MICHAEL GURULE

Data Scientist | Machine Learning Engineer

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PROFESSIONAL SUMMARY

Senior Data Scientist & ML Engineer with 8+ years of experience architecting end-to-end analytical systems for Fortune 500 leaders. Expertise in designing and deploying production-grade machine learning models and automated data pipelines (Python, AWS) that drive 8-figure business impact in industrials, materials, and financial services. Currently completing an **MS in Data Science**; certified **AWS Data Engineer** and **Google Advanced Data Analytics** professional. Proven track record of bridging the gap between complex algorithmic modeling and enterprise-scale deployment.

PROFESSIONAL EXPERIENCE

Senior Data Scientist / ML Engineer (Senior Consultant)

Sedgwick | March 2020 - August 2025

- **ML Engineering:** Developed and deployed an end-to-end **Gradient Boosted Regressor** on AWS to optimize production for a global chemical manufacturer. Engineered a multi-variable objective function integrating real-time commodity feeds, delivering a **$2.9M impact on EBITDA** through reductions in operation expense and significantly reducing raw material waste during supply chain disruptions.
- **MLOps & Automation:** Designed a scalable MLOps pipeline using **AWS Lambda, S3, and Python** to automate risk scoring across 3,000+ jurisdictions. Implemented automated model retraining triggers and **data drift monitoring** to ensure model performance stayed robust against rapidly shifting regulatory data throughout the pandemic.
- **Data Science:** Performed multivariate regression on supply chain volatility to identify profit drivers, delivering an 8-figure EBITDA impact.
- **Data Architecture:** Architected cloud-native **ETL pipelines** that unified disparate ERP systems, market feeds, and government APIs into a central **AWS data lake**. Reduced data latency for mission-critical business intelligence by **>20%**, enabling real-time portfolio risk monitoring for Fortune 500 financial clients.
- **Geospatial Engineering:** Engineered a geospatial risk-intelligence API using Geopandas and Shapely to automate legal compliance documentation.

Data Scientist / Engineer (Consultant)

JS Held | January 2017 - March 2020

- **Predictive Analytics:** Deployed time-series and regression models for 20+ engagements across industrials, materials, and finance sectors to forecast multi-million dollar trends.
- **Technical Integration:** Led the integration of an M&A-acquired analytics platform, conducting pipeline assessments and mapping legacy data to AWS/SQL.
- **Data Visualization:** Synthesized high-dimensional market datasets into automated Tableau/Power BI dashboards for C-suite decision-making.

PORTFOLIO PROJECTS

Full code base & implementation available on GitHub

HYPERION - Deep Learning Hypersonic Defense Swarm Intelligence

Engineering: Developed a decentralized multi-agent reinforcement learning system using **Ray Rllib** and **PyTorch** to coordinate autonomous UAV swarms for hypersonic threat detection and engagement.

Optimization: Integrated **Physics-Informed Neural Networks (PINNs)** for high-fidelity trajectory simulation and **Graph Neural Networks (GNNs)** for agent communication, achieving sub-100ms inference latency.

Performance: Validated systems through adversarial scenario testing, achieving >85% interception rates while managing decentralized communication protocols across 20+ simulated agents.

SENTINEL - Advanced Multi-Sensor Intelligence Platform (OPIR & Radio Frequency)

Data Science: Implemented a production ML system fusing **RF positioning (TDOA/FDOA)**, thermal imaging, and telemetry streams using **Kalman Filtering** for real-time object tracking.

Technical Rigor: Engineered sensor geometry optimization algorithms that delivered a **40x accuracy improvement** over baseline GPS approaches in GPA-denied environments.

Deployment: Architected the system to handle asynchronous, high-frequency data streams, ensuring robust threat detection across varied sensor hardware profiles.

MERIDIAN - Quantitative Investment Portfolio Optimization Engine

Data Science & Optimization: Developed a quantitative engine implementing **Mean-Variance Optimization (MVO)** and **Risk Parity** strategies; utilized **CVXPY** for convex optimization to solve for optimal asset allocation under complex constraint specifications.

Engineering & Integration: Built a real-time data ingestion pipeline integrating the **Yahoo Finance API** to stream market data into multi-factor risk models and correlation matrices.

Technical Rigor: Implemented robust correlation analysis and risk-modeling to generate dynamic rebalancing recommendations, ensuring portfolio stability across varying market volatility regimes.

SKILLS

Machine Learning: Scikit-Learn, PyTorch, TensorFlow, Time-Series Forecasting, Optimization Algorithms (Linear Programming), Multivariate Regression, Hypothesis Testing, Feature Engineering, Model Validation . **Data Engineering & Cloud:** AWS (Lambda, S3, Glue, Athena, RDS), ETL Pipeline Development, MLOps, Docker, Git/GitHub, RESTful API Design, JSON/XML Data Integration . **Languages & Analytics:** Python (Pandas, NumPy, SciPy), SQL (PostgreSQL, MySQL), R, Tableau, Power BI, Geopandas (Geospatial Analysis), Excel (VBA/Solver).

EDUCATION

Masters of Science in Data Science
University of Colorado | 2024 - In-Progress

Bachelor of Science in Finance & Risk
University of Colorado Denver | 2013 - 2017

CERTIFICATIONS

AWS - Certified Data Engineer-Associate

Google - Advanced Data Analytics Professional