MARTIN WALTER AMPAH
APPLIED ML RESEARCHER | ML ENGINEER | SOFTWARE ENGINEER

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Applied Machine Learning Researcher and Software Engineer with an MSc in Computer Science from Kumamoto University and 6+ years of professional experience developing automation infrastructure, API integrations, and software reliability solutions. My research focuses on trustworthy machine learning, including predictive modeling, uncertainty quantification, probability calibration, explainable AI, and risk-aware decision-making. I have developed Python-based ML workflows for industrial failure prediction and multi-asset financial market analysis, incorporating data preparation, model experimentation, validation, and failure analysis. I combine rigorous ML evaluation with production-oriented software engineering experience across fintech, SaaS, and large-scale consumer technology. Interested in developing, evaluating, and improving reliable AI systems that solve real-world problems.

RESERACH AND ENGINEERING SKILLS

- **Machine learning**: Supervised learning, Imbalanced classification, Predictive maintenance, XGBoost, Random Forest, Gradient Boosting, Model Evaluation, Probability Calibration, Uncertainty Quantification, Conformal Prediction, Explainable AI, Retrieval-Augmented Generation (RAG)
- **Data & experimentation**: Python, SQL, pandas, data preparation, feature engineering, time-series validation, reproducible experiments, anomaly detection
- **Software engineering**: Python, JavaScript/TypeScript, REST APIs, Git, Docker, Linux, GitHub Actions, Jenkins, CI/CD, Debugging, Automated Integration Testing

SELECTED ENGINEERING PROJECTS

Safety-Aware Predictive Maintenance System | MSc. Research, Kumamoto University
Python | Machine Learning | Data Processing | Predictive Analytics

- Designed and implemented a **Python-based machine-learning evaluation and decision-support framework** for predicting rare industrial equipment failures from operational sensor data.
- Developed modular data-processing, model-training, probability-calibration, uncertainty-estimation, and decision-making pipelines.
- Implemented algorithms combining **conformal prediction, confidence estimation, and cost-aware decision logic** to determine when automated predictions could be trusted or should be deferred.
- Evaluated performance through classification metrics, failure analysis, repeated validation, and reproducible experiments.

Multi-Asset Financial Market Prediction & Risk Analysis System
Python | Machine Learning | Time-Series Forecasting | Financial Analytics | Data Engineering

- Designed and implemented a **Python-based machine-learning evaluation and decision-support framework**
- Developed modular Python pipelines for market data acquisition, preprocessing, feature engineering, validation, and anomaly detection across equities, crypto, FX, and commodities.
- Worked with time-series prediction approaches including Logistic Regression, XGBoost, and LSTM, with evaluation and risk-analysis workflows described in the existing CV.
- Integrated automated tests and structured data-quality checks to improve experiment reproducibility and pipeline reliability.

WORK EXPERIENCE

Tinder | Remote **Texas**
Senior Software Quality Engineer / SDET - Contract June 2024 – June 2026

- Developed and maintained Python and JavaScript/TypeScript automation infrastructure, reusable libraries, and service-integration components supporting feature releases for a global consumer platform serving tens of millions of users.
- Designed reusable engineering utilities and internal developer tooling that reduced repetitive automation development effort by approximately 40% and improved maintainability.
- Developed API and backend-integration components supporting complex interactions across mobile applications, authentication services, payment systems, backend APIs, and third-party integrations.
- Investigated and resolved 100+ application and integration issues through debugging, log analysis, network inspection, API diagnostics, and root-cause analysis.
- Contributed to technical design and architecture reviews, providing engineering input on system behaviour, integration risks, scalability, reliability, and maintainability.
- Integrated automated validation into GitHub Actions and Jenkins CI/CD pipelines, improving development feedback and production release confidence.

Testlio – MTN Ayoba | Remote
Senior Software Quality Engineer / SDET - Contract

- Developed reusable **JavaScript/Python automation and integration components** supporting AI Chat, messaging, payments and other mobile services.
- Built API integration and validation components covering **authentication, payment services, backend APIs, promotions, and interconnected application functionality**.
- Refactored existing automation architecture and reusable components, reducing execution time by approximately

30% while improving maintainability and engineering efficiency.
- Implemented data-driven software solutions supporting validation and analysis across multiple application modules, devices, environments, and network conditions.
- Debugged complex application and backend integration failures using API inspection, logs, network analysis, and systematic root-cause investigation.

Outliant | Remote **Texas**
Software Quality Engineer / SDET — Contract Aug 2023 – March 2024
- Developed reusable **backend-integration utilities and automation services** supporting customer-facing SaaS and FinTech web applications.
- Built API-oriented components supporting authentication, financial workflows, data validation, and integration between frontend and backend systems.
- Contributed to implementation and maintenance of **CI/CD pipelines**, improving deployment consistency and reducing repetitive operational effort.
- Participated in technical design discussions focused on **application scalability, maintainability, reliability, and performance**.
- Investigated production issues through application logs, API diagnostics, monitoring, and debugging, contributing to faster root-cause identification and resolution.

Really Great Tech (RGT) | Remote **Tel Aviv & New York**
Software Quality Engineer / SDET — Contract Sept 2019 – May 2023
- Developed internal engineering tools and reusable components supporting development workflows across multiple projects.
- Collaborated with Product Managers, Designers, and Software Engineers to translate **business requirements into technical specifications and implementation strategies**.
- Contributed to software architecture discussions, technical design reviews, implementation planning, and engineering decision-making for customer-facing web applications.
- Developed monitoring and reporting utilities improving visibility into application behaviour, system health, and engineering quality metrics.

EDUCATION

Kumamoto University **Kumamoto, Japan**
MSc. Computer Science **Graduation Date**: September 2026

Focus: Software Engineering, Safety-aware Testing, Predictive Maintenance and Failure Analysis, Uncertainty Quantification, Conformal Prediction, Cost-Aware Decision Systems, Imbalanced Data Modelling, Machine Learning, AI Evaluation.

Research focused on **safety-aware AI/ML systems, predictive maintenance, uncertainty quantification, calibrated prediction and risk-informed automated decision-making**, with emphasis on system reliability and failure analysis in industrial environments.

Ashesi University **Berekuso, Eastern Region, Ghana**
BSc. Electrical Engineering **Graduation Date**: Jun 2019

Focus: Coursework and engineering experience spanning Software Engineering, Data Structures & Algorithms, Robotics, Embedded Systems, Computer Architecture, Operating Systems, Intelligent Systems, and Programming.