TENDAI MUKANDE
MACHINE LEARNING RESEARCH SCIENTIST

✉ tmukande12@gmail.com   📍 Belfast, United Kingdom

PROFILE

- Machine Learning Research and Development professional who has developed commercial AI solutions and published research at top-tier conferences in Australia, Europe, and the USA.
- Experienced in Graph Neural Networks, Large Language Models, Recommender Systems, IoT and Cloud Networks.
- Expertise in solution architecture, research and innovation to help enterprises modernize their technology platforms, reduce TCO and improve ROI.

PROFESSIONAL EXPERIENCE

KANTANAI, KEYWORDS STUDIOS GROUP
📍 Dublin, Ireland

RESEARCH AND DEVELOPMENT SCIENTIST
📅 May - Nov 2023

Project: AI Recommendation Engine   **Client(s):** Multi-Vendor: Automotive, E-commerce, Industry Software Localization
Role(s): Team Lead **Technology Stack:** Python, Pandas, Javascript, SQL, Apache, FastAPI, AWS EC2/ Sagemaker/ Lambda, RESTful API, PyTorch, JSON, JIRA

Responsibilities:

- Developed a Recommendation engine which uses AI to accelerate the SDLC by automated routing of machine-translated video game content to a global community of professional translators for review and post-editing.
- Developed energy-efficient machine learning solutions for batch software product localization which reduced costs, improved efficiency in software development workflows and enabled faster market reach.
- Developed AI algorithms to enhance productivity and quality of gaming, e-commerce and automotive software products.
- Developed interactive AI agents to optimize daily workflows, which improved the resolution time to trouble tickets as well as customer satisfaction.
- Implemented scalable neural machine translation solutions for market expansion of gaming, e-commerce, automotive, travel and hospitality software products

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SFI ML-LABS
📍 Dublin, Ireland

RESEARCHER
📅 Sept 2021 – Present

Project: Hierarchical Graph Representation Learning for efficient Recommender Systems   **Client(s):** In-house
Role(s): Research Lead   **Technology Stack:** Python, Pandas/Scikit Learn/Numpy, PyTorch/ Tensorflow, Keras, XGBoost, Jupyter Notebooks, Graph Neural Networks, Transformers, Reinforcement Learning, CUDA Github/GitLab, NLP, LLMs,Langchain, Hugging Face, GPT, Computer Vision

Responsibilities:

- Developed Hyper-graph Representation Learning models for Efficient Recommender Systems to enhance performance at lower computational cost.
- Conducted research on reducing the carbon footprint of ML models training and inference to alleviate climate change.
- Developed e-commerce Machine Learning models to capture intricate patterns of user behaviour in order to provide better quality recommendation.
- Resolved the high computational cost issue of transformers in GPU/CPU resource-constrained environments using scalable sparse and model compression algorithms.
- Developed multi-modal Generative AI models combining Audio, Text, Images and Video to improve user engagement in Conversational Search Systems.

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HUAWEI TECHNOLOGIES CO. LTD
📍 Southern Africa Region

TECHNICAL LEADER, WIRELESS NETWORK PRODUCTS
📅 May 2011 – Dec 2022

Project: IoT, LTE, 5G, Cloud Edge Computing Development and Deployment   **Client(s):** In-house, Multi-vendor
Role(s): Technical Lead   **Technology Stack:** Java, Scala, C/C++, Python, Pandas, Scikit Learn, SQL, PostgreSQL, Hadoop/ HBase/ MapReduce/ Pig/Hive, Spark/ Kafka, Docker/Kubernetes, CI/CD, Flask, Suse/Dopra Linux, TCP/IP, GCP/AWS/Azure
Responsibilities:

- Led the successful migration of the Cloud Business Intelligence Platforms from the X86/Suse Linux to ARM/EulerOS for 7 multi-national Enterprises which provide Information Communication Technology services to more than 20 million customers.
- Led ICT modernization projects involving 4G/5G/IoT network rollout to more than 50 million users in 7 countries. Main responsibilities included new sites batch deployment, Radio Frequency optimization and AI product integration.
- Designed and implemented multi-vendor IaaS/PaaS/SaaS, MLOPs ,large-scale ETL development and data warehousing solutions which facilitated revenue growth for various enterprises.
- Developed AI roadmaps which strengthened the Network Technology Department team's understanding of data models, data mining, machine learning, Agile/Scrum, collaboration, data-driven insights and Test -driven development/deployment.
- Developed patches for software bugs and security vulnerability fixes in Cloud Infrastructure.
- Integrated end-to-end AI models for batch 5G/LTE/IoT node deployment which accelerated project delivery, ensured, reliability as well as reduced project deployment cost.
- Implemented smart acceptance tests, customer churn predictions, AI enhanced network audit, and intelligent KPI data analysis for cloud-edge networks.

SELECTED PROJECTS

- **Founding member of the AGAPE Open Science Community** established to promote transparent, accessible and reproducible research by early-career researchers.
- **A Machine Learning Model for COVID-19 Contact Tracing using Bluetooth Low Energy Signals and IMU Sensor Readings:** TC4TL challenge organized by The National Institute of Standards and Technology (NIST), in coordination with the MIT PACT to notify people of exposure to the COVID-19 virus in order to limit the spread of the disease.

PUBLICATIONS

- **MMCRec: Towards Multi-Modal Generative AI in Conversational Recommendation.** Accepted for publication in the *Proceedings of the 46th European Conference on Information Retrieval (ECIR)*, Glasgow, Scotland, United Kingdom, 2024.
- **A Sparse Sinkhorn Transformer for Multi-Behaviour Recommendation.** In *Proceedings of the IEEE International Conference on E-Business Engineering (ICEBE)*, Sydney, Australia, 2023.
- **A Flash Attention Transformer for Multi-Behaviour Recommendation.** In *Proceedings of the 32nd ACM Conference on Information and Knowledge Management (CIKM)*, Birmingham, United Kingdom, 2023.
- **Heterogeneous Graph Representation Learning for multi-target Cross-Domain Recommendation.** In *Proceedings of the 16th ACM Conference on Recommender Systems (RecSys)*, Seattle, USA, 2022.
- **Graph Representation Learning for Cross-Domain Recommender Systems.** *Future Directions in Information Access (FDIA) Symposium*, Lisbon, Portugal, 2022.

HONOURS

🏆 **Wireless Network Product Line President's Award** Huawei Hall of Fame	📅 Jul 2017
🏆 **Future Star** Huawei	📅 Dec 2016

EDUCATION

PHD, MACHINE LEARNING
Dublin City University, Ireland   📅 2021-2024

BACHELOR OF SCIENCE (HONOURS) IN ELECTRICAL ENGINEERING
University of Zimbabwe   📅 2006-2010