HYSTON KAYANGE

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Seoul, South Korea

Professional Summary

AI research engineer with 3+ years of experience in machine and deep learning, specializing in model development and applied research. Contributed to the Korean-funded "Digital Twin Project for Training Content Technology," focusing on research, data analysis, and ML model development. Conducted research on recommendation algorithms to improve the performance of real-world recommendation systems. Built a real-time sign language translation system using CNNs and OpenCV with the aim to enhance communication for deaf students in Malawi. Passionate about leveraging AI in both academic and industrial settings to tackle real-world challenges and promote business growth.

Experience

- **Assistant Researcher** — Seoul, South Korea
  System Software Lab, Soongsil University — Sept 2022 – Feb 2025
  - Contributed to the *"XR Twin-based Rehabilitation Training Content Technology Development"* project (IITP/MSIT-funded, Project No. 2022-0-00218), focusing on AI-driven rehabilitation technologies. Perfomed data analysis.Developed a hybrid heart rate prediction model for the XR Twin project to support AI-driven custom coaching through personalized fitness recommendations.
  - Led research on probabilistic and adaptive feature selection (ProAdaFs) for deep recommender systems (DeepFM, DCN, Wide & Deep), improving AUC to 0.8088.
  - Authored 3 peer-reviewed papers (1 journal, 2 conferences) on personalized fitness recommendations and feature selection.

ICT Officer — Mzuzu, Malawi
United Civil Servant SACCO - Head Office — Sept 2021 – Aug 2022

- Managed Fintech systems and network infrastructure, ensuring 99.9% uptime across operations.
- Automated reporting workflows, reducing manual processing time by 60%.

Education

- **MSc in Computer Science and Engineering** — Seoul, South Korea, GPA: 4.14/4.50
  Soongsil University — Sept 2022 – Feb 2025
  - Thesis: "A Multi-Model Machine Learning Framework for Personalized Fitness Recommendations Using DBNs and LSTMs"
- **BSc in Information Communication Technology** — Lilongwe, Malawi, GPA: 3.30/4.0
  Daeyang University — Sept 2017 – Sept 2021

Skills

- **Machine Learning:** Deep Learning, Neural Networks, Decision Trees, Gradient Boosting, SVMs, Dynamic Bayesian Networks, LSTMs
- **Programming:** Python (Pandas, NumPy, Scikit-learn, TensorFlow, Keras, PyTorch), Java, C++
- **Databases:** MySQL, MongoDB
- **Tools and Platforms:** Jupyter, Docker, GitHub, AWS (SageMaker)
- **Research:** Data Analysis, Data Cleaning, Visualization, Model Evaluation, Literature Review

Projects

- **XR Twin - based Rehabilitation Training Content Technology (July – Oct 2024)**
  - Performed data analyis
  - Developed a hybrid heart rate prediction model for the XR Twin project to support AI-driven custom coaching through personalized fitness recommendations. The model achieved an average mean absolute error of 5.1 BPM in predicting an individual's heart rate during workouts.
  - Tools: Python, PyTorch, Jupyter, Pandas, Numpy, DBNs
- **Feature Selection Tool (Dec 2023)**
  - Developed a Python-based Feature Selector Tool for automated data preprocessing, feature importance analysis, and visualization, supporting classification and regression tasks.
  - Tools: Python, Scikit-Learn, Feature-Engine, Seaborn, Matplotlib
- **Mthandizi: Communication Tool for the Deaf (Nov 2020 – June 2021)**
  - Developed a real-time sign language translation system with 87% accuracy using TensorFlow, CNN and OpenCV, featuring a PyQt5 interactive UI.
  - Tools: Python, TensorFlow, CNN, OpenCV, PyQt5

Publications

C.1 H. Kayange et al. (2024). "ProAdaFs: Probabilistic and Adaptive Feature Selection in Deep Recommendation Systems." *ICOIN Conference*, Vietnam. DOI

C.2 H. Kayange et al. (2023). "Deep Adaptive Feature Selection in Deep Recommender Systems." *Korean Society of Information Science*, Jeju Island. DOI

J.1 H. Kayange et al. (2024). "A Hybrid Approach to Modeling Heart Rate Response for Personalized Fitness Recommendations." *Electronics*, Vol. 13, Issue 19. DOI

- **Google Scholar Profile:** Google Scholar

Languages

- **English:** Native
- **Korean:** Beginner (Currently learning)