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|  | **HEALTHCARE ai CONSULTANT**  *“Turning Data into Decisions Where Resources Are Scarce”* | | | | | | | |  |
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|  | CONTACT |  |  | SUMMARY PROFILE |  | | |  |  |
|  | +267-71474055twinmugume@gmail.com<https://atwine.github.io/> **TECHNICAL EXPERTISE**  **Programming & Frameworks:** Python (Anaconda), R (RStudio), JavaScript, Rasa, Botpress  **ML/AI Technologies:** Transformer models, DIET Entity Classifier, SpaCy, Random Forest, Gradient Boosting  **Infrastructure:** K3S containerization, cloud deployment, database architecture.    **Specialties:** NLP, epidemiological surveillance, ethical AI frameworks, real-time dashboards | |  | I solve healthcare data problems that others consider "impossible" in Low- and Middle-Income Countries. Having proven my expertise in Uganda's resource-constrained health system—from rural clinics to Ministry of Health boardrooms—I bring battle-tested approaches ready to scale across Africa. I've learned that the most sophisticated AI is worthless if it can't run on unreliable power or be understood by overworked healthcare workers.  **How I Deliver Results:**  **I build end-to-end AI/ML solutions:** that enable Faster Outbreak Response, detecting disease patterns weeks earlier than traditional surveillance.  **I create integrated data systems:** that optimize resource allocation through real-time dashboards showing exactly where to deploy drugs, staff, and supplies.  **I deliver production-ready solutions:** that increase program effectiveness by accurately identifying at-risk populations before crises hit.  **I develop local technical capacity:** that strengthens funding proposals with hard evidence of measurable health impact  My clients—governments, UN agencies, and research institutions—engage me when they need someone who understands both cutting-edge AI capabilities and the ground reality of implementing solutions where budgets are tight, infrastructure is unreliable, and stakeholder buy-in determines success.  **Core expertise:** Machine learning for epidemiological surveillance, health systems optimization, real-time decision support dashboards, and transforming fragmented health data into evidence-based policy recommendations. | | | | |  |
|  |  |  |  | EXPERIENCE | |  | |  |  |
|  |  | |  | **Data Science Specialist | Uganda Virus Research Institute (UVRI)****Sept 2021 – Present****CLIENT PROBLEM:** Critical health data across Africa was trapped in institutional silos, preventing the large-scale collaborative research needed to tackle continent-wide challenges like pandemics and genetic diseases.**SOLUTION & IMPACT:**  Co-led the data work stream for the eLwazi Open Data Science Platform —the central data infrastructure for DS-I Africa, an $88M NIH-funded consortium spanning 38 projects across 22 African countries.**Delivered Continental Data Infrastructure:** Led teams that designed and deployed the centralized data platform serving 22 African countries, enabling collaborative health research at unprecedented scale across the continent**Enabled $88M Research Ecosystem:** Built the technical foundation supporting 38 active research projects, 7 training programs, and 4 ethics initiatives spanning the entire African continent**Pioneered FAIR Data Standards:** Established metadata standards and harmonization protocols now adopted across the largest health data science consortium in Africa's history.Live platform: https://elwazi.org/ | Data catalog: https://catalog.elwazi.org/**Senior Data Scientist & Consultant | Africa Center of Excellence in Bioinformatics (ACE)****Dec 2019 – Present**Led multiple high-impact projects addressing critical public health challenges through practical AI implementation.**KEY PROJECTS & MEASURABLE IMPACT:****Led Technical Strategy for Major International Grants:** Provided the core technical leadership for projects backed by world-class funders including the Bill & Melinda Gates Foundation, NIH, Lacuna Fund, and Canada's IDRC, successfully executing on grants totaling over $300,000.**HIV Prevention Targeting:** Developed ML model achieving 85% accuracy in identifying at-risk youth from behavioral data, enabling health organizations to target prevention campaigns 3x more effectively and optimize resource allocation for maximum impact**COVID-19 Misinformation Combat:**  Led social media data mining initiative tracking misinformation spread across 40,000+ posts, providing health officials with actionable intelligence that improved communication strategy effectiveness by 60%**AI-Powered Public Health Communication:**- Deployed public-facing Chabot handling 25,000+ COVID-19 queries monthly, reducing healthcare worker burden while providing 24/7 reliable information access- Built internal LLM-based system transforming 500+ page technical manuals into interactive Q&A format, cutting information access time from hours to seconds**Early Disease Detection:** Created predictive model identifying HIV-positive individuals at high risk for Cryptococcal Meningitis with 78% accuracy, enabling earlier intervention and reducing mortality rates by 30%.**NLP Consultant & ML Engineer | Infectious Diseases Institute (IDI)****Nov 2021 – Oct 2023****CLIENT PROBLEM:** Healthcare providers needed effective decision-making tools, but complex underlying data and ethical AI concerns created major implementation barriers.**SOLUTION & IMPACT:**  Led development of ethical AI-powered Decision Support System serving multiple health facilities.**Engineered Complete ML Pipeline:** Built end-to-end system from raw data ingestion to clinical decision interface, processing patient records monthly**Pioneered Ethical AI Framework:** Implemented rigorous evaluation protocols ensuring model fairness, transparency, and alignment with patient welfare—framework now adopted by 3 other regional health institutions**Delivered Production-Ready Solution:** Provided full-stack technical leadership from model selection through deployment, resulting in 40% improvement in clinical decision accuracy.**Capacity Building Lead | Africa Center of Excellence (ACE)** **Jan 2020 – Present****CLIENT PROBLEM:** Sustainable AI solutions in Africa require local talent, but academic programs struggled to bridge theory-practice gaps for real organizational challenges.**SOLUTION & IMPACT:** Developed and delivered Big Data Analytics curriculum for 150+ Master's and Ph.D. students.**Built Regional Talent Pipeline:** Trained next generation of African bioinformaticians with practical ML skills, with 80% of graduates securing data science roles in health sector**Designed Applied Learning:** Created hands-on curriculum around real health challenges and Kaggle-style competitions, preparing students for complex implementation scenarios**Established Mentorship Excellence:** Supervised 25+ thesis projects, directly contributing to skilled local AI talent pool capable of leading sustainable innovation.**Technical Lead - COVID-19 Response | Africa Center of Excellence (ACE)****July 2021 – Oct 2023****CLIENT PROBLEM:** Health authorities were overwhelmed by thousands of daily COVID-19 inquiries while dangerous misinformation spread rapidly across social platforms.**SOLUTION & IMPACT:** Led full-cycle development of national COVID-19 Chabot providing instant, verified health information.**Delivered Scalable Public Health Tool:** Guided team through technology selection (Rasa), data curation, ML pipeline development, and K3S deployment handling hundreds of concurrent users.**Automated Critical Communications:** Chatbot processed a multitude of citizen queries, freeing human resources while ensuring consistent, accurate messaging during peak crisis periods.**Combated Misinformation at Scale:** Provided trusted 24/7 resource that directly countered false health narratives with verified information, measurably reducing misinformation spread.**Database Systems Architect | Infectious Diseases Institute (IDI)****Mar 2018 – Nov 2018****CLIENT PROBLEM:** Critical program data fragmented across 12 different sources made reporting inefficient and advanced analysis impossible.**SOLUTION & IMPACT:** Engineered organization's first centralized database system serving 200+ staff members.**Built Foundational Data Infrastructure:** Integrated and cleaned 5+ years of historical program data, creating reliable single source of truth for all organizational analysis**Improved Operational Efficiency:** Developed custom modules reducing manual data collection time by 75% and enabling real-time reporting for first time **Enabled Advanced Analytics:** Created robust backend supporting all future ML and predictive analysis capabilities.  **EDUCATION & CREDENTIALS**  Master of Computer Science | Limkokwing University, Malaysia (First Class Honors)  Bachelor of Science in Computer Science | Mbarara University, Uganda (Second Class)  **Professional Certifications:**  Data Scientist with Python (Data Camp Career Track)  Machine Learning Scientist with Python (Data Camp Career Track)  Data Analyst with SQL (Data Camp Career Track)  Languages: English (Native), French (Intermediate)  **THOUGHT LEADERSHIP & RECOGNITION**  **Peer-Reviewed Publications:**  Dynamic Workload Performance Optimization Model for Multi-Tenancy in Cloud Systems (IJCSI, 2013)  An Efficient Load Balancing Algorithm for Virtualized Cloud Data Centers (CSSCC14, 2014)  **Awards:**  Silver Award, MARS ITEX & Malaysian Research Society - Mobile Cloud and Augmented Reality innovation | | | | |  |
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