

HIRA AHMED

AI Automation & Backend Engineer | Agentic Systems, RAG Architecture & Data Operations

Karachi, Pakistan (Open to Remote) | hira229922@gmail.com | +92-331-8041395 | linkedin.com/in/hira-a-4068402a7 | github.com/hira299

SUMMARY

AI Systems, Automation & Backend Engineer specializing in production multi-agent architectures (LangGraph, n8n), deterministic RAG pipelines, cloud security automation (AWS, Docker), and end-to-end QA / data operations for enterprise LMS and marketplace platforms. Peer-reviewed research under review at IEEE Transactions on Cloud Computing.

TECHNICAL SKILLS

AI Frameworks & LLM: LangGraph (StateGraph), Corrective RAG (CRAG), pgvector, FastEmbed, PyMuPDF, LangChain, LlamaIndex, Llama 3.3, Claude 3.5, GPT-4o, Groq, Tavily AI, JSON-Mode.

Backend & Cloud: Python (Advanced), Linux/Bash, JavaScript/TypeScript, SQL, Next.js 15, FastAPI, AWS (Lambda, RDS, API Gateway, EC2, S3, VPC, CloudWatch, CloudFormation, IAM, Cognito), Terraform, CI/CD, Docker Compose, AWS CLI Automation.

Databases & Storage: PostgreSQL (JSONB, pgvector, GIN Indexing), Supabase (Vector DB), DynamoDB, NoSQL.

Automation, QA & Data Ops: n8n, Make.com, Agentic Workflows, Async State Machines, Concurrency Locks, DLQ, Manual & Regression QA/Testing, Bug Reproduction & Root-Cause Analysis, Data Cleaning & Migration, ETL, Client-Facing Data Support, Localization/i18n (9+ languages).

EXPERIENCE

AI Research Collaborator | Independent Research, Cloud Security & Neuro-Symbolic AI Mar 2026 - Jul 2026

- Co-authored "Sentinel-Mesh," a neuro-symbolic cloud-remediation framework combining neural misconfiguration detection with formally-verified symbolic remediation planning (preprint: Research Square DOI 10.21203/rs.3.rs-10674271/v1); manuscript under review at IEEE Transactions on Cloud Computing (ID TCC-2026-08-0693), benchmark and artifacts archived on Zenodo (DOI 10.5281/zenodo.20975067).

Data Operations Intern | Ekelin (Remote) Jul 2025 - Present

- Clean, validate, and standardize production datasets for enterprise clients across Retail, Insurance, and Corporate portfolios: audited and corrected **9,000+** rows (**7,524** Retail; **1,000** each Insurance and Corporate) spanning vehicle identifiers (Chassis No, Engine No, Vehicle Registration Number), contact/emergency-contact fields, device configuration, and financial columns across **46** logged cleaning tasks.
- Uncovered systemic financial data errors in device billing fields: flagged **6,795** invalid cells across Device Amount, Taxes, and Total columns, incl. **1,993** rows where Amount + Taxes did not reconcile to Total, and defined validation rules to prevent recurrence.
- Diagnose client-reported data issues on live calls and implement permanent fixes rather than one-off corrections, while shadowing daily data-science operations end to end.

Backend & Automation Engineer (started as Intern) | Tech Potion, Malaysia (Remote, 3-person team) Jan 2025 - Sept 2026

- Own and maintain a **28,000+** listing AI tools directory end-to-end: built a Python scraper (BeautifulSoup, Playwright, Selenium; **20+** extraction methods across **10** platforms, **~95%** success rate) plus a URL-healing service, and personally triaged and resolved **26** production bugs spanning authentication (AWS Cognito), listings, filtering/pagination, and **9+** language localization.
- Built a **7-stage** content pipeline (PostgreSQL status tracking) running **4** sequential LLM calls via OpenRouter/Gemini Flash (**~27x** lower cost-per-item than GPT-4, **100%** schema-valid JSON output, **5.6x** speedup via concurrent workers); shipped the Next.js SSR frontend on Vercel across **9+** language routes.
- Migrated data to AWS RDS, configured Lambda/API Gateway, ran ETL on EC2, used S3 for media storage, and managed VPC access, cutting monthly AWS costs **34%** via query optimization; modeled multi-tenant B2B portal topologies (booking, payment, government financial warrants) and AWS serverless architectures with automated failover routing for enterprise systems architecture engagements.
- Ran **34+** hours of structured end-to-end QA across the LMS (branching scenarios, XP/header tracking, certificates, artifacts, notifications): found, reproduced, and documented **20** bugs, including **3** Critical- and **14** Major-severity defects, with structured reproduction tables and fix recommendations; verified **31** Content Studio components and core systems (auth, streaks, progress tracking) as working correctly.

Quality Assurance Intern | Sadiq AI, Karachi, Pakistan Jun 2024 - Aug 2024

- Built a RAG-based internal chatbot (Gemini API, Python, Streamlit) to help the dev team query bug-tracking data faster, improving query efficiency **~40%**; ran manual and automated (unit, widget, golden) tests on Flutter applications, documenting **150+** edge-case bugs pre-release.

AUTOMATION & AI PROJECTS PORTFOLIO

Autonomous Cloud Compliance & Evidence-Based AI Auditing Engine (AWS CLI, Docker, n8n, LangGraph, Supabase pgvector, Groq, FastAPI) - Cut questionnaire turnaround **~90%** via a **6-node** LangGraph CRAG state machine (**100%** citation enforcement, Llama-3.1-8B relevance scoring, ARN-verifying Critic Agent) auto-answering **250+** question enterprise reviews (CAIQ, SOC 2, SIG); vector engine hit **0.95** semantic relevance at **\$0** embedding cost; n8n queue processed **2,000+** questions, zero timeouts.

Autonomous Agentic Research Framework (*LangGraph, FastAPI, Tavily AI*) - Planner-Synthesizer RAG workflow: a planner decomposes prompts into search queries, Tavily AI grounds results, and a synthesis layer produces cited reports. Loom demo.

Enterprise Profitability Guardrail (*n8n, ClickUp, PostgreSQL*) - state machine + dead-letter queue for **100%** data integrity on concurrent updates. Loom demo. **Scalable SEO Agency OS & Autonomous Agent** (*n8n, ClickUp, Gemini*) - ClickUp project system with an n8n agent that scrapes competitor sites and auto-flags content gaps. Loom demo.

EDUCATION

Bachelor of Science in Cybersecurity | Sir Syed University of Engineering & Technology (SSUET)

Top 10 Finalist (Blue Team), Ignite National Hackathon, selected from **200+** teams.