

## Collins Njuguna

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### Education

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#### United States International University – Africa

*Bachelor of Science in Software Engineering*

August 2023 – August 2027

Nairobi, Kenya

**Relevant Coursework:** Data Structures, Software Methodology, Algorithms Analysis, Database Management, Artificial Intelligence, Machine Learning, Web Development

#### Projects

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- **Aquafarm Fisheries** | React, Node.js, Express, MongoDB, Microsoft Azure, Daraja M-Pesa
  - Architected a commercial aquaculture platform with product browsing, cart checkout in KES, and bilingual (EN/SW) interfaces.
  - Integrated Safaricom Daraja API (M-Pesa STK Push) and Stripe, implementing idempotent webhooks for zero-loss payment reconciliation.
  - Deployed containerized backend services and cloud asset storage on Microsoft Azure (App Service, Blob Storage) using Docker Compose.
  - Developed an operations portal for farm staff to monitor pond telemetry, feed inventory, and automated transaction receipts.
- **ClearCaption Kiosk** | Python, FastAPI, Whisper ASR, Microsoft Azure, WebSockets, Docker
  - Designed an AI speech accessibility platform to bridge clinical intake communication gaps for Deaf and hard-of-hearing hospital patients.
  - Developed an asynchronous streaming speech pipeline with Python (FastAPI, asyncio) and WebSockets, achieving sub-350ms latency targets.
  - Evaluated and integrated speech recognition models with OpenAI Whisper and Microsoft Azure Cognitive Services for clinical audio transcription.
- **Mwananchi Budget Concierge** | Python, Gemini API, Azure, Firebase Firestore, Africa's Talking
  - Built an automated civic data extraction pipeline that ingests 200+ page county budget PDFs and normalizes unstructured fiscal figures.
  - Integrated Google Gemini API and cloud document parsing on Microsoft Azure Functions to generate plain-language spending breakdowns.
  - Connected Africa's Talking SMS gateway to broadcast automated text alerts to registered community members on local ward budgets.

### Technical Skills

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**Languages:** Python, SQL, Java, C/C++, JavaScript, TypeScript, HTML/CSS

**Data & Pipelines:** ETL design, data ingestion, data transformation, pandas, NumPy, SQLAlchemy, PostgreSQL, Redis, Kafka

**Cloud & DevOps:** Microsoft Azure (App Service, Blob, Functions), AWS, Docker, GitHub Actions, Redis Queue

**Frameworks & APIs:** FastAPI, Django, Node.js, React, Express.js, Alembic, WebSockets

**ML/AI Libraries:** OpenAI Whisper ASR, Google Gemini API, TensorFlow, scikit-learn, pandas, matplotlib, seaborn, Jupyter

**Databases:** PostgreSQL, SQL, Firestore/Firebase, MongoDB, SQLite

**Testing & Quality:** pytest, Safaricom Daraja API, Africa's Talking SMS, unit testing, integration testing, data validation