

AHMED EID ABDULLAH

SENIOR AI BACKEND ENGINEER

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PROFESSIONAL SUMMARY

AI Backend Engineer focusing on architecting and building reliable, scalable, and observable infrastructure for agentic AI systems. Experienced in distributed systems, event-driven architectures, and cloud-native platforms, with a focus on designing production-grade AI applications powered by LLMs, RAG pipelines, vector search, and intelligent workflow orchestration. Specialized in building efficient AI infrastructure by optimizing performance, latency, reliability, and LLM inference costs while designing systems that remain maintainable, resilient, and scalable in production environments.

TECHNICAL SKILLS

- Languages:** TypeScript - JavaScript
- Backend Development:** Node.js - Express.js - REST APIs - WebSockets - Real-Time Systems - Event-Driven Architecture - Asynchronous Processing - Background Jobs - Microservices - API Design
- Distributed Systems & Messaging:** Kafka - RabbitMQ - BullMQ - Redis Pub/Sub - Redis Streams
- AI Engineering & Agentic Systems:** Production AI Agents - LangGraph - LangChain - LangSmith - MCP integration - Production RAG Pipelines - Vector Databases (Qdrant) - LLM Application Design - AI Workflow Orchestration
- Databases & Caching:** PostgreSQL - MongoDB - Redis - Data Modeling - Query Optimization - Caching Strategies
- Cloud & Infrastructure:** Docker - Nginx - GitHub Actions (CI/CD) Cloud-Native Deployment (AWS - GCP)
- Observability:** OpenTelemetry - Prometheus - Grafana - Jaeger - Promtail - Loki - prom-client - Logging Pipelines - Production Monitoring
- Architecture & Design:** Distributed System Design - Scalable System Design - High Availability - Fault Tolerance - Load Balancing - API Gateway - Circuit Breakers - Resilience Patterns - System Performance Optimization

WORK EXPERIENCE

EignSpaces

Senior AI Backend Engineer

Sep 2025 - Aug 2026

- Architected and built Tawasoul, a multi-tenant AI agent platform for e-commerce businesses, leveraging LangGraph for agent orchestration and structured state management to enable intelligent product discovery, recommendations, comparisons, order processing with offers, and automated customer support workflows.
- Designed and built a scalable, real-time business intelligence dashboard using WebSockets, distributed connection management, and Redis Streams, enabling business owners to monitor AI agent conversations, manage support escalations, track orders, receive real-time notifications, and analyze conversion rates and customer metrics.
- Architected an end-to-end RAG pipeline covering document ingestion and source registration across PDFs, CSVs, databases, and APIs, through document processing, indexing, query understanding, retrieval, context construction, and response generation.
- Implemented a centralized AI gateway for intelligent model routing, LangSmith-based token usage tracking, and tenant-level cost control, optimizing LLM inference efficiency.
- Reduced redundant LangGraph invocations by implementing conversation-level message debouncing and buffering to aggregate incoming webhook messages into a single request.
- Reduced RAG pipeline costs by 65% through product context caching and reuse across multi-turn conversations, eliminating redundant retrieval operations.
- Optimized RAG retrieval latency, search efficiency, and token consumption through Qdrant payload indexing, metadata filtering, semantic search, and context optimization.
- Implemented AI guardrails and validation nodes to detect and track out-of-context queries, trigger human escalation, and reduce unnecessary LLM invocations and token consumption.
- Implemented resilient LLM failure handling with model fallback strategies and exponential backoff retries, improving AI workflow reliability under transient failures, rate limits, and provider errors.
- Integrated Odoo ERP with the platform to automate order creation, modification, cancellation, and real-time order tracking.
- Integrated Google Maps APIs to calculate delivery fees dynamically based on customer location (latitude and longitude).

Technologies: TypeScript, Node.js, LangGraph, LangSmith, RAG, Qdrant, Redis, Redis Streams, BullMQ, PostgreSQL, WebSockets, Docker, OpenTelemetry, WhatsApp Coexistence

JoProgrammer

Backend Engineer (DeFi Infrastructure)

Jul 2024 - May 2025

- Designed and built a microservices-based blockchain indexing architecture consisting of Block Listener, Block Fetcher, Event Extractor, Event Normalizer, and Protocol Parser services, enabling scalable and maintainable off-chain data processing for a multi-chain DeFi protocol.
- Built a blockchain event indexing pipeline for the protocol, processing EVM smart contract events across Arbitrum and BNB Chain using Viem, handling up to 3,260 events/sec through a Kafka-based event-driven architecture.
- Implemented blockchain reorg handling and event rollback strategies using Kafka and BullMQ, maintaining indexing consistency and recovering from chain state changes.
- Implemented a blockchain RPC management layer supporting three WebSocket RPC fallbacks with circuit breaker patterns, enabling automatic failover, connection recovery, and reliable EVM event ingestion.
- Implemented a distributed logging pipeline using Promtail and Loki, providing centralized observability across five backend microservices.

Technologies: TypeScript, Node.js, Viem, Kafka, BullMQ, Microservices Architecture, Event-Driven Architecture, WebSocket and Json RPC, Circuit Breaker Pattern, Blockchain Indexing, Promtail, Loki, Docker

JoProgrammer
Backend Developer
Oct 2023 - Jun 2024

Contributed to the development and enhancement of software solutions for two clients:

1- An Operations Management System for a Canadian recycling company, supporting, logistics scheduling, material inventory tracking, and operational analytics across the recycling lifecycle.

- Contributed to building a Node.js monolithic backend application using a layered architecture, separating application concerns across API, business logic, and data access layers.
- Developed an admin dashboard and supporting APIs for inventory management, operational reporting, and analytics, providing visibility into recycling workflows and business performance metrics.
- Containerized application services using Docker and Docker Compose, deploying and managing production workloads on VPS infrastructure with Nginx reverse proxy configuration and SSL termination.

2- A B2B and B2C truck rental platform enabling individuals and business to rent trucks for residential moves and commercial goods transportation.

- Designed and implemented a scalable real-time auction service using WebSockets, enabling authenticated users to receive live auction updates and track auction status in real time.
- Contributed to building distributed WebSocket infrastructure using Redis Adapter for event propagation and a Distributed Connection Registry for managing active connections across multiple application instances.
- Implemented Redis-based caching for auction data with cache invalidation strategies to improve response latency and reduce database load.
- Developed KYC workflows for user verification, including secure document submission and storage using AWS S3.

Technologies: Node.js, WebSockets, Socket.IO, Redis, Redis Adapter, Redis Streams, AWS S3, Docker, VPS

Zimozi Solutions
Backend Developer
Mar 2023 - Aug 2023

- Implemented RESTful APIs with full CRUD operations using Express.js, applying clean architecture principles (layered services/controllers/routes) and security best practices.
- Modeled MongoDB schemas with Mongoose and wrote complex aggregation pipelines for analytics admin dashboard.
- Implemented authentication and authorization workflows including JWT, bcrypt, and role-based access control (RBAC) with protected route middleware.
- Built modular, reusable services, controllers, and middleware layers with centralized error handling.
- Implemented secure OAuth login flows (Google, GitHub) with token validation, CSRF protection, and session handling, improving overall security.
- Developed an SMS notification service for OTP authentication using Twilio, including asynchronous webhook handling for message status updates and delivery tracking.

Technologies: Node.js, Express.js, MongoDB, Mongoose, RESTful APIs, JWT Authentication, OAuth, RBAC, Security Middleware, Twilio SMS API, Webhooks

Polygon Labs
Backend Developer Intern (Blockchain Infrastructure)
Oct 2022 - Dec 2022

- Selected for the Polygon Africa Bootcamp 2022, an intensive 3-month Web3 engineering program (40+ hours/week) focused on blockchain fundamentals, smart contract development, and decentralized application architecture.
- Covered core topics including Ethereum and Polygon architecture, Solidity smart contracts, gas optimization, wallet integration, transaction lifecycle, decentralized computing, and dApp development and deployment on Polygon.
- Designed and developed "Multi-Talenta", a multichain NFT marketplace with an NFT bridge enabling cross-chain creation, trading, and transfers across Polygon, Ethereum, Avalanche, and BNB Smart Chain.
- Ranked Top 3 in the NFT Marketplace track during the final hackathon evaluation phase.

Technologies: Node.js, React.js, Solidity, Ethers.js, Smart Contracts, Blockchain Development, Decentralized Applications (dApps)

BugCrowd
Web Application and API Penetration Tester
Mar 2020 - Jul 2021

- Identified critical authentication and authorization vulnerabilities across 55+ web applications and APIs, including 2FA & OTP bypasses, OAuth misconfigurations, IDOR, privilege escalation, and zero-click account takeover issues through end-to-end security assessments.
- Discovered and responsibly disclosed 100+ validated vulnerabilities through BugCrowd and public security programs.
- Ranked among the Top 1000 Bugcrowd security researchers globally.
- Awarded the MVP Badge (Q3 2020) for exceptional vulnerability discovery and reporting quality.
- Public Profile: [Bugcrowd Security Researcher Profile](#)

ENGINEERING WRITING & PRODUCTION INSIGHTS

- Publishing technical deep dives on distributed architectures, event-driven systems, asynchronous processing, real-time WebSocket platforms, AI infrastructure, reliability engineering, scalability patterns, observability, and production-grade backend system design.
- Sharing production engineering insights on architectural decisions, system design trade-offs, reliability, observability, and lessons learned from designing scalable distributed systems, reliable AI agent architectures, and production-grade AI infrastructure.
- [Personal Website](#).

EDUCATION

Zewail City Of Science And Technology | Sept 2017 – Jun 2022

Bachelor's in Communication and Information Engineering

Specialization: Artificial Intelligence and Machine Learning

Cumulative GPA: 3.34 out of 4