MUGANJI JULIUS

Assistant Lecturer · Computer Scientist · AI, NLP & Software Systems

Kampala, Uganda · +256 777 830 6172 / +256 755 385 743 · muganji93@gmail.com · English & Luganda

PROFESSIONAL PROFILE

Computer scientist and Assistant Lecturer at Uganda Martyrs University, with an MSc in Computer Science from Makerere University. Research and teaching span artificial intelligence, machine learning, natural language processing, speech technologies, human-computer interaction, and software systems. Published on programming-language support for continuous user authentication (SN Computer Science, 2022). Proposed PhD research: a retrieval-augmented speech-to-text legal assistant for Luganda case law, to improve access to justice in Uganda - aligned with Mak-AI's NLP theme and AI for societal good.

RESEARCH INTERESTS

Artificial intelligence and machine learning; NLP and low-resource African languages; Luganda speech recognition; multilingual / cross-lingual information retrieval; retrieval-augmented generation (RAG); legal AI; trustworthy and responsible AI; human-computer interaction; biometric authentication.

EDUCATION

Makerere University - Master of Science in Computer Science, 2021

Nkumba University - Bachelor of Information Technology

Proposed PhD research - Makerere University Centre for Artificial Intelligence (Mak-AI)

A Retrieval-Augmented Speech-to-Text Legal Assistant for Luganda Case Law to Enhance Access to Justice in Uganda

ACADEMIC AND PROFESSIONAL EXPERIENCE

Uganda Martyrs University, Nkozi | Assistant *Lecturer* · 2022 - Present

- Teach and support Computer Science and Information Technology courses.
- Supervise and mentor undergraduate software and computing projects.
- Conduct research in AI, machine learning, and socially relevant computing.

Tulima Solar Limited | IT *Manager* · 2021

- Led IT operations, systems support, and data management.

Uganda Telecom | VAS *Engineer* · 2019

- Supported value-added service platforms and telecommunications systems.

PUBLICATIONS

Muganji, J., & Bainomugisha, E. (2022). *Plascua: Programming language support for continuous user authentication.* SN Computer Science, 3, 450. https://doi.org/10.1007/s42979-022-01293-9

SELECTED RESEARCH AND MANUSCRIPTS

The Uganda Case Law Corpus: A Dataset for Legal AI Research in East Africa. Structured case-law dataset to support NLP, information retrieval, and RAG for Ugandan legal information access.

A Framework for Enhanced Security of Electronic Health Records (EHRs) in Uganda (UgandaEMR). Security framework for electronic health-record systems in a Ugandan clinical setting.

Quantifying Productivity Loss with Traffic Congestion. Computational analysis of productivity effects associated with traffic congestion.

SELECTED TECHNICAL PROJECTS

PLASCUA language library. Python framework supporting continuous user-authentication applications.

Behavioural biometric authentication. Systems and a Python API for keyboard/mouse interaction data used in continuous authentication research.

Network fraud detection. Python project applying computational methods to flag potentially fraudulent network activity.

TECHNICAL SKILLS

Programming: Python, C#, PHP

AI / ML / NLP: Machine learning, neural networks, computer vision (OpenCV), speech-to-text, information retrieval, RAG, model evaluation, behavioural biometrics

Software & data: APIs, .NET / ASP.NET MVC, PostgreSQL, MySQL, Linux/Ubuntu, cloud-hosted web applications

REFEREES

Mr. Kasozi Brian
Head of Department
Faculty of Science
Uganda Martyrs University
bkasozi@umu.ac.ug
+256 757 355 841

Mrs. Akite Miriam Amon
Lecturer
Computer Science
Lira University
akitemiriam07@gmail.com
+256 752 840 802

Mr. Nathan Walugembe
Head of IT
Yako Bank
n.walugembe@gmail.com
+256 702 056 515