Matt Oremland, PhD

Vice President, Data Science

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PROFESSIONAL SUMMARY

Data science executive with 9+ years leading ML-powered product development in highly regulated, production-grade environments. Proven track record building data science organizations, delivering business outcomes through forecasting and optimization models, and establishing rigorous ML governance frameworks. Deep expertise in causal methods, pricing optimization, and deploying production ML systems at scale. PhD in Mathematics with specialized research in optimization algorithms and computational modeling. Successfully led cross-functional teams delivering intelligence-driven products that changed operational decisions and drove measurable ROI.

PROFESSIONAL EXPERIENCE

Redica Systems
April 2025 – Present

Director, Data Strategy & Analytics — *Remote*

- Lead data science strategy and execution for pharma SaaS platform serving clients including Eli Lilly, Merck, and ProQuality Network; established vision for ML-powered regulatory intelligence and risk scoring
- Built production LLM classifier using OpenAI API analyzing FDA enforcement data; established responsible AI framework including model validation, auditability standards, and data governance guardrails for deployment
- Developed Python-based risk scoring models processing regulatory text and facility attributes in Snowflake; balanced model complexity with system performance to meet latency and cost constraints in production environment
- Established rigorous analytics practice prioritizing reproducibility and decision-grade insights; created evaluation frameworks measuring business impact of model-driven recommendations on client risk mitigation strategies
- Lead cross-functional collaboration with engineering and product teams to integrate ML capabilities into platform UX; influenced product roadmap priorities based on data science opportunities

Tidal Wave Analytics LLC
January 2025 – Present

Consulting Data Scientist / Founder — *Saratoga Springs, NY*

- Delivered production ML systems across multiple SaaS clients; managed full model lifecycle from research to deployment including monitoring, versioning, and performance evaluation
- Built random forest model for Paradigm deployed to Databricks with nightly batch processing; designed monitoring framework tracking data drift, model performance degradation, and system latency
- Engineered agentic RAG system for tax compliance using HuggingFace and PyTorch; architected document ingestion pipeline, vector store, and query generation for intelligent decisioning workflow
- Managed resource allocation and strategic tradeoffs between model accuracy, computational cost, and delivery timelines across concurrent client engagements

Gilead Sciences
January 2023 – March 2025

Director, Data & Analytics (Medical Affairs) — *Foster City, CA*

- Defined and executed enterprise data and analytics strategy for Medical Affairs organization serving as strategic advisor to VP-level leadership on data-driven decision-making
- Built and led team of 5+ data professionals (analysts, Spotfire developers, vendors) managing HCP/HCO analytics; established hiring standards, professional development programs, and performance management frameworks
- Architected centralized data lake consolidating 5+ disparate sources with automated ETL pipelines; designed data quality validation logic, schema normalization, and governance framework ensuring auditability and lineage tracking
- Established formal data governance standards including data quality metrics, access controls, and compliance requirements for healthcare reference data; ensured all analytics met regulatory and privacy standards

- Delivered measurable business outcomes through analytics-driven insights reducing manual operations by 70% and enabling data-informed Medical Affairs strategy

Takeda Pharmaceuticals May 2021 – December 2022

Associate Director, Digital & Data Science *Lexington, MA*

- Led data science organization spanning digital analytics and statistical monitoring groups; managed team priorities, resource allocation, and strategic roadmap balancing research initiatives with operational delivery
- Built predictive ML models for manufacturing optimization using ensemble methods, PLS, and PCA; deployed production models driving real-time quality decisions with rigorous validation and monitoring frameworks
- Designed experimentation framework for process optimization evaluating causal impact of manufacturing parameter changes on product quality; established statistical rigor standards for decision-grade analytics
- Served as Spotfire system administrator managing platform governance, user access, and technical standards across enterprise analytics environment
- Led semi-annual APQR (Annual Product Quality Review) process coordinating cross-functional stakeholders and presenting insights to senior leadership; communicated complex analytical findings to executive audiences

Regeneron Pharmaceuticals May 2016 – May 2021

Senior Process Data Scientist *Rensselaer, NY*

- Built ML-powered forecasting and optimization systems for biopharmaceutical manufacturing; developed models that changed operational business decisions and production planning strategies
- Engineered automated feed quantity optimization system using constrained optimization algorithms; balanced multiple competing objectives including material costs, process constraints, and quality targets
- Designed predictive modeling platform for product quality forecasting using ensemble methods and PLS regression; established rigorous evaluation framework with cross-validation, holdout testing, and performance monitoring
- Developed automated statistical limit calculation system processing historical batch data; implemented statistical algorithms for distribution fitting, outlier detection, and confidence interval estimation meeting regulatory compliance requirements
- Built end-to-end ML pipelines including data ingestion, feature engineering, model training, validation, and deployment; established reproducibility standards and version control practices
- Presented technical work and business impact to senior leadership and cross-functional stakeholders; demonstrated ROI through quantified improvements in process efficiency and quality outcomes

Mathematical Biosciences Institute 2014 – 2016

Postdoctoral Research Fellow *Columbus, OH*

- Conducted research in computational biology applying optimization algorithms and causal modeling methods to agent-based systems; published 5 peer-reviewed papers and 1 textbook chapter
- Developed multi-objective optimization frameworks using genetic and evolutionary algorithms; established rigorous experimental design and reproducibility standards for computational research

EDUCATION

Doctor of Philosophy (PhD) in Mathematics 2014

Virginia Polytechnic Institute & State University

Dissertation: Optimization and control of agent-based models in biological systems. Published 7 peer-reviewed papers applying optimization theory, causal methods, and computational algorithms to complex systems modeling.

SKILLS & TECHNOLOGIES

Data Science Leadership & Strategy: ML Product Development • Team Building & Management • Data Science Roadmap • Resource Allocation • Cross-Functional Leadership • Executive Communication

Machine Learning & AI: Forecasting Models • Optimization Algorithms • Ensemble Methods • Causal Inference • LLM Integration • Agentic Systems • RAG Architectures

ML Operations & Platform: Model Lifecycle Management • MLOps • Production Deployment • Model Monitoring • Data Quality Validation • A/B Testing • Experimentation Frameworks

Technical Foundations: Python • Scikit-Learn • TensorFlow • PyTorch • SQL • Snowflake • Databricks • AWS • Statistical Modeling • PLS • PCA

Governance & Compliance: Responsible AI • Model Auditability • Data Governance • Regulatory Compliance • Privacy Standards • Reproducibility Frameworks

PRESENTATIONS & PUBLICATIONS

- CHPA Quality and Manufacturing Meeting (2025) — Solo Presenter: Decoding FDA Enforcement Trends - analytics-driven insights for regulated industries
- ISPE Annual Meeting & Expo (2025) — Solo Presenter: Navigating FDA Compliance - data intelligence for regulatory decision-making
- CHPA Regulatory, Scientific & Quality Conference (2025) — Solo Presenter: The Impact of AI on FDA-Regulated Industries - responsible AI frameworks
- Redica Systems Webinar (2025) — Solo Presenter: From Reactive to Proactive: Leveraging AI/ML to Improve Quality Operations

PUBLICATIONS

- "Optimization and control of agent-based models in biology: a perspective" — Bulletin of Mathematical Biology, 2017
- "Optimal control of sugarscape agent-based model via a PDE approximation model" — Optimal Control Applications and Methods, 2016
- "Agent-based models and optimal control in biology: a discrete approach" — Mathematical Concepts and Methods in Modern Biology (Elsevier), 2013 (Textbook chapter)