

# CHRISTOPHER CRILLY PIENAAB

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## TECHNICAL SKILLS

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**Languages & Databases:** Python, SQL, R, JavaScript (Node.js, TypeScript), PostgreSQL, Supabase, DynamoDB, Snowflake, BigQuery

**ML / NLP / LLMs:** LangChain, LangGraph, Flowise (low-code AI workflows), GPT-4, Claude API, Gemini, Hugging Face, RAG, Transformer-based NLP, Multi-Agent Orchestration, Model Fine-Tuning, SHAP, Prompt Engineering, Embeddings

**Integrations & Platforms:** Salesforce API, REST/GraphQL APIs, Webhook Automation, CRM Integration, OpenAI API, Supabase, Node.js, TypeScript

**ML Frameworks:** TensorFlow, Keras, PyTorch, scikit-learn, XGBoost, spaCy, NLTK, Spark NLP

**Cloud & MLOps:** AWS (S3, Lambda, SageMaker), GCP (Vertex AI, BigQuery ML, Looker), Azure (Data Factory, Databricks), Docker, CI/CD, MLflow, Airflow, Feature Drift Detection, Model Registry, dbt, Power BI

**Model Governance:** OSFI E-23, SR 11-7, Independent Model Validation, Conceptual Soundness, Uncertainty Quantification, Fairness Auditing, Metric Stability, Data Drift Verification, Explainable AI (SHAP, LIME), Regulatory Traceability

## TECHNICAL PROJECTS

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**SME Growth Co-Pilot – Multi-Agent AI System** | *Python, LangGraph, GPT-4, Streamlit, PostgreSQL* 2024

- Built a production 6-agent LangGraph orchestration system for the Kaggle × Google AI Agents Intensive capstone – performing competitive intelligence, financial forecasting, and strategic recommendation synthesis with deterministic output validation and 100% reproducible pipeline execution.
- Cut manual SME analysis time 90% by automating data ingestion, multi-source cross-referencing, and structured report generation across financial and market datasets.

**Self-Healing ML Pipeline & Monitoring Platform** | *GCP, Python, Airflow, MLflow, Docker* 2024–2025

- Reduced post-deployment system downtime 78% by engineering an automated self-healing ML pipeline processing 431M+ behavioral records with drift detection, rollback gates, and model registry versioning across GCP and AWS.
- Achieved full audit-trail reproducibility across every deployment by building CI/CD-gated retraining workflows with environment isolation, metric stability tracking, and data drift verification aligned to SR 11-7 model risk standards.

**LuminaMed AI – Clinical Radiology Intelligence** | *Python, PyTorch, LangChain, GPT-4, FastAPI* 2024

- Reduced LLM hallucination rate from 12% to 8% by designing a 3-agent RAG verification system benchmarked across 3 architectures; integrated SHAP/LIME explainability layers to satisfy model risk governance and conceptual soundness protocols.
- Ensured full HIPAA compliance by designing de-identification pipelines and controlled access protocols with MLflow model versioning and reproducible evaluation across every deployment iteration.

**Nytia Labs – Behavioral Wellness Data Platform** | *GCP, Python, BigQuery, Airflow, dbt* 2024

- Achieved ROC AUC 94% on a behavioral health classification model by building end-to-end ETL pipelines processing 431M+ daily records with automated data quality validation and anomaly remediation workflows.
- Reduced model governance failures 100% by designing FOIP-compliant access controls, metadata standards, and data stewardship policies audited across the full data lifecycle.
- Accelerated data science cycle time 40% by engineering a reusable feature store and standardized schema registry enabling reproducible, multi-team access to curated wellness datasets.

**Power BI Analytics Portfolio** | *Power BI, DAX, Azure Maps, World Bank WDI, Python* 2025–2026

- Built a 3-page AI Model Monitoring dashboard for Nytia Labs surfacing predicted risk tiers (LOW/MODERATE/HIGH/CRITICAL) across 52K+ flagged patients, connecting Power BI directly to live ML model outputs for operational decision-making.
- Delivered 3 additional enterprise dashboards spanning 827K+ accident records, US\$46M+ federal contract opportunities, and Ghana macroeconomic indicators (2015–2024) featuring DAX-driven measures, Azure Maps, and executive-level time-series analysis.

**PDF-to-SQL Pipeline – Document Intelligence API** | *Python, Docling OCR, Gemini Flash-Lite, FastAPI* 2025

- Engineered a 3-layer production document processing pipeline – local Docling OCR extracts text from PDFs, Gemini Flash-Lite maps raw text to typed structured JSON, and a deterministic validation engine enforces business rules – achieving 95.4% accuracy at \$0.0005 per document across bank statements, invoices, and clinical notes.

- Designed for data sovereignty in regulated financial environments – original PDFs never leave the local machine, with FastAPI REST endpoints, Swagger UI, and multi-schema support for 7 document types including financial records.

**CHRISLINE Algorithmic Trading System** | *Python, MetaTrader 5, PostgreSQL, Multi-Timeframe Data* 2024–2026

- Engineered a production-grade real-time financial data ingestion system consuming multi-timeframe OHLCV tick data (M15/H1/H4/D1/W1) across NAS100 and XAUUSD – processing 55K+ bars through a 3-layer feature engineering pipeline with conviction scoring, stability gates, and kill-zone scheduling.
- Achieved Profit Factor 2.51, 1.6% max drawdown, and FTMO compliance across 262 validated trades over 28 months with automated backtesting, anomaly detection, trade logging, and equity brake alerting.

**Volta IVA – World Bank Energy Verification Platform** | *Python, FastAPI, React, SHA-256, GCP* 2025–2026

- Built a three-source data reconciliation engine for World Bank PAD4401 (US\$260M IDA Credit) ingesting ECG Zeus billing, GRIDCo SCADA physical delivery, and GRA treasury receipts simultaneously – surfacing GH¢2.95bn in unverified revenue across all 12 months of 2024 with every month rated CRITICAL risk.
- Implemented cryptographic audit trails using SHA-256 hashing, Trillian Merkle tree, and RFC 3161 timestamping – tamper-evident records that cannot be altered by any party, with DLI scoring for all seven PAD4401 disbursement indicators.

PROFESSIONAL EXPERIENCE

**AI Engineer & Product Strategist** Sept 2024 – May 2025

*ICON Leadership Institute* Toronto, ON

- Increased NLP pipeline throughput 3× (450K → 1.35M daily records) by reengineering GPT-4 workflows with async processing, optimized prompt templates, and Redis caching on AWS Lambda – reducing average inference latency by 55%.
- Cut manual data triage duration 60% by designing a high-throughput document classification and entity extraction pipeline using Hugging Face Transformers with structured confidence-scoring gates routing high-risk cases to human validation.
- Cut average program startup time 25% by designing a multi-agent orchestration framework integrating regulatory document analysis, participant feasibility scoring, and cross-program benchmarking into a unified AI-assisted workflow.
- Eliminated \$15K–\$25K in annual SaaS licensing costs by engineering a custom full-stack CRM from scratch serving 10–20 staff with native integrations to Salesforce and third-party platforms, covering contact management, pipeline tracking, billing automation, and client communications.

**Director of Operations & Analytics** Jan 2014 – Aug 2024

*CHRISLINE Prints & Advertising* Ghana / Canada

- Engineered a centralized PostgreSQL database and Python/SQL ETL pipeline automating financial reporting and KPI tracking across 50+ SME client accounts, eliminating manual compilation and reducing turnaround time 65%.
- Standardized client-facing dashboard schemas with automated data ingestion validation and anomaly flagging, ensuring data quality and reducing reporting errors to near-zero across all accounts.

EDUCATION

**Northeastern University** Toronto, ON

*MPS in Analytics – Applied Machine Intelligence* | GPA: 3.89/4.0 (Analytics: 3.97/4.0) May 2026

- Relevant coursework: Machine Learning, NLP, Deep Learning, AI Systems, Data Mining, Applied Mathematics, Reinforcement Learning

**Sir Sandford Fleming College** Toronto, ON

*Graduate Certificate in Project Management* July 2024

**University of Nottingham (Russell Group)** United Kingdom

*Master of Science in Entrepreneurship, Innovation & Management* December 2015

**University for Development Studies** Ghana

*Bachelor of Arts in Economics & Entrepreneurship Studies* December 2013

CERTIFICATIONS

**5-Day AI Agents Intensive with Google** – Kaggle × Google (Dec 2025) | Verified badge:

[kaggle.com/certification/badges/christophercrilly/105](https://kaggle.com/certification/badges/christophercrilly/105)

**AWS Generative AI** – Udacity (2025)

**Applied AI Development** – DTTP (2025)

**Google Data Analytics Professional Certificate** – Google (2024)