Jules Udahemuka

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Summary

Data-driven decision-maker and entrepreneur specialized in AI solutions, with expertise in analytics, ML/AI, and venture creation. My research in Machine Learning and Climate includes developing algorithms that integrate different data sources and applying deep learning. Proven track record of translating research into successful ventures, including founding MonitorMed AI and winning international competitions. I seek a role that aligns with my passion for AI/ML, entrepreneurship, and solving global challenges through science-based innovation.

Education

Carnegie Mellon University **Pittsburgh**
Master of Science in Engineering Artificial Intelligence *Aug. 2023 – May. 2025*

University of Rwanda **Rwanda**
Bachelor of Science in Environmental Engineering *Aug. 2013 – July. 2017*

Awards & Recognition

Winner, Patient Safety Technology Challenge | *Nucleate PGH Bio-Hack ($1,500 prize)* **2024**

Winner, NextGen Space Challenge | *International competition (UK & African Space Agencies)* **2025**

Nucleate Activator Program | *Selected startup accelerator participant* **2025**

Internal Hackathon Winner | *Machine learning project that reduce defaulters by 14.2%* **2022**

Experience

MonitorMed AI **Pittsburgh, PA / Remote**
Founder & CEO *Nov. 2024 – Present*

- Founded healthcare AI startup focused on uncertainty quantification in medical imaging systems using Monte Carlo dropout methods.
- Won $1,500 Patient Safety Technology Challenge at Nucleate PGH Bio-Hack, competing against 50+ teams.
- Selected for prestigious Nucleate Activator program, building "Evaluation Store" for comprehensive AI model monitoring.
- Developing production-ready platform for continuous monitoring of FDA-approved medical imaging AI systems.

Babylon Health **Rwanda**
Data Scientist *Jun. 2022 – Jul. 2023*

- ML for Revenue Optimization: Led strategies and analyses across different departments, leveraging ML to optimize clinical operations, resulting in a 13.4% revenue increase by minimizing unpaid consultations.
- Decreased Fraudulent Activities: Decreased fraudulent consultations by 99.9% through data-driven performance management strategies, defining metrics, and analyzing various data points.
- Built Dashboards: Developed custom dashboards, enabling teams to make informed day-to-day performance decisions and drive business results.

Bboxx **Rwanda**
BI & Analytics Engineer *Feb. 2020 – May. 2022*

- Designed and Built Data Warehouse: Played a key role in designing and implementing robust ETL processes using dbt, enhancing decentralized data integration from diverse sources and systems, and ensuring data accuracy.
- Developed Dashboards: Created 5 Power BI dashboards with over 40 worksheets, enabling management and employees to make data-informed business decisions.
- Won Internal Hackathon: Partnered on an internal hackathon machine learning project, predicting defaulters and achieving a 14.2% reduction.

One Acre Fund **Rwanda**

Data Analyst, Marketing *May. 2017 – Jun. 2020*

- Increased Product Adoption: Spearheaded data-driven marketing strategies, increasing adoption rates by 17.7% in six months through research and segmentation strategies.
- Optimized Operations: Optimized retail expansion efforts, overseeing growth from 4 to 100 stores across the country in two years, supported by decentralized data gathering and live data visualization tools.
- Increased Retention: Developed and implemented retention strategy, raising retention rates from 82% to 93% during the COVID-19 lockdown period.

Projects

Climate AI - Regional Weather Prediction | *Neural ODEs, Python, TensorFlow* **2024**

- Developed climate downscaling framework using Neural ODEs for precise regional predictions in Rwanda.
- Enhanced ClimODE framework for developing regions, selected as winner in international NextGen Space Challenge.
- Applied Scientific Machine Learning to bridge gap between global climate models and local weather predictions.

Drones Computer Vision | *Python, OpenCV, YOLO, Faster R-CNN* **2023**

- Developed open-source project for analyzing drone footage and applying computer vision techniques like YOLO and Faster R-CNN for real-time object detection and tracking.

Digital Twin for Climate Change | *Python, AI Simulation, Climate Modeling* **2023**

- Created a digital twin framework using AI and simulation to model and visualize the potential impacts of climate change on the African continent.

Securing USSD Systems with Machine Learning | *Python, Scikit-learn, Anomaly Detection* **2022**

- Implemented unsupervised anomaly detection algorithms and supervised fraud prediction models to enhance the security of USSD mobile money systems in Africa.

Technical Skills

Programming Languages: Python, C++, SQL
ML/AI Frameworks: TensorFlow, PyTorch, OpenCV, HuggingFace Transformers, Monte Carlo Methods
Data Analytics/BI: dbt, Power BI, Tableau
Other Skills: Deep Learning, Computer Vision, NLP, MLOps, Data Warehousing, Dashboarding, Scientific Machine Learning (SciML), Uncertainty Quantification, Climate Modeling

Research

The Growing Appetite: AI's Impact on Electric Power Demand and Climate Implications **2024**

- Research paper exploring escalating electrical power consumption of AI, environmental consequences, and mitigation strategies.

Enhancing Security in USSD-based Financial Systems | *Machine Learning, Intelligent Agents* **2023**

- Comprehensive framework leveraging ensemble ML models and intelligent agents for robust USSD financial system security.

Atmospheric Circulation and Rainfall Patterns | *Climate Science, Advanced Modeling* **2023**

- Review paper bridging climate science fundamentals with cutting-edge modeling approaches for enhanced predictive capabilities.