ALVIN KABWAMA

Fairfield, Iowa 52556 • +1-641-233-2326 • alvinkabwama10@gmail.com
https://www.linkedin.com/in/alvinkabwama/

MACHINE LEARNING ENGINEER

Results-driven Machine Learning Engineer with almost 6 years of extensive expertise in designing, training, and deploying machine learning models for business intelligence, financial technology, and automation. Skilled in statistical modeling, deep learning, and cloud-based AI, leveraging Python, TensorFlow, Scikit-learn, SQL, and AWS Sage Maker to develop scalable solutions. Strong background in feature engineering, and algorithm optimization, ensuring high-performance AI applications. Experienced in Agile methodologies, working closely with stakeholders to translate complex data challenges into practical, AI-driven insights that enhance operational efficiency and strategic decision-making.

• Statistical Modeling and Predictive Analytics • Data Wrangling and Transformation • Feature Engineering and Selection • Algorithm Performance Tuning • Cloud-based AI Model Deployment • MLOps and ML Model Lifecycle Management

Languages: Python, Java
Web/App Servers: nginX, gunicorn, Tomcat
Frameworks: Scikit-Learn, Keras, Tensorflow, XGBoost, Django
Databases: Oracle, MySQL
Design Patterns: Transfer Learning, Hyperparameter Tuning, Distributed Training, Model-View-Controller (MVC)
SDLC: Agile Methodology
Tools: Amazon Sage Maker, Git, Microsoft VS Code, Spyder, IntelliJ
Platforms: Windows, MacOS, Ubuntu, Amazon Web Services (AWS), Microsoft Azure

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PROFESSIONAL EXPERIENCE

CAREER NOTE: *Completed on-campus studies and currently taking distance education courses to complete a* ***Master's Degree in Computer Science*** *(Available for full-time, W-2 employment).*

NATIONAL SOCIAL SECURITY FUND (NSSF), Kampala, Uganda • 02/2021 – 07/2024
A government-run social security institution tasked with providing social protection to workers in Uganda.

Machine Learning Engineer
Build and deploy data driven software and machine learning algorithms for process improvement of social security delivery.

- Developed a predictive defaulting employer detection model using Python, Scikit-learn, and Keras, increasing social security collections by 18% and improving audit efficiency.
- Designed and implemented a financial document classification algorithm using Keras and AWS Sage Maker, cutting error detection time by 35% and ensuring faster social security benefit disbursement.
- Created an employee churn prediction model using Python, Scikit-learn, and AWS Sage Maker, enabling HR to identify at-risk employees and boost staff retention by 20%.
- Leveraged Python and Scikit-learn to build an algorithm predicting individuals likely to claim social security benefits, enabling proactive fund allocation and faster benefit payouts.
- Implemented a customer recommendation algorithm using Python to predict potential customers for NSSF's real estate offering.
- Implemented an auditing interface using Python, Django and AWS EC2, enabling auditors to perform real-time fraud risk assessments, cutting down audit processing time by 30%.

Technologies Used: *Python, Oracle Database, Python, Scikit-learn, Keras, AWS EC2 and Sage Maker, Django, Microsoft Visual Studio Code, internal cloud infrastructure (Ubuntu).*

NATIONAL SOCIAL SECURITY FUND, Kampala, Uganda • 07/2019 – 01/2021
A government-run social security institution tasked with providing social protection to workers in Uganda.

Data Analyst
Deriving data-driven insights from social security data creating process improvement software and solutions.

- Developed a sentiment analysis system using Twitter API, Google Cloud NLP, and Python, providing real-time brand sentiment tracking that improved customer engagement strategies.
- Built and integrated an AI-driven photo and fingerprint verification system using Python, OpenCV, and Amazon Rekognition, eliminating double registrations and enhancing identity validation accuracy.

- Utilized Python and Amazon Sage Maker to implement a sentiment analysis algorithm that analyzes employee feedback from surveys and emails, identifying trends in workplace satisfaction and engagement.
- Engineered an automated Power BI dashboard for real-time data visualization, centralizing NSSF's operational insights and streamlining branch-wide performance tracking.
- Created an interactive business intelligence dashboard using Power BI and SQL, enabling real-time performance monitoring, which resulted in a 20% improvement in operational efficiency.

Technologies Used: *Python, Amazon Sage Maker, Open CV, Visual Studio Code, Twitter API, Google Cloud Platform, Power BI*

IDAIR, Shanghai, China • 12/2017 – 04/2018
A company developing air quality monitoring sensors ensuring every Chinese citizen knows the quality of air they are breathing.

Product Design and Machine Learning Engineer
Building Particulate Matter (PM) 2.5 sensors and analyzing their data.

- Designed and built a PM 2.5 air pollution monitoring system using AtMega microcontrollers, enabling real-time pollution tracking across Shanghai.
- Developed and integrated a predictive air pollution model using Python, and Scikit-learn, improving pollution forecasting accuracy by 50%, helping customers determine when to wear masks.

Technologies Used: *Autodesk Eagle for PCB design, Autodesk Fusion 360, Objective-C for programming the AtMega chips, Python(scikit-learn).*

INDEPENDENT CONTRACTOR EXPERIENCE

CATALYSTS AFRICA LIMITED, Kampala, Uganda • 09/2019 – 07/2024
A software company providing services concerning distribution of results through standardized web-portals and hosting dedicated data driven technologies that include machine learning based software solutions.

Software and Machine Learning Consultant (Part-time)
Building data driven process improvement software.

- Developed and deployed an automated handwriting recognition system using Google Cloud Vision API and OpenCV, reducing data entry time for attendance forms from 2 days to 6 hours.
- Implemented an invoice data extraction algorithm using Python, OpenCV, and Power Automate eliminating manual data entry by the accounts team reducing invoice processing time.
- Developed a machine failure prediction algorithm for Century Bottling Company Uganda using Python, Scikit-learn, and IoT vibration sensor data, enabling the maintenance team to schedule proactive maintenance and minimize equipment downtime.
- Designed and implemented a tax computation portal using Python, Django and AWS EC2, optimizing procurement workflows and reducing supplier payment processing time from 45 days to 30 days.

Technologies Used: *Python, Django framework, AWS EC2, Google Cloud Platform, OpenCV, Spyder IDE.*

ACADEMIC PROJECTS

Maharishi International University (2024)
Prescription Management System: Prescription Management System (PMS) is designed to automate the management of prescriptions for a pharmacy named "Drugs For You." The system keeps track of customer information, prescription history, and medications stocked by the pharmacy. The goal is to facilitate efficient tracking of patient prescriptions and medication dispensing - Utilized Java, Spring Boot, Thymeleaf, Apache Tomcat, MySQL.

EDUCATION

Master of Science in Computer Science
(In progress via distance education; expected completion 04/2027)
Maharishi International University, Fairfield, Iowa

Key Courses: Web Application Programming, Enterprise Architecture, Algorithms, Software Engineering

Bachelor of Science in Electrical Engineering in Electrical Engineering
Makerere University, Kampala, Uganda (05/2016)