

# KWABENA ARTHUR

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AI/ML Engineer with 5+ years of experience in commercial and research machine learning. Practical experience in a wide range of machine learning algorithms, scoping and validating data pipelines, and model development and deployment. Strong background in incorporating physics into data-driven algorithms.

## EDUCATION

### Massachusetts Institute of Technology (MIT)

B.Sc. in Mechanical Engineering and Physics

M.Sc. in Mechanical Engineering

## TECHNICAL SKILLS

Python, Matlab, C++, Bash

Tensorflow, Pytorch, Keras, XGBoost, Sci-kit learn, Jupyter

AWS, Linode, CVAT, Superset, SQL

CAD, CAM, Electronics, PCB, Prototyping

## WORK EXPERIENCE

### Samsung SmartThings, Computer Vision & Machine Learning Research Engineer (Oct '22 - Feb '24)

- Transformed literature reviews and feasibility studies to develop state-of-the-art models for motion detection, recommender systems, and presence detection.
- Developed and deployed XGBoost model for presence state detection of user locations.
- Developed a scalable automated dataset creation pipeline, handling billions of events daily.
- Implemented rigorous data validation and strict compliance to Samsung data security requirements.
- Implemented monitoring for evaluating data drift and ensuring dataset representativeness.
- Actively researched and presented cutting-edge AI advancements and novel algorithms.

### TAE Ghana, Lead Engineer (Dec '23 - Feb '24)

- Designed system including hardware, firmware, web platforms, and analytical models, for comprehensive analysis of livestream and recorded matches.
- Directed the development of CNN models for tracking events, players, and balls for sports analysis.
- Designed and implemented a scalable ML system for online and offline computation.
- Established rigorous manual annotation strategy, ensuring consistency and accuracy.

### Labby Inc, Head Data Scientist (Jun 21 - Oct 22)

- Developed and deployed regression models to estimate milk composition and classification models to assess cow health based on milk spectral measurements and historical cow data.
- Utilized unsupervised learning techniques to explore data subdomains for evaluating performance.
- Pioneered physics-based feature engineering techniques further enhancing model performance.
- Strategized and executed data collection and logging, significantly improving quality and precision.
- Investigated sources of data variability, leading to improved data fidelity and model performance.
- Explored novel applications of technology for additional fluorophores, resulting in a patent.

### MIT Mechanical Engineering Department, Research Associate (Aug 20 - Jun 21, Aug 17 - Sep 18)

- Developed computer vision models for tomography, phase retrieval, image enhancement, fake image detection and scene text recognition.
- Orchestrated data collection efforts for several projects.
- Researched and presented on latest publications and advancements in computer vision.
- Created high-accuracy simulations for dataset augmentation in multiple projects.
- Designed and built various electronic, robotic, computational, and optical hardware components.
- Effectively communicated performance results to sponsors and in several publications.