 | Databricks Academy

April 2022