

SYLVIA IMANIRAKIZA

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EDUCATION

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|---|---|
| University of Massachusetts Amherst
MS/PhD in Computer Science (advised by Dr Jay Taneja)
<i>CGPA: 3.8/4.0</i> | September 2023 - August 2028 (Expected) |
| Kafue Gorge Regional Training Center, Zambia
Certificate Course in Power Quality and System Stability | October 2022 |
| Makerere University, Uganda
BSc in Electrical Engineering (First Class Honors) | August 2018 - September 2022 |

RESEARCH AND TECHNICAL EXPERIENCE

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| Graduate Research Assistant
<i>University of Massachusetts Amherst</i> | September 2023- Present |
| <ul style="list-style-type: none">Working on techniques for non-intrusively measuring the electric power quality of grids in developing economies i.e Uganda and Kenya.Working on approaches for evaluating graph neural networks for mapping underground infrastructure i.e sanitation systems.Led field deployment and instrumentation for voltage quality measurements using IoT power sensors in Uganda | |
| Applied Machine Learning Summer Fellow
<i>Los Alamos National Laboratory</i> | May 2025- August 2025 |
| <ul style="list-style-type: none">Advised by Christa Brelsford, PhD and David Joshua Butts, PhDUsing machine learning methods to learn the relationships between infrastructure data and contact network properties. | |
| Research Assistant
<i>Marconi Research and Innovations Laboratory, Uganda</i> | August 2020 – April 2023 |
| <ul style="list-style-type: none">Advised by Cosmas Mwikirize, PhD & Andrew Katumba, PhDDeveloped and implemented ConvLSTM-based machine learning model for the classification of severity of prostate cancer from low-resolution multiparametric MRI image sequences achieving a selectivity score of 80%, using Python.Applied and evaluated state-of-the-art object localization models (YOLO-r) for needle tip localization in minimally invasive procedures achieving a mean average precision AP of 0.9520.Collected and annotated a new in-house in-vivo ultrasound video dataset from an animal specimen study using a portable ultrasound system.Conducted experiments to evaluate the performance of a novel time-aware deep neural network model for needle localization in 2D ultrasound to guide minimally invasive procedures, achieving a 30% improvement in tip localization accuracy from the prior art. | |

SKILLS

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| Programming | Python, Pandas, Matplotlib, Numpy, Scikit-learn, Pytorch, networkx, Pytorch-Geometric |
| Soft skills | Research Writing, Public Speaking, Teamwork, Time management, Mentorship |
| Miscellaneous | Anaconda distribution, DlgSILENT Power System Simulation, QGIS |

PUBLICATIONS AND CONFERENCE PRESENTATIONS

1. *Graph Neural Networks for Predicting Wastewater Service Type At A Land Parcel Level.* **Sylvia Imanirakiza**, Nana Akua Agyemang Sereboo, Nelson da Luz, Emily Kumpel, and Jay Taneja. NeurIPS Workshop on UrbanAI: Harnessing Artificial Intelligence for Smart Cities 2025.
2. *Digital Monitoring for Health Facility Emission Prediction and Climate Finance: A Case Study from the Democratic Republic of the Congo.* Daniel S. D. Sitompul, Sam B. Miles, Rashmi Varma, **Sylvia Imanirakiza**, Sanuratu Koroma, Jackson Mughuma, Ryan McCord, Olufolahan Osunmuyiwa, Janvier Kamundala, Ngalula Sandrine Mubenga, Jay Taneja, Daniel M. Kammen, and Laura H. Kwong, IEEE Global Humanitarian Technology Conference (GHTC) 2025.
3. *Utilizing Supervised Learning to Generate Synthetic Contact Networks.* **Sylvia Imanirakiza**, David J. Butts, Christa Brelsford, Tim Germann, Poster Presentation and Abstract, Los Alamos National Laboratory Summer 2025 Student Symposium.
4. *A Smart Portable Ultrasound System for the guidance of minimally invasive procedures.*, **Sylvia Imanirakiza**, Paul Mugume Okwija, Joanitta Nabacwa, Alvin Kimbowa, Cosmas Mwikirize, Andrew Katumba. Makerere University National Communications Conference, 2022.[Link]
5. *Time-aware deep neural networks for needle tip localization in 2D ultrasound.* Cosmas Mwikirize, Alvin B. Kimbowa, **Sylvia Imanirakiza**, Andrew Katumba, John L. Noshier, and Ilker Hacihaliloglu. International Journal of Computer-Assisted Radiology and Surgery, 2021.[Link]
6. *Development of an e-Health System for Improving Health-Care Access in Developing Countries.* Arnold, K., Mugisha, G.A., Uzoka, FM., **Imanirakiza, S.**, Muhumuza, C., Bukenya, J.N. Proceedings of the Future Technologies Conference (FTC) 2021.[Link]

HONORS AND AWARDS

Grace Hopper Celebration 2024 UMass Amherst CICS Scholarship	October 2024
CIFAR AI Inclusive Scholarship	July 2024
UMass Amherst CICS PhD Scholarship	Spring 2024 - Present
Dean's First Year Fellowship	Fall 2023 - Spring 2024
Spaulding Smith Fellowship Recipient	Fall 2023 - Present
Outstanding Graduating Student Award from the Makerere School of Engineering	February 2023
UNESCO India Africa Hackathon Finalist	November 2022
Full Scholarship Recipient under the Skills for Energy in Southern Africa project	October 2022
Uganda Representative Delegate to the ITU Generation Connect Youth Summit	June 2022
1st Runner's Up in Uganda in the Invent for the Planet Global Hackathon	2020
Government of Uganda Merit Undergraduate Scholarship	2018

VOLUNTEER ACTIVITIES AND SERVICE

Vice President	05/2025 - Present
<i>African Graduates and Scholars Association UMass Amherst</i>	
Communications Lead	11/2024 - 04/2025
<i>Voices of Data Science 2025</i>	
Graduate Student Mentor	09/2024 - 08/2025
<i>UMass Amherst Institute of Diversity Sciences and Early Research Scholars Program 24-25</i>	