Danson Mwangi Wachira

MACHINE LEARNING ENGINEER

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PROFESSIONAL SUMMARY

Machine Learning Engineer with expertise in computer vision, deep learning, and robotics systems. Experienced in building production-ready ML pipelines using PyTorch, TensorFlow, and ROS 2. Strong background in developing AI-driven automation solutions for industrial applications, with hands-on experience deploying cloud-based systems on AWS and Google Cloud. Currently pursuing MS in Computer Science with research focus on AI Safety and Robustness in Vision Systems.

WORK EXPERIENCE

Machine Learning Engineer

Feb 2025 - Present

LARRI - Louisville Automation & Robotics Research Institute

Louisville, KY

- Trained custom YOLO-NAS object detection models achieving 85% mAP for a high-throughput industrial sorting facility, tuning hyperparameters and optimizing inference for real-time deployment
- Designed data augmentation pipelines with motion blur, lighting variations, and geometric transforms, improving model generalization by 15% across varying warehouse conditions
- Built a multi-object tracking system using IoU-based matching and flicker detection, maintaining consistent identification across 30 FPS video streams
- Developed model evaluation tools computing mAP, precision, and recall on labeled datasets to guide model selection and tuning decisions
- Architected an end-to-end ROS 2 computer vision pipeline integrating camera streams, object detection, and barcode decoding into a single deployable system
- Containerized ML environments with Docker and set up CI/CD pipelines with automated testing, reducing team onboarding time by 40%

Software Engineer

Mar 2023 - Jul 2024

ASCC Logistics

Nairobi, Kenya (International Operations; Dubai HQ coordination)

- Developed AI-driven automation solutions improving logistics efficiency by 20% and reducing processing time by 30%
- Designed and implemented scalable API-centric architectures for enterprise software serving international operations
- Led cross-functional teams deploying cloud-based AI solutions on AWS and Google Cloud
- Conducted security audits and code reviews ensuring compliance with enterprise software engineering standards

EDUCATION

MS Computer Science & Engineering

University of Louisville

Expected May 2026 | GPA: 3.7

Continuing Scholarship Recipient

Coursework: Deep Learning, Artificial Intelligence, Design & Analysis of Algorithms, Data Mining

BS Software Development

KCA University, Nairobi, Kenya

November 2023 | GPA: 3.5

Coursework: Machine Learning, Artificial Intelligence, Distributed Systems, Cloud Development, Advanced Databases, Data Structures & Algorithms

TECHNICAL SKILLS

Languages

Python, Go, C++, Java, JavaScript, Bash

ML & AI

PyTorch, TensorFlow/Keras, Scikit-learn, OpenCV, YOLO, NumPy, Pandas

Robotics & CV

ROS 2, Object Detection, Barcode Decoding, IoU/Precision/Recall Evaluation

DevOps & Cloud

Docker, GitHub Actions, AWS, Google Cloud, CI/CD

Tools

Git, Linux, pytest, LaTeX, Agile/Scrum

CERTIFICATIONS

- National Cyber League Certificate (Fall 2024)
- MIT Professional Certificate in AI & Cybersecurity *(In Progress)*

RESEARCH & PROJECTS

AI Safety & Robustness in Vision Systems MS Thesis

Investigating where vision classifiers hit unavoidable error under low-information inputs. Implementing CNNs, VGG transfer learning, and autoencoders for uncertainty estimation. *Technologies: PyTorch, TensorFlow, OpenCV*

Vision AI for Autonomous Systems (CARLA)

Developed object detection and tracking for self-driving simulations. Benchmarked YOLO and ResNet against adversarial attacks (occlusion, perturbation). *Technologies: CARLA, YOLO, ResNet, TensorFlow*

Climate Change: Data Mining

Data mining analysis on climate data from Shreveport and Seville airports. Applied Logistic Regression, Random Forest, SVM for weather forecasting. *Technologies: Scikit-learn, Pandas, Matplotlib, Seaborn*

Real-Time Facial Recognition System

Built real-time facial recognition using OpenCV with Haar cascades and deep learning models for improved accuracy. *Technologies: OpenCV, Python, NumPy*

Diabetes Prediction Model

Predictive classification model comparing Logistic Regression, Random Forest, and SVM; evaluated with accuracy, F1-score, and ROC-AUC. *Technologies: Scikit-learn, Pandas, NumPy*

Carlton Resort - Hotel Booking Platform Undergraduate Capstone Project

Full-stack hotel booking system with PayPal payment integration, dynamic routing, and date range booking flow. *Technologies: React 18, MongoDB, Node.js, PayPal API*

REFERENCES

Available upon request

INTERESTS

AI/Robotics Research, Playing Guitar, Travel