Sudi Murindanyi

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Web page: https://sudimuk2017.github.io/

EDUCATION

Makerere University

BSc in Computer Engineering

Final Year Project: "Design of a Machine Learning Based Traffic Control System" "Reinforcement Learning Project"

MSc in Computer Science

Dissertation: Deep Learning Based Models For Yield Estimation Using Drone Imagery"

RELATED AI COURSES

Graduate

Machine Learning, Deep Learning, Computer Vision, Data Mining, Data Analysis and Visualization, Cloud Technologies and Architecture

Undergraduate

Digital Image and Video Processing, Audio and Speech Signal Processing, Software Engineering, and Database Systems

CERTIFICATES

- **Coursera Specializations:** Deep Learning, Natural Language Processing, Machine Learning, Mathematics for Machine Learning, AI for Medicine, Applied Data Science with Python, Executive Data Science, and TensorFlow in Practice (All are Coursera Specializations with 3 to 7 courses)
- **Dataquest Paths:** Data Engineer and Data Scientist, both from Dataquest.io
- **WorldQuant University Certificates:** Machine Learning & Statistical Analysis, and Scientific Computing for Data Science, both from WorldQuant University

SKILLS

- **Python, JavaScript, C, R**
- **D3.js, Django, React, React Native**
- **Scikit-learn, TensorFlow, PyTorch, JAX**
- **CV, NLP, RL**

STUDY SCHOLARSHIP

Google DeepMind Scholarship

Honored with the Google DeepMind Scholarship in recognition of academic excellence and a steadfast commitment to advancing innovation in transformative education for my MSc.

EXPERIENCE

Bielefeld University: *AG Visual AI Group Research Engineer | Dec 2025 - present*

Working as a research engineer in visual AI for the extended reality lab at CITEC, led by Prof. Dr. Helge Rhodin. Mainly working to help PhD students and improve and develop new systems to help in research.

Bielefeld University: *AG Visual AI Group Visiting Researcher | June 2025 - November 2025*

Working under the supervision and mentorship of Prof. Dr. Helge Rhodin in his lab as a visiting researcher on different projects, including 3D, edge AI, and many more.

Makerere University: *Researcher and Teaching Assistant | Aug 2021 - June 2025*

Working as an AI researcher on various projects, as well as assisting senior lecturers in teaching different courses, including Machine Learning and Computer Vision at the Master's level, as well as programming at the Bachelor's level.

Marconi Lab: *Research Scientist/ML Engineer | May 2021 - Dec 2025*

Working with different senior researchers led by Dr. Andrew Katumba in the lab under the College of Engineering at Makerere University on Medical AI and NLP projects.

Makerere AI Lab: *Research Scientist/ML Engineer | May 2021 - Dec 2025*

Working with Dr. Joyce Nabende Nakatumba and her team on different projects applying AI in agriculture and explainable AI in the lab at the College of Computer Science, Makerere University.

Omdena: *Lead ML Engineer/Technical Mentor/ Chapter Lead | Feb 2020 - Present*

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Started as a Junior ML Engineer and advanced to ML Engineer and then Senior/Lead ML Engineer. Developed AI solutions for social good and challenges, mentored upcoming ML engineers in NLP and CV applications, and founded the Omdena branch in Uganda and promoted AI4GOOD through educated regional AI enthusiasts.

Kin-keepers*: AI Advisor/ML Engineer | Feb 2021 - May 2023*

Started as a Senior ML Engineer and later advanced to AI Advisor; created synthetic ML model data for Alzheimer's and Aphasia, and developed Alexa skills for senior care.

CURRENT AREAS OF RESEARCH

- Advanced 3D and video data analysis and modeling.
- Multimodal models for medical and agricultural data.
- Diffusion models for predictive analytics.
- AI-driven object counting and re-identification (ReID).
- Edge deployment of machine learning models for real-time field applications.
- Cross-domain AI applications.

Publications

Peer-Reviewed Journal Articles

1. **Murindanyi, S.**, Hamza, K., Kagumire, S., & Marvin, G. (2024). Responsible Music Genre Classification Using Interpretable Model-Agnostic Visual Explainers. *SN Computer Science*, *6*(1), 52.
2. Turyahabwa, P., & **Murindanyi, S**. (2025). Integrative Review of Human Activity Recognition and Violence Detection: Exploring Techniques, Modalities, and Cross-Domain Knowledge Transfer. *Journal of Data Science and Intelligent Systems*.
3. Nakatumba-Nabende, J., & **Murindanyi, S**. (2025). Deep learning models for enhanced in-field maize leaf disease diagnosis. *Machine Learning with Applications*, 100673.
4. Musinguzi, D., Katumba, A., **Murindanyi, S.**, Nakatumba-Nabende, J., Mwikirize, C., Mbabazi, M., ... & G Kawooya, M. (2025). PaliGemma-CXR: a multi-task multimodal model for tuberculosis chest X-ray interpretation. *BMC Artificial Intelligence*, *1*(1), 1-10.
5. Katumba, A., Okello, W. S., **Murindanyi, S.,** Nakatumba-Nabende, J., & Bomera, M. (2024). *Leveraging edge computing and deep learning for the real-time identification of bean plant pathologies*. Smart Agricultural Technology, 9, 100627.
6. Nakatumba-Nabende, J., Mukiibi, J., Bateesa, T. S., **Murindanyi, S.**, Katumba, A., et al. (2024). *Machine learning analysis of radio data to uncover community perceptions on the Ebola outbreak in Uganda*. ACM Journal on Computing and Sustainable Societies, 2(3), 1–28.
7. Okila, N., Katumba, A., Nakatumba-Nabende, J., Mwikirize, C., Serugunda, J., **Murindanyi, S.**, et al. (2024). *Deep learning for accurate B-line detection and localization in lung ultrasound imaging*. Frontiers in Artificial Intelligence, 8, 1560523.
8. Nakatumba-Nabende, J., Babirye, C., Tusubira, J. F., Mutegeki, H., Nabiryo, A. L., **Murindanyi, S.**, et al. (2023). *Using machine learning for image-based analysis of sweetpotato root sensory attributes*. Smart Agricultural Technology, 5, 100291.
9. Sanya, R., Nabiryo, A. L., Tusubira, J. F., **Murindanyi, S.**, Katumba, A., et al. (2024). *Coffee and cashew nut dataset: A dataset for detection, classification, and yield estimation for machine learning applications*. Data in Brief, 52, 109952.
10. Katumba, A., Kagumire, S., Nakatumba-Nabende, J., Quinn, J., & **Murindanyi, S.** (2025). Building Text-to-Speech Models for Low-Resourced Languages From Crowdsourced Data. *Applied AI Letters*, *6*(2), e117.
11. Katumba, A., Kagumire, S., Nakatumba-Nabende, J., Quinn, J., & **Murindanyi, S.** (2025). A curated crowdsourced dataset of Luganda and Swahili speech for text-to-speech synthesis. *Data in Brief*, 111915.

Conference Papers

1. **Murindanyi, S.,** Mugalu, B. W., Nakatumba-Nabende, J., & Marvin, G. (2023). *Interpretable machine learning for predicting customer churn in retail banking*. 7th International Conference on Trends in Electronics and Informatics.

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2. **Murindanyi, S.**, Nagwovuma, M., Nansamba, B., & Marvin, G. (2023). *Explainable ensemble learning and trustworthy open AI for customer engagement prediction in retail banking*. Proceedings of the Fifteenth International Conference on Contemporary Computing.
3. **Murindanyi, S.**, Kirabo, C., Kirabo, N. P., Hellen, N., & Marvin, G. (2023). *Trustworthy machine emotion intelligence using facial micro-expressions*. International Conference on Intelligent Vision and Computing, 46–62.
4. **Murindanyi, S.**, Yiiki, B. A., Katumba, A., & Nakatumba-Nabende, J. (2023). *Explainable machine learning models for Swahili news classification*. Proceedings of the 7th International Conference on Natural Language Processing.
5. **Murindanyi, S.**, Nakate, A., Kyebambe, M. N., Nakibuule, R., & Marvin, G. (2023). *Responsible artificial intelligence for music recommendation*.
6. Kirabo, C., **Murindanyi, S.**, Kirabo, N. P., Hasib, K. M., & Marvin, G. (2023). *SHapley additive exPlanations for machine emotion intelligence in CNNs*. International Conference on Computational Intelligence, 657–671.
7. Kaitesi, J., Martin, S. R., **Murindanyi, S.**, Asiimwe, P. J., Kanagwa, B., & Marvin, G. (2024, September). Interpretable Machine Learning Techniques for Audio Source Separation. In *Congress on Intelligent Systems* (pp. 539-551). Singapore: Springer Nature Singapore.
8. Makanga, C., Mukwaba, D., Agaba, C. L., **Murindanyi, S.**, Joseph, T., Hellen, N., et al. (2024). *Explainable machine learning and graph neural network approaches for predicting employee attrition*. Proceedings of the Sixteenth International Conference on Contemporary Computing.
9. Katumba, A., Kagumire, S., Nakatumba-Nabende, J., Quinn, J., & **Murindanyi, S.** (2024). *Building text-to-speech models for low-resourced languages from crowdsourced data*. Africa NLP 2024

Preprints

1. **Murindanyi, S.,** Nakatumba-Nabende, J., Sanya, R., Nakibuule, R., & Katumba, A. (2024). *Enhanced infield agriculture with interpretable machine learning approaches for crop classification*. arXiv:2408.12426.
2. Katumba, A., **Murindanyi, S.**, Kasule, J. T., & Mugume, E. (2024). *Luganda speech intent recognition for IoT applications*. arXiv:2405.19343.
3. Okila, N., Katumba, A., Nakatumba-Nabende, J., Serugunda, J., Mwikirize, C., **Murindanyi, S.,** et al. (2025). *Automated lung disease classification using advanced ultrasound imaging techniques*. SSRN.
4. Musinguzi, D., Katumba, A., & **Murindanyi, S.** (2025). *PaliGemma-CXR: A multi-task multimodal model for TB chest X-ray interpretation*. arXiv:2503.00171.
5. Chelangat, D.M., **Murindanyi, S.**, Mugizi, B., Musana, P., Yada, B., Otema, M.A., Osaru, F., Katumba, A. and Nakatumba-Nabende, J., (2026). Machine Learning for Detection and Severity Estimation of Sweetpotato Weevil Damage in Field and Lab Conditions. arXiv preprint arXiv:2602.06786.
6. Mugizi, B., **Murindanyi, S.**, Nakacwa, O. and Katumba, A., 2026. Intelligent Traffic Surveillance for Real-Time Vehicle Detection, License Plate Recognition, and Speed Estimation. arXiv preprint arXiv:2601.00344.

References

Prof. Dr. Helge Rhodin
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Sudi Murindanyi - April 20, 2026

