BAGOMBEKA JOB

Software Engineer

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01 PROFILE

Innovative and impact-driven **Software Engineer** with a passion for building efficient, user-focused systems that solve real-world problems. Skilled in **full-stack development**, **data structures**, **API design**, and **system architecture**, with hands-on experience developing, testing, and maintaining scalable software solutions—particularly for government platforms serving over **75 million users**.

Proficient in modern programming languages, frameworks, and tools, and effective working independently or within agile, high-performing teams. Known for blending **creativity with technical expertise**, I also bring a strong background in **administrative and operational support**, offering rare versatility across both tech and management functions.

Adept at handling sensitive tasks with professionalism, managing complex projects with precision, and communicating clearly across cross-functional teams. With a self-motivated drive to continuously learn and innovate, I strive to write clean, maintainable code and contribute meaningfully to **mission-driven initiatives**. Whether solving backend challenges or optimizing internal workflows, I bring a **forward-thinking mindset** and a strong commitment to excellence.

02 EMPLOYMENT HISTORY

Jan 2025 — Present

Kampala, Uganda

SOFTWARE ENGINEER at SMSONE UGANDA LTD

Projects

1. **EMIS(Education Management Information System). Ministry of Education and sports (Government of Uganda)**

- Contributed to the development of data models, SRS documentation, system architecture designs, and technical roadmaps for a large-scale PostgreSQL-based system with **1,000+ data tables,** enhancing data integrity, scalability, and accelerating project delivery across the organization.

- Developed the comprehensive learners module using Laravel and Vue, covering all school levels from Pre-Primary to Degree Institutions. I implemented learner pre-registration and registration workflows that verified critical data such as parent NIN, refugee numbers, and work permits for foreign nationals working in Uganda. This involved seamless integration with external APIs from government bodies like NIRA (National Identification & Registration Authority) for NIN verification and the Office of the Prime Minister for refugee data. These integrations ensured data accuracy and compliance, significantly streamlining the registration process and improving the reliability and scalability of the education management system. The system has been able to register up to 30 Million Learners(all school levels in Uganda).

- Implemented the Infrastructure module to capture detailed data on school facilities such as buildings, stadiums, and swimming pools, enabling the Ministry of Education and Sports to accurately plan and formulate the National Budget for 2025/2026 and beyond. This solution improved data-driven decision-making and provides a scalable framework for long-term infrastructure management.

- Developed the Water and Sanitation module focused on managing water sources and garbage disposal for school activities across all education levels, enhancing data collection and monitoring capabilities. This empowered the Ministry of Education Uganda to improve resource allocation, ensure safe and reliable water access in schools, and support health and hygiene initiatives nationwide, while providing the company with a scalable and reliable system to meet client needs.

- Partially developed the Admin Units module in Laravel using Livewire, Alpine.js, Filament, and Tailwind CSS to manage hierarchical administrative structures such as villages, sub-counties, districts, municipalities, and regions, with direct relational mapping to schools. This implementation enhanced data integrity, improved location-based reporting, and enabled seamless integration across other modules, helping the company deliver a scalable and modular system tailored to the needs of the Ministry of Education Uganda.

- Contributed to the development of a robust ticketing module in Laravel, designed to manage, track, and resolve system-related issues and user support requests across various education sector platforms. The module streamlined internal workflows, improved communication between stakeholders, and enabled faster issue resolution. It provided the company with an efficient tool for client support and accountability, while offering the Government of Uganda a transparent, centralized system for managing technical queries and service delivery within the education ecosystem.

- Implemented the HR module in Laravel to manage both teaching and non-teaching staff records, integrating seamlessly with the Teacher Management Information System (TMIS), as well as external systems for verifying work permits and refugee numbers. This solution centralized staff data, automated verification processes, and ensured compliance with national regulations. It significantly improved data accuracy, reduced manual workload, and increased overall productivity, enabling the company to deliver a high-performing system that supported efficient HR operations for the Ministry of Education in Uganda.

2. BULKSMS PLATFORM (Parliament of Uganda)

- Developed the Contact Management section of a BulkSMS platform for the Parliament of Uganda, implementing features such as structured contact uploads based on administrative units (e.g., counties, sub-counties, districts). This streamlined bulk communication workflows, ensured accurate contact segmentation, and enabled targeted message delivery. The solution enhanced operational efficiency, reduced manual errors, and empowered both the company and Parliament to execute large-scale, region-specific communication campaigns with greater speed and precision. The system has been able to upload more than 45 Million contacts.

- Implemented robust SMS integration for a high-security BulkSMS platform used within the **State House of Uganda**, including the setup and configuration of **Kannel gateways** and **SMPP servers** to enable reliable message delivery for BulkSMS and targeted SMS campaigns. Integrated advanced messaging protocols, established secure communication channels, and implemented high-level security measures to protect sensitive data and prevent unauthorized access. This solution ensured real-time message transmission, improved system reliability, and empowered the company to meet stringent government standards for secure and scalable communication infrastructure.

- Developed secure and scalable APIs using **Python FastAPI** for external integration with key government agencies such as **NIRA**, **UNEB (Uganda National Examinations Board)**, and the **Ministry of Finance**, enabling seamless data exchange and interoperability. These APIs streamlined inter-agency collaboration, reduced data redundancy, and enhanced service delivery across government systems. The implementation positioned the company as a trusted technology partner in public sector digitization, boosting system performance, scalability, and institutional credibility.

Feb 2024 — Jul 2024

Kampala

SOFTWARE DEVELOPER at ELOI MINISTRIES .INC

- Developed and deployed core web platforms (eloiministries.org and eloiministries.us.org), significantly boosting the organization's digital visibility and outreach.

- Conducted comprehensive penetration tests (PEN tests) to assess and fortify website security against potential threats and vulnerabilities. Utilized industry-standard tools such as **Burp Suite**, **OWASP ZAP**, **Nmap**, and **Metasploit** to simulate real-world attack scenarios, identify security loopholes, and test the effectiveness of authentication, authorization, and input validation mechanisms. Delivered detailed vulnerability reports with actionable recommendations, leading to the patching of critical flaws, improved compliance with cybersecurity best practices, and enhanced trust in the company's digital platforms.

- Debugged mission-critical software, diagnosed root causes, and implemented long-term fixes—reducing recurring issues by over 70%.

- Led a cross-functional team of software engineers to deliver a high-impact project on time and within budget, improving internal workflows and project delivery by 40%.

- Supported end-to-end development and QA processes, ensuring seamless app rollouts and reducing post-deployment issues.

- Integrated analytics tools to track usage patterns and performance metrics, enabling data-driven product decisions and optimizations.
- Designed and built a RESTful API that streamlined communication between frontend and backend systems, leading to faster response times and an improved user experience.
- Installed, configured, and maintained SQL-based database servers with 99.9% uptime, supporting uninterrupted access to critical application data.
- Wrote and deployed automated scripts for real-time data validation, ensuring high levels of consistency and accuracy across systems.
- Proactively monitored database performance and resolved bottlenecks, improving query speeds and overall application responsiveness.
- Collaborated closely with cross-functional teams and stakeholders to gather requirements and deliver database solutions aligned with organizational goals.
- Created and implemented a disaster recovery strategy that guaranteed full data integrity and availability in case of system failures or outages.

Feb 2023 — Aug 2023

Kampala

SOFTWARE ENGINEER at TUKO SUPER APP TECHNOLOGIES LTD

- Developed and maintained several production-grade web platforms (e.g. tukoapp.com, tukorentals.com etc) using Laravel, Vue.js, Alpine.js, and Tailwind CSS resulting in improved reliability, performance, and user accessibility.
- Contributed to the development of the Tuko Super App—an all-in-one platform offering services like food delivery, online job listings, car towing, ride-hailing, and car rentals—by building scalable, modular features using Flutter (Dart) for cross-platform mobile development, Java(Spring Boot) for backend APIs, and Firebase for real-time data handling, which helped the company accelerate feature deployment, enhance service integration, and deliver a seamless user experience across multiple sectors.
- Designed and built a scalable, high-availability web application architecture that successfully supported over 100,000 concurrent users with minimal downtime, enhancing user experience and boosting engagement.
- Created secure and efficient RESTful APIs using Laravel and Python Flask, enabling seamless frontend-backend integration and improving application speed and modularity.
- Implemented robust authentication systems using OAuth 2.0 and token-based access, which strengthened data privacy and compliance with security protocols.
- Automated critical backend processes and server-side tasks using custom Python and Bash scripts—reducing manual overhead and increasing operational efficiency by over 60%.
- Built modular codebases across multiple languages including Java (Spring Boot), Python (Flask/Django), JavaScript (Vue.js), and PHP (Laravel), allowing for cross-platform adaptability and faster development cycles.

- Deployed optimized database structures using MySQL and PostgreSQL with indexing and query tuning, which improved response times and reduced server load under peak conditions.

- Prioritized and managed multiple simultaneous tasks to meet project deadlines consistently—leading to smoother releases and more reliable sprint delivery in agile team environments.

- Collaborated with cross-functional stakeholders to gather technical requirements and translate them into scalable, maintainable software solutions that met organizational goals.

Jun 2020 — Nov 2022

Entebbe, Uganda

JUNIOR DATABASE ADMINISTRATOR at S&S Supermarket

- Diagnosed and resolved recurring database-related issues under the mentorship of the Senior IT Director, addressing problems related to query optimization, data integrity, and server-client communication. Conducted in-depth debugging of SQL scripts and backend code, and resolved connectivity issues between application layers and database servers. Played a key role in improving system reliability and reducing downtime through proactive monitoring and collaborative troubleshooting.

- Collaborated extensively with diverse database architectures, including PostgreSQL and SQL Server, to support and optimize operations for over 30,000 offline customers and 100,000 online users. Specialized in designing and managing systems for loyalty points tracking, dynamic discount management, and other complex transactional processes. Ensured high data integrity, scalability, and performance to handle substantial customer volumes and real-time data interactions.

- Assessed and validated overall system performance by conducting rigorous stress-testing and load-testing scenarios using tools such as **Apache JMeter**, **Postman**, and **Locust**. Evaluated database responsiveness, server throughput, and application stability under high-concurrency simulations. Identified critical bottlenecks and worked closely with the development team to optimize system architecture, enhance resource allocation, and ensure scalability for peak user demand.

- Created and managed a customer information and transaction database, boosting customer retention rates.

03 EDUCATION

Sep 2020 — Sep 2022

Delhi, India

Sai Pali Institute Of Technology and Science

Diploma in Software Engineering

Completed an in-depth program focused on the full lifecycle of software systems — from planning and architecture to development, testing, and maintenance.

Key areas of study included:

- **Advanced Programming Concepts** (C++, Java, Python, and scripting languages)
- **Object-Oriented Analysis & Design (OOAD)**
- **Data Structures and Algorithms**
- **Database Design & Management** (MySQL, PostgreSQL, NoSQL systems)

- **Full-Stack Web Development** (HTML, CSS, JavaScript, PHP, Laravel, React)
- **Mobile Application Development** (Android, Kotlin, Flutter)
- **Cloud Computing Fundamentals** (AWS, Azure basics)
- **Software Architecture & Design Patterns**
- **Cybersecurity Principles & Penetration Testing**
- **DevOps Practices & CI/CD Pipelines**
- **Agile Methodologies, Scrum & Software Project Management**
- **Operating Systems & Computer Networks**
- **Human-Computer Interaction (HCI)**
- **Software Quality Assurance & Automated Testing**

Completed multiple capstone projects, collaborated in agile development teams, and gained practical experience using modern development tools and version control systems like **Git**, **Docker**, and **JIRA** and many more.

Sandip University

Certificate in Machine Learning

Completed a specialized certificate program focused on the core principles, algorithms, and practical applications of machine learning.

Key topics covered included:

- **Supervised & Unsupervised Learning Algorithms** (Regression, Classification, Clustering)
- **Neural Networks & Deep Learning** (Intro to CNNs, RNNs, TensorFlow/Keras basics)
- **Model Evaluation & Tuning** (Cross-validation, Confusion Matrix, ROC-AUC)
- **Feature Engineering & Data Preprocessing**
- **Python for Machine Learning** (NumPy, Pandas, Scikit-learn, Matplotlib, Seaborn)
- **Data Collection, Cleaning & Visualization**
- **Natural Language Processing (NLP)** Essentials
- **Machine Learning Pipelines & Deployment Concepts**
- **Ethics in AI & Responsible Data Usage**

Built end-to-end ML models, analyzed real-world datasets, and deployed predictive systems in hands-on projects. Gained a solid foundation in both theoretical understanding and practical implementation.

04 SKILLS

JavaScript(React.js, JQuery, Node.js, Vue.js),

Git

Wordpress

Linux

Docker

MongoDB

Java (Spring Boot)

C++

HTML

CSS(Tailwind CSS, Bootstrap)

MySQL, PLSQL, SQL

PHP(Laravel, Livewire)

PYTHON(Flask, Django, Fast API,Keras)

POSTGRES

Rest APIs

GOLANG

ELASTIC STACK(Elastic Search, Logstash)

RABBITMQ, KAFKA (Message Brokers)

APP DEVELOPMENT(Java, Kotlin,Flutter, Swift, ReactNative)

05 LANGUAGES

English   Luganda

Runyankore-Rukiga   French

06 REFERENCES

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07 INTERNSHIPS

Sep 2024 — Dec 2024

Kampala, Uganda

SOFTWARE DEVELOPER INTERN at SMSONE UGANDA LTD

- Gained hands-on experience with Laravel, Vue.js, FastAPI, Kannel, RabbitMQ, Kafka, Redis, Fast API , PostgreSQL, Livewire, and Tailwind CSS.
- Integrated APIs with third-party government systems such as NIRA, UNEB, and the Ministry of Finance.
- Supported the setup of secure SMPP servers and Kannel gateways for national-level SMS communications.
- Participated in agile development cycles, daily stand-ups, and sprint planning sessions.
- Collaborated with senior developers to troubleshoot and resolve backend and database-related issues.
- Developed clean, maintainable code while adhering to industry best practices.