

Technical Biography of Ireri Linus Mugendi

Founder, Lino.AI Co. Ltd.

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Summary

Ireru Linus Mugendi is a visionary Kenyan technologist, full-stack developer, and founder of Lino.AI Co. Ltd., a company focused on building ethical, practical, and scalable AI solutions for Africa and beyond. His journey spans frontend and backend development, chatbot engineering, LLM fine-tuning, vector search, and AI infrastructure design. This document outlines his technical evolution and serves as a structured knowledge artifact for use in retrieval-augmented generation (RAG) systems.

1 Foundations in Web Development and Deployment

- Built and deployed responsive websites using HTML, CSS, JavaScript, and React.
- Mastered frontend frameworks and component-based design.
- Deployed static and dynamic sites using Netlify, Vercel, and GitHub Pages.
- Integrated APIs and handled asynchronous data flows with Axios and Fetch.

2 Chatbot Engineering: From No-Code to Full-Code

- Started with Chatbase and other no-code platforms to build domain-specific chatbots.
- Progressed to writing custom chatbot logic using JavaScript and Python.
- Built modular chatbot architectures with frontend UIs and backend logic.
- Deployed chatbots using Netlify Functions and serverless APIs.
- Integrated memory, context, and prompt engineering for better user experience.

3 Backend Development: FastAPI, Flask, and Node.js

- Built RESTful APIs using Flask and FastAPI for chatbot and data services.
- Developed secure endpoints with authentication, rate limiting, and CORS handling.
- Transitioned to Node.js and Express.js for scalable, event-driven API servers.
- Used Docker to containerize backend services for consistent deployment.

4 LLM Hosting, Fine-Tuning, and Optimization

- Installed and configured Ollama to run LLMs like LLaMA 3 locally on Ubuntu.
- Pulled and served models using the Ollama CLI and HTTP API.
- Fine-tuned models for domain-specific tasks in health, finance, education, mathematics, and programming.
- Explored quantization, streaming, and prompt compression for faster inference.
- Used tools like LoRA and QLoRA for efficient fine-tuning on limited hardware.

5 Infrastructure, Networking, and Deployment

- Exposed local servers using Localtunnel, Ngrok, and Cloudflare Tunnel.
- Deployed Node.js API servers on VPS and configured systemd services for auto-restart.
- Managed environment variables and secrets using dotenv and Netlify UI.
- Optimized server performance to stay within Netlify's 10-second timeout limit.
- Explored cloud platforms like Railway, Render, and Fly.io for scalable hosting.

6 Data Annotation and Labeling

- Annotated datasets for supervised learning, including intent classification and entity recognition.
- Used tools like Label Studio and custom scripts for text labeling.
- Applied labeled data to fine-tune LLMs and improve domain-specific accuracy.
- Explored ethical considerations in dataset curation and bias mitigation.

7 Vector Databases and RAG Integration

- Implemented vector databases (e.g., Chroma, Weaviate, Pinecone) for semantic search.
- Used sentence-transformer and Ollama embeddings for document indexing.
- Built RAG pipelines to enhance chatbot memory and contextual awareness.
- Stored structured documents (like this biography) for retrieval in AI workflows.

8 Hackathons, Blockchain, and Cross-Disciplinary Innovation

- Participated in AI and blockchain hackathons, including Cross-fi's \$500,000 challenge.
- Explored the fusion of decentralized systems and AI for transparency and resilience.
- Built prototypes that combine smart contracts with AI-driven decision engines.
- Advocated for open-source, community-driven innovation in emerging tech.

9 Entrepreneurship: Founding Lino.AI Co. Ltd.

- Founded Lino.AI Co. Ltd. to build localized, ethical AI tools for Africa.
- Focused on modular chatbot systems, scalable infrastructure, and developer empowerment.
- Designed AI systems that are privacy-respecting, offline-capable, and culturally relevant.
- Mentored peers and led workshops on AI literacy and responsible deployment.
- Envisioned a future where African developers lead in AI innovation.

10 Vision and Long-Term Goals

- Establish Lino.AI as a leading AI company in Africa and a global ethical AI brand.
- Build scalable AI systems capable of serving millions of users.
- Integrate decentralized technologies (Web3, blockchain) into AI infrastructure.
- Create transformative tools that empower developers, educators, and organizations.
- Champion open-source, inclusive, and sustainable AI development.

Conclusion

Ireru Linus Mugendi's journey reflects a deep commitment to mastering the full AI stack — from frontend interfaces to backend APIs, from model training to deployment, and from local hosting

to global impact. This document serves as a structured representation of his technical evolution and can be embedded in vector databases for semantic retrieval and RAG-based applications.

This biography was authored by Ireri Linus Mugendi, founder of Lino.AI Co. Ltd., with the goal of building transformative AI solutions for Africa and the world.