AI Developer & Data Scientist
Modeling, Optimization & Deployment

Georges BALOGOG
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Profile

AI Developer and Data Scientist specialized in the **design of predictive and prescriptive models** integrated into **industrial data pipelines**. Expertise in **time series forecasting**, **mathematical optimization**, and **deployment of decision-oriented AI solutions**. Strong experience in structuring end-to-end data projects, from data ingestion to model exposure through APIs and analytical dashboards.

Applied Projects:

Intelligent Beamforming for Planar Antenna Arrays *MATLAB, CST*
Design of a supervised learning model (MLP) aimed at predicting the feeding law (amplitudes and phases) of a 4×5 planar antenna array in order to dynamically steer the main beam. The approach was compared to a reference analytical method (Dolph–Chebyshev) and validated through electromagnetic co-simulation using CST. The AI model achieved a directivity gain of **+0.2 dB** with an inference time of approximately **1.3 s**, demonstrating the relevance of applied AI for product-oriented radio problems.

Indoor Wi-Fi Localization via RSSI Fingerprinting (ML vs PSO) *MATLAB*
Development of a real-time constrained indoor localization prototype, reformulating position estimation as a supervised regression problem ($RSSI \rightarrow x, y$). A neural network (MLP) was compared to a Particle Swarm Optimization (PSO) approach in a controlled environment. Results show a mean localization error of **2.57 m** for the MLP versus **2.86 m** for PSO, with inference **6.2× faster**, highlighting the advantage of AI-based approaches for low-latency radio systems.

Multivariate Time Series Forecasting for Energy Systems *R, Python, TensorFlow / PyTorch*
Implementation of complete pipelines for regional energy demand forecasting in a non-stationary context, integrating rolling temporal validation and exogenous variables. The performance of interpretable statistical models (ETS, SARIMA) was compared with sequential deep learning models (TCN, LSTM). This work produced robust, operationally exploitable baselines while identifying performance gains in highly variable regions through deep learning.

Industrial Optimization Engine (LP/MILP) for Logistics Operations *Python, Gurobi*
Design of a deterministic optimization engine integrating stock placement, order picking, and replenishment under daily operational constraints. The problem was formulated as a modular MILP, orchestrated using performance indicators (distances, occupancy rates, layout stability). The solution reduced internal movements and improved operational stability, providing a replicable foundation for integrating decision-oriented AI in industrial environments.

Cloud-Native MLOps Platform with Federated Learning *AWS, Docker, Kubernetes*
Development of an end-to-end AI platform deployed on the cloud, covering data ingestion, training, deployment, and model exposure via APIs. The architecture integrates containerized services, Kubernetes orchestration, and a federated learning mechanism enabling distributed training without centralizing sensitive data. The project demonstrates the ability to move from AI prototype to a secure and scalable production solution.

Core Skills — AI & Data Science

- **Predictive modeling**: time series (SARIMA, ETS), neural networks (RNN), exogenous variables, temporal validation, error analysis, and robustness.
- **Optimization and hybrid AI**: linear and mixed-integer linear programming (LP, MILP), optimization under uncertainty (RL, SDDP), integration of predictive models into decision systems.
- **Applied data engineering**: ETL/ELT pipelines, multi-source ingestion (ERP, files, APIs), data transformation, quality control, and traceability (Databricks, Power BI).
- **MLOps and industrialization**: structuring reproducible workflows (preprocessing, training, evaluation), performance monitoring, and model lifecycle management.
- **Model deployment**: exposure via **FastAPI**, **Docker** containerization, cloud integration (Azure / AWS – local environment), scaling (K8s).
- **Languages and tools**: Python (Pandas, NumPy, PyTorch, TensorFlow, Scikit-learn, AutoML), advanced SQL, R; Power BI; Git, CI/CD.

Professional Experience

AI & Analytics Analyst — Supply Chain *Adfast Corp, Montreal*
Sept. 2025 – Present
Design of decision-oriented AI solutions applied to complex logistics systems. Development of data pipelines from **Dynamics 365 SCM** to feed predictive and prescriptive models, including optimization formulations (LP/MILP) for slotting, picking, and replenishment. Integration of results into automated decision workflows and **Power BI** dashboards. The work led to measurable improvements in operational efficiency and reduced internal movements.

AI Developer *La Cité Collégiale, Ottawa*
2023
End-to-end applied AI role covering modeling, training, and deployment of models under near-real conditions. Design of AI solutions for the *EcoEnergy* project, aimed at providing intelligent feedback to users on energy consumption, including implementation of a **federated learning** approach to preserve data privacy. Development of forecasting models (SARIMA, RNN) for operational planning, setup of reproducible MLOps pipelines (versioning, deployment, monitoring), and delivery of interactive dashboards for performance tracking. This experience provided strong hands-on expertise in **AI model deployment, cloud integration, and operational exploitation**.

Data Analyst — Operations *Total Cameroun*
2020 – 2022
Exploitation and analysis of large-scale industrial and logistics data to support operational performance. Automation of analytical reporting, structuring of key indicators, and support to business teams for planning and decision-making in a constrained industrial environment.

Education

M.Sc. in Data Science — HEC Montréal 2025
Specialization: statistical modeling, machine learning, optimization

Certificate in Applied Artificial Intelligence — La Cité Collégiale 2023
Specialization: data collection, processing, model design and deployment (CI/CD)

B.Sc. in Telecommunications and Information Technologies 2020
Specialization: antennas and transmissions

M.Sc. in Electrical Engineering — ENSET Douala 2019
Specialization: digital and power electronics, signal processing, nanotechnology

Professional Strengths

- Strong ability to connect AI models with real operational constraints.
- Excellent technical communication and ability to explain concepts to non-technical audiences.
- Autonomy, scientific rigor, and product-oriented mindset focused on impact.