

# MUHAMMAD USMAN

## Full-Stack AI Engineer | AI Systems & Autonomous Agents

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### SUMMARY

Full-Stack AI Engineer specializing in LLM-powered applications, autonomous agent systems, and high-performance backend tooling. Built and shipped production systems spanning a PyPI-published Rust database engine, multi-agent orchestration platforms, and end-to-end AI automation pipelines — from low-level systems programming to serverless React frontends.

### KEY SKILLS

Languages & Frameworks: Python, TypeScript, JavaScript, Rust, SQL, FastAPI, Next.js, React, Node.js  
AI/ML: RAG Pipelines, Agent Architectures, LangChain, Vector Databases, OpenAI, Gemini, Claude  
Databases & Tools: n8n, PostgreSQL, MongoDB, SQLite, Supabase, Docker, Git, GitHub Actions, Vercel

### WORK EXPERIENCE

#### AI/ML Engineering Intern | DeveloperHub.co

Dec 2025 – Jan 2026

- Built 5 end-to-end ML/AI Streamlit applications in 6 weeks including RAG chatbots and predictive models using Python, LangChain, TensorFlow, and Scikit-learn.
- Developed a Gemini-powered mental health assistant with real-time crisis-detection logic.

### PROJECTS

#### ELYX — Autonomous AI Agent | Python, FastAPI, Next.js, SQLite, LLM APIs

[github.com/MuhammadUsmanGM/ELYX-Digital-FTE](https://github.com/MuhammadUsmanGM/ELYX-Digital-FTE)

- Slashed manual operational workload by 70% architecting event-driven AI agents monitoring Gmail, WhatsApp, and Odoo ERP to trigger role-scoped approval workflows.
- Architected model-agnostic LLM routing across 4 providers, cutting latency by 85% with cryptographically signed audit trails and human-in-the-loop gates.

#### FerrumDB | Rust, PyO3, Tokio, AES-256-GCM, Axum

[github.com/MuhammadUsmanGM/FerrumDB](https://github.com/MuhammadUsmanGM/FerrumDB)

- Built a custom embedded database engine in Rust (~1,000 lines) with O(1) reads/writes, AES-256-GCM encryption, atomic transactions, and a Bitcask-inspired log architecture.
- Shipped to both PyPI and crates.io with 750+ real-world downloads; benchmarked sub-1µs GETs and 1,000 SETs in ~2-5ms via Criterion.

#### The Signal — AI Newsletter | React, Node.js, Supabase, GitHub Actions, Cloudflare

[github.com/MuhammadUsmanGM/THE-SIGNAL](https://github.com/MuhammadUsmanGM/THE-SIGNAL) | [news-letter-umber-five.vercel.app](https://news-letter-umber-five.vercel.app)

- Engineered a fully autonomous AI newsletter pipeline ingesting global AI news via LLM summarization and delivering weekly briefings to 300+ subscribers.
- Secured delivery with Cloudflare Turnstile and implemented serverless scheduling via GitHub Actions for timezone-aware 9AM local-time email distribution.

### EDUCATION

#### Bachelor of Science in Software Engineering

Virtual University of Pakistan

Oct 2024 – Expected 2028

#### Certified Agentic AI Engineer

Presidential Initiative for Artificial Intelligence & Computing (PIAIC)

Dec 2024 – present