

# Takura Mukaro

**AI Software Engineer | Machine Learning Engineer**

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**Portfolio:** [portfolio-a0e4c.web.app](https://portfolio-a0e4c.web.app) | **GitHub:** [github.com/taksrules](https://github.com/taksrules)

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## Summary

AI Software Engineer with expertise in building and deploying production AI systems, LLM-based applications, and agentic workflows. Proven track record of architecting end-to-end AI platforms from concept to production, with experience in LangChain orchestration, payment API integrations, and scalable cloud deployments. Strong foundation in machine learning, full-stack development, and system architecture. Passionate about applying AI to solve real-world problems and building intelligent, user-centric applications.

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## Professional Experience

### Co-Founder & Technical Lead

**Nerva AI** — Remote

*June 2023 – Present*

- **AI Platform Architecture:** Designed and built Nerva AI ([nervaii.org](https://nervaii.org)), a production voice AI platform enabling users to create and deploy conversational agents with multimodal capabilities (speech-to-text, LLM processing, text-to-speech)
- **LLM & Agentic Workflows:** Implemented production agent systems using LangChain, building tool-use capabilities that enable agents to perform actions, access external services, and maintain conversational context
- **Multi-Provider Integration:** Architected seamless integration with Deepgram (STT), OpenAI (LLM), and ElevenLabs (TTS), creating a unified platform for voice AI deployment
- **Full-Stack Development:** Built complete user management system with authentication, agent lifecycle management, configuration interfaces, and real-time playground for testing conversations
- **System Deployment:** Deployed and managed production infrastructure on AWS/cloud platforms, implementing WebSocket communication for real-time voice interactions
- **Technical Decision-Making:** Made all architectural decisions, technology choices, and system design trade-offs from inception through multiple development phases to live production

## Software Engineer

**AfriSight** — Remote

*June 2024 – Present*

- **System Migration & Optimization:** Led migration of legacy systems serving large user base, improving platform efficiency by 40% through optimized data retrieval and modern architecture patterns
- **Payment API Integration:** Integrated multiple payment APIs (Reloadly, Flutterwave, PayNow, Stripe) enabling secure, flexible transactions across African markets
- **API Development:** Designed and implemented RESTful APIs with comprehensive testing using Postman and automated frameworks, ensuring robust performance
- **Data Security:** Developed encryption and key signing features ensuring compliance with international data security standards (ESOMAR Code of Conduct)
- **Microservices Architecture:** Deployed Docker-based microservices improving scalability by 50% and enabling rapid feature integration
- **Cloud Infrastructure:** Managed DigitalOcean deployments with auto-scaling configuration for high availability

## Freelance Software Developer

**Remote**

*June 2022 – Present*

- **Payment Gateway Development (Tango Africa):** Built scalable payment infrastructure integrating multiple providers, improving transaction success rates by 25% while ensuring regulatory compliance
- **AI Chatbot Development (PropertyBook):** Created WhatsApp-based AI chatbot using NLP for real estate transactions, enabling property inquiries, scheduling, and listing management
- **Cloud Infrastructure:** Configured DigitalOcean infrastructure with auto-scaling for payment gateways and high-availability services
- **Client Collaboration:** Gathered requirements, provided technical consultation, and delivered custom solutions increasing operational efficiency by 25%

## Software Engineer

**BrainStake Solutions** — Harare, Zimbabwe

*Oct 2023 – Feb 2024*

- **Computer Vision Integration:** Implemented OCR feature using AI for homework assistance, enabling real-time image-to-text processing
- **Payment Systems:** Integrated PayPal payment processing, expanding payment options and improving transaction reliability
- **Performance Optimization:** Enhanced system performance through debugging and optimization, increasing user satisfaction by 15%

## Graduate Trainee Software Engineer

**GrowthSense Technology** — Harare, Zimbabwe

*Nov 2022 – Oct 2023*

- **Full-Stack Development:** Built HR management system using ReactJS and NestJS, streamlining HR processes for internal teams

- **Enterprise Integration:** Developed SharePoint-based intranet promoting cross-departmental collaboration and resource sharing
- **Quality Assurance:** Conducted automated and manual testing ensuring high-quality deliverables aligned with user requirements

## Software Engineer Intern

Shanghai Art Institute — Shanghai, China

Jan 2021 – Mar 2021

- **Computer Vision Application:** Developed Python-based NFT generation program using OpenCV for digital art portfolio
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# Education

## Bachelor of Engineering in Software Engineering

Zhejiang University of Technology — Hangzhou, China

Sept 2018 – June 2022

- **Focus Areas:** Machine Learning, Neural Networks, Computer Vision, Java Programming, Android Development, Data Mining
  - **Undergraduate Thesis:** Neural Style Transfer using Cycle-GAN architectures (ResNet and U-Net generators)
  - **Awards:** Dean's Award for academic excellence
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# Technical Skills

## AI/ML & LLM Development

- **Frameworks:** LangChain (agent orchestration, tool-use), OpenAI API, TensorFlow, PyTorch
- **AI Applications:** Conversational AI, Voice Agents, RAG systems, Agentic Workflows, NLP, Computer Vision (OpenCV)
- **Speech Processing:** Deepgram (STT), ElevenLabs (TTS), Real-time audio processing

## Backend Development

- **Languages:** Python, TypeScript, JavaScript, Java, PHP
- **Frameworks:** NestJS, Django, Laravel, Node.js, Express
- **API Development:** RESTful APIs, WebSocket, JSON payloads, Postman testing

## Frontend Development

- **Frameworks:** React, React Native, Next.js
- **Technologies:** TypeScript, HTML5, CSS3, Tailwind CSS, Responsive Design

## Databases & Data

- **SQL:** PostgreSQL, MySQL
- **NoSQL:** Firebase, MongoDB
- **ORMs:** TypeORM, Prisma

## DevOps & Cloud Infrastructure

- **Containerization:** Docker, Docker Compose
- **CI/CD:** Jenkins, GitHub Actions
- **Cloud Platforms:** AWS (EC2, S3, Lambda), DigitalOcean (Droplets, Auto-scaling)
- **Deployment:** PM2, cPanel, Firebase Hosting
- **Monitoring:** Application performance optimization, Resource management

## Development Practices

- **Methodologies:** Agile (Scrum), Test-Driven Development
  - **Version Control:** Git, GitHub
  - **Testing:** Automated testing frameworks, API testing, UAT
  - **Project Management:** Azure DevOps, Jira
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# Certifications

- **Stanford University Machine Learning Specialization** (Coursera/DeepMind)
  - **Advanced Learning Algorithms** (Coursera)
  - **Scrum: Agile Project Management & Requirements Gathering**
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# Research Interests

- Automatic Speech Recognition (ASR) for low-resource African languages
  - Neural network architectures for speech and language processing
  - Generative models and data augmentation techniques
  - Applied AI for social impact and emerging markets
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# Awards

- **Academic Scholarship Award (Grade A)** – 2018/2019
  - **Zhejiang Provincial Government Scholarship** – 2018/2019, 2020/2021
  - **Dean's Scholarship** – 2020/2021
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# Languages

- **English:** Fluent
  - **Shona:** Native
  - **Mandarin:** Conversational
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## References

Available upon request