Samuel Omole

omole.samuel92@gmail.com linkedin.com/in/samuel-omole/ saamuomole.github.io/ Chestermere, AB

PROFESSIONAL SUMMARY

Data Scientist with a PhD in Mechanical Engineering and extensive experience designing, building, and deploying AI-powered backend systems in production environments. Expert in translating ambiguous business problems into scalable, end-to-end AI solutions using foundational models (e.g., OpenAI, Hugging Face), APIs, and cloud-native architectures. Strong background in Python, distributed systems, and data pipelines, with hands-on experience integrating AI services into complex stacks using AWS, containerization, and microservices. Brings a pragmatic, systems-oriented mindset, combining hands-on implementation with clear communication and accountability to deliver intelligent AI features that drive real operational impact.

EXPERIENCE

Science and Technology Facilities Council (STFC), Hartree Centre

Data Scientist, July 2023 – Present

- Finetuned and deployed **geospatial foundation models** for water segmentation and flood detection on multispectral and hyperspectral satellite images, achieving **>90%** accuracy. Integrated **agentic** pipelines with **LLMs** to autonomously retrieve Sentinel-1/2 imagery from APIs and trigger model inference for automated flood risk assessment.
- Designed and deployed production-grade **time series foundation models** and **statistical models** for grid demand forecasting (**<3%** error margin). Built end-to-end ML pipelines with automated model versioning, monitoring, and deployment workflows, delivering AI-driven solutions that enhanced grid reliability and operational decision-making.
- Engineered production-grade deep learning pipelines for real-time vessel detection achieving **~85%** accuracy and **<2 minutes** latency. Built end-to-end ML solution integrating DAS and AIS data streams, implementing robust model training and deployment workflows that enabled real-time maritime surveillance capabilities and decision-making.
- Designed, optimised and deployed **computer vision-based** models for fabric defect detection and classification, delivering **>95%** accuracy and **milliseconds** inference latency in production.
- Collaborated and co-led initiatives like Smart Manufacturing Data Hub (SMDH) and BridgeAI to develop and integrate diverse ML solutions for complex industrial applications in small and medium-sized enterprises (SMEs) to streamline processes, enhance productivity and competitiveness.
- Built production-ready **data engineering pipelines** on cloud platforms that transformed raw, multi-modal, and unstructured data into reliable datasets for real-time AI/ML predictive modelling and inference. Designed scalable ETL workflows with robust data validation, feature engineering, and integration processes that ensured data quality and pipeline reliability for AI-driven solutions.
- Actively research and apply emerging ML/AI methods, bridging technical findings with business applications to turn new approaches into prototypes and sharing learnings and documentation across teams to advance internal AI capabilities.

DUFIL Prima Foods Plc

Continuous Process Improvement Engineer, February 2016 – September 2017

- Utilised statistical tools including **R** and Minitab to analyse production data, identify process inefficiencies, and define improvement projects, leading to a **15%** reduction in cycle time and a **10%** increase in yield across key production lines.
- Drove cross-functional initiatives using **Lean** and **6σ** DMAIC methodology to deliver data-driven digital solutions, achieving a **16%** reduction in fat content of finished food products and a **19%** decrease in unplanned production line downtime, significantly improving product quality and process efficiency.
- Developed and deployed a VBA-powered automated inventory tracking tool that integrated with existing ERP systems to digitalised production planning and asset management, reducing manual entry errors by **90%**, cutting planning time by **40%** and enabling Just-In-Time (JIT) production through real-time stock and asset monitoring.
- Implemented data-driven digital solutions to optimise storage utilisation and align raw material inventory with production schedules, increasing warehouse capacity by **25%** and minimising stockouts and overstock by aligning demand forecasts with real-time supply data.

De Koolar Limited

HVAC Engineer, January 2015 – January 2016

- Collaborated with clients to gather and analyse operational data, translating complex HVAC performance requirements into data-informed design solutions that met real-world constraints and improved system efficiency.
- Performed data-driven analysis of heating and cooling loads to determine precise ventilation and HVAC requirements, optimising system performance and ensuring compliance with building and energy efficiency standards.

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- Contributed to R&D initiatives that transformed client challenges into technical solutions, leveraging analytical thinking and cross-functional collaboration to drive innovation and meet operational goals.

EDUCATION

Doctor of Philosophy in Mechanical Engineering | University of Bath, United Kingdom, 2019 – 2023

Publications:

Omole, S., Dogan, H., Lunt, A.J.G., Kirk, S. and Shokrani, A., 2023. Using machine learning for cutting tool condition monitoring and prediction during machining of tungsten. International Journal of Computer Integrated Manufacturing, 37(6), 747-771. https://doi.org/10.1080/0951192X.2023.2257648 (PhD work, primary author).

Omole, S., Lunt, A.J.G., Kirk, S. and Shokrani, A., 2022. Advanced processing and machining of tungsten and its alloys. Journal of Manufacturing and Materials Processing, 6(1), 15. https://doi.org/10.3390/jmmp6010015 (PhD work, primary author).

Master of Science in Mechanical Engineering (Distinction) | Loughborough University, United Kingdom, 2017 – 2018

Bachelor of Engineering in Mechanical Engineering (First Class Honours) | University of Ilorin, Nigeria, 2009 – 2014

TECHNICAL SKILLS

- **ML & DL**: PyTorch, TensorFlow, JAX, HuggingFace, OpenCV, Scikit-learn, NumPy, Pandas, Statsmodels; classical and deep learning models for classification, anomaly detection, and imbalanced data; sequence and event-based modeling (RNNs, Transformers), time series modelling (ARIMA, LSTMs), embeddings and representation learning, foundation models (time series, geospatial analysis), computer vision (classification, object detection, image segmentation); applied optimization and intelligent automation.
- **LLMs & Agentic AI**: LangChain, AutoGen, MCP, LM Studio, Ollama; RAG, vector search and embeddings, prompt engineering, tool-augmented and multi-agent workflows, LLM fine-tuning and evaluation for text and multi-modal reasoning; reinforcement learning-informed optimization and feedback loops.
- **Databases & Data Engineering:** PostgreSQL, Snowflake, BigQuery, Redis, Milvus; PySpark, Spark SQL, dbt, Prefect, Airflow; feature pipelines, embedding stores, and high-throughput data pipelines supporting real-time and batch inference.
- **MLOps & Deployment**: CI/CD, Git, Docker, Kubernetes, MLflow, PyTest, FastAPI, Flask; model versioning, monitoring and retraining workflows; Linux-based development and production environments.
- **Cloud & Distributed Compute:** AWS, Azure; cloud-native ML deployment, distributed training and inference, GPU acceleration.
- **Data Visualization:** Matplotlib, Seaborn, Dash, Plotly, Tableau, PowerBI, QuickSight.

AWARDS & ACHIEVEMENTS

- Journal of Manufacturing and Materials Processing (JMMP) 2022 best paper award
- EPSRC DTP Studentship with United Kingdom Atomic Energy Authority (UKAEA), 2019
- Loughborough University Graduate School Development Trust Africa Scholarship, 2017/2018
- Best Graduating Student in the Department of Mechanical Engineering, 2014

COURSES & CERTIFICATIONS

- DeepLearning.AI TensorFlow Developer Professional Certificate
- Exploratory Data Analysis for Machine Learning
- Deep Learning Specialisation
- Practical Machine Learning
- Lean Six Sigma Green Belt
- AWS Certified Solutions Architect – Associate and Professional (TBC)
- AWS Certified Machine Learning – Specialty (TBC)
- Royal Statistical Society Data Science Professional (TBC)