

HASAN AHMED KHAN

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ABOUT

AI Engineer and Backend Developer with hands-on experience designing and deploying production-scale generative AI systems and distributed backend architectures. Skilled in building scalable microservices, AI-powered automation pipelines, and cloud-native applications using Spring Boot, Python, Node.js, and AWS. Strong expertise in Retrieval-Augmented Generation (RAG), prompt engineering, and building high-performance APIs supporting large-scale student learning platforms.

EDUCATION

Digicrome Academy

Post Graduate Program in Data Science & Artificial Intelligence

Online

Nov 2024– Current

HKBK College of Engineering

Bachelor of Engineering in Information Science and Engineering

Bengaluru, Karnataka

Oct 2020 – Jul 2024

PROFESSIONAL EXPERIENCE

Future Education

AI Engineer, Backend Dev, DevOps

Bengaluru, Karnataka

April 2025 – Current

- Architected 2 distinct, personalized chatbots using Generative AI, handling over 10,000 student interactions.
- Engineered a cost-management system for chatbot interactions that tracks API token usage across multiple client subscription tiers.
- Automated a content pipeline using Python and AI to process 200,000+ questions from DOCX to JSON, reducing manual processing time by an estimated 95%.
- Developed an AI-powered analytics module to generate actionable insights on academic performance.
- Utilized MongoDB to manage and query a database containing 10,000+ student records and deployed backend services on AWS Lambda for a scalable, serverless architecture.
- Architected and deployed a serverless smart timetable engine using Node.js and AWS Lambda, creating endpoints to automate conflict-free teacher assignments and dynamically sync daily session plans across multiple batches.

Financial Literacy Platform (Spring Boot Microservices)

- Developed production-grade backend microservices using Spring Boot for a financial literacy platform combining e-learning and e-commerce workflows.
- Designed distributed microservices architecture using Eureka Service Discovery and API Gateway for secure routing, authentication relay, logging, and rate limiting.
- Implemented secure user authentication and profile workflows using JWT authorization with referral and family account management.
- Integrated Cashfree payment gateway for course subscriptions, event transactions, and product purchases.
- Built scalable content ingestion and storage pipelines using Google Sheets API and AWS S3 to support dynamic educational content and platform assets.

TECHNICAL SKILLS

AI & Machine Learning: Generative AI, RAG, Vector Databases, Prompt Engineering, NLP, Scikit-Learn, TensorFlow, Pandas, NumPy

Programming & Web: Python, Java, Spring Boot, Node.js, Electron.js, REST APIs, Microservices Architecture

Cloud & Databases: AWS Services, MongoDB, SQL, Google Firebase, Vercel

Architecture & Tools: Postman, Docker, Git, API Gateway, Eureka Service Discovery, JWT Authentication, Redis

PROJECTS

Content Generation Desktop App:

- Designed and developed a cross-platform Windows desktop application using Electron.js and Node.js for AI-powered content generation.
- Integrated 5+ AI APIs (Gemini, GPT, and others) along with local language models (Ollama, ckpt, safetensors) to provide on-demand, offline, and hybrid content generation capabilities.
- Implemented a modular architecture supporting multi-model inference, customizable prompts, and asynchronous data handling for improved user experience and performance.
- Enhanced usability with a clean, responsive UI and integrated caching and error-handling mechanisms for seamless API communication.

Code-Sharing Desktop App:

- Developed a full-featured desktop application enabling developers to write, share, and collaborate on code snippets in real-time.
- Integrated Firebase backend, leveraging Firestore for real-time data synchronization and Firebase Auth for secure user authentication and role management.
- Built a custom embedded code editor with syntax highlighting, version tracking, and instant updates for collaborative coding.
- Focused on scalability, responsiveness, and user experience, ensuring low-latency interactions and efficient data handling across sessions.

AI Restaurant Ordering Chatbot (Stateless AI Waiter – POS Integrated)

- Designed and deployed a real-time AI ordering chatbot integrated with restaurant POS systems, enabling automated and scalable digital ordering workflows.
- Implemented a group ordering per table feature using a room-based architecture, allowing multiple users to collaboratively place orders in real time.
- Built a stateless Node.js backend using WebSockets and implemented RAG pipelines using PostgreSQL (pgvector) for context-aware menu recommendations.
- Architected multi-LLM support (OpenAI & Gemini), Redis session management, and deployed the system on AWS to support scalable real-time AI interactions.

CERTIFICATIONS

NextHikes IT Solutions

Online

Data Science Intern

Jan 2025 – Current

- Completed 6+ monthly projects covering the full data science lifecycle, including data collection, cleaning, feature engineering, model training, and evaluation using Scikit-Learn and TensorFlow on datasets exceeding 30,000 records.
- Developed and deployed machine learning models as scalable, containerized REST APIs using Flask and Docker, enabling real-time inference and easy integration.
- Applied exploratory data analysis (EDA) and visualization using Pandas, NumPy, Matplotlib, and Seaborn to extract key insights and guide model design.
- Performed hyperparameter tuning, cross-validation, and model optimization to improve prediction accuracy and generalization.
- Utilized Git/GitHub for version control and CI/CD pipelines to automate testing and deployment workflows.

Cranes Varsity

Bengaluru, Karnataka

Intern/Student

Aug 2023 – Sept 2023

Project: Sentiment Analysis using Machine Learning

- Processed 125M tweets for sentiment classification using advanced NLP.
- Built and optimized ML/DL models (TF-IDF, Word2Vec, LSTM, BERT).
- Visualized sentiment trends with Matplotlib and Seaborn.