

## REGINALD LEDAIN

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### SUMMARY

- 20 years of experience spanning **education technology, analytics product delivery and government IT**
- Led cross-functional team of 3-5 **engineers and data analysts**, aligning delivery to business priorities
- Decreased cloud compute cost by **20–40%** through workload optimizations and custom docker consolidations
- Designed and maintained **3+ production SageMaker inference endpoints** and increased test coverage to **80-90%** in less than 2 months.
- 15 years as a **system and network administrator** for a large state government agency with more than 4,000 employees.

### TECHNICAL SKILLS

**Languages:** Python, PHP, SQL, Bash, JavaScript

**ML frameworks:** Scikit-learn, PyTorch, LightGBM, Deep Learning & Neural Networks

**Cloud Platforms:** AWS (Sagemaker, S3, Redshift, Athena, Glue, EC2), Azure (App Service, Blob Storage, Azure SQL)

**MLOps & ML Tools:** MLflow, Docker, DVC

**Data Engineering Tools:** dbt, Pandas, Snowflake, Informatica Cloud

**BI Tools & Observability:** Tableau, Domo, Salesforce Tableau CRM, Datadog

**DevOps & CI/CD:** GitHub, Sonarqube, Concourse CI, Terraform, Kubernetes

**Databases:** PostgreSQL, MySQL, MS SQL Server, DynamoDB

**Project & Delivery Management:** Agile & Scrum, JIRA, Confluence, Cross-Functional Team Leadership

### PROFESSIONAL EXPERIENCE

#### Staff-Level Data & Machine Learning Engineer

**Houghton Mifflin Harcourt** – (Remote/Toa Baja, PR) | January 2011 – October 2025

HMH is a leading K-12 learning company serving over 50 million students and 4 million educators in 150 countries, supporting a multi-billion-dollar education solutions business.

- **Designed and developed** automated, scalable **MLOps pipelines** in **AWS** using **SageMaker** and **Concourse CI**, enabling training of a **probabilistic Bayesian network** on millions of student assessment records for proficiency estimation.
- **Built and deployed Python-based** SageMaker endpoints within custom Docker containers to handle inference requests from microservices.
- **Implemented CI/CD workflows** with **Concourse** and **Terraform** for **IaC**, automating deployment of cascading inference endpoints across **non-prod and prod environments**.

- **Deployed automated load and performance tests** with **Locust** on a **Kubernetes cluster**, enabling continuous benchmarking and ensuring production readiness under expected traffic loads.
- **Monitored and optimized** model training using **MLflow**, improving hyperparameter tuning, model traceability, and experiment reproducibility.
- **Developed tool** in **Streamlit** leveraging **sentence transformer models** to compare short-text similarity, reducing content alignment time by **80%** for Learning Scientists and Designers.
- **Hands-on experience** with GenAI frameworks (OpenAI, Hugging Face, LangChain), LLMs, multimodal models, retrieval-augmented generation (RAG), and AI agent orchestration.
- **Built and deployed churn prediction models** on **Salesforce CRM** using **Scikit-Learn decision trees**, identifying at-risk customers impacting **Annual Recurring Revenue (ARR)**.
- **Developed data pipelines** in **Pentaho** to load daily **S3 exports** into **Amazon Redshift**, automating reports in **Domo** and saving **30+ man-hours per month** of manual Excel analysis.
- **Led data integration and analytics efforts** for **K-12 education products**, ensuring high-quality, reliable delivery of learning metrics and reporting dashboards.
- **Supported large-scale implementations** of curriculum platforms and **learning analytics systems** at **district and state levels**, collaborating with cross-functional education partners.
- **Led Agile ceremonies** (sprint planning, backlog grooming, daily stand-ups, retrospectives) using JIRA and Confluence to coordinate cross-functional data engineering and MLOps teams.
- **Championed architecture communication**, leading stakeholder sessions to align IT, product, and data functions on system integration strategy and roadmap priorities

## Managerial Engineer

*Puerto Rico Highway Authority – San Juan, PR | 1995 – 2011*

- Led IT infrastructure for a 4,000-user organization, including VMware virtualization, network ops, and DR planning.
- Deployed secure network systems with Checkpoint, ISA Server, and Active Directory.

## Information Systems Director

*Puerto Rico Department of Corrections – San Juan, PR | 1994 – 1995*

- Directed all IT operations and infrastructure for the Department of Corrections.

## EDUCATION

- **M.S. Computer Science**, Polytechnic Univ. of Puerto Rico (2019) — Knowledge Discovery & Data Mining
- **B.S. Electrical Engineering**, Univ. of Puerto Rico (1993) — Telecommunications Minor