

# Matt Oremland, PhD

*Senior Director of Artificial Intelligence & Data Infrastructure*

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## PROFESSIONAL SUMMARY

Technology and data platform leader with PhD in Mathematics and 10+ years of experience designing, building, and leading data and AI platforms in life sciences and biotechnology organizations. Proven track record architecting and delivering enterprise data platforms that accelerate research, enhance product development, and drive operational excellence. Deep expertise in cloud platforms (AWS, Azure Databricks, Snowflake), production ML systems, and data engineering with extensive experience in FDA-regulated pharmaceutical environments. Strong leadership experience building and mentoring technical teams, establishing best practices, and collaborating across R&D, quality, manufacturing, and regulatory functions.

## PROFESSIONAL EXPERIENCE

### Redica Systems

2024 – Present

*Director, Data Strategy & Analytics*

Remote

- Led strategic development and execution of data and AI platform capabilities for pharmaceutical clients (Eli Lilly, Merck), designing scalable data architecture in Snowflake that supports enterprise-wide analytics and machine learning workflows
- Architected and deployed production LLM classification system (OpenAI API) that processes unstructured regulatory data—designed end-to-end platform including data ingestion, model inference, validation framework, and analytics output, enforcing best practices for data quality, security, and auditability by design
- Built reference data architecture from scratch supporting multi-tenant clients, implementing data governance frameworks, quality controls, and compliance standards that enable self-service analytics while maintaining data integrity and regulatory requirements
- Drove adoption of advanced AI/ML methodologies across client organizations by delivering production models, establishing validation standards, and providing technical guidance to data science teams on responsible AI development and deployment
- Collaborated with data engineering teams to implement scalable data pipelines, optimize platform performance, and ensure system reliability for mission-critical analytics workloads

### Tidal Wave Analytics LLC

2023 – Present

*Consulting Data Scientist*

Saratoga Springs, NY

- Architected and deployed production ML platform on Azure Databricks for Paradigm, designing data infrastructure that integrates multiple source systems, processes features, and delivers nightly predictions to operational workflows—collaborated directly with data engineering teams and VP of Product
- Built RAG system infrastructure for Denari using cloud platforms, implementing data ingestion pipelines, document repositories, and ML inference architecture using HuggingFace and PyTorch that enables AI-driven tax compliance advisory
- Developed full-stack web application (Escalators puzzle game) using modern cloud architecture—Python backend, React/Node.js/Vite frontend, Google OAuth integration, Supabase for data management—demonstrating ability to design and implement scalable, user-facing platforms end-to-end

### Gilead Sciences

2023 – 2024

*Director, Data & Analytics (Medical Affairs)*

Foster City, CA

- Defined and executed strategic roadmap for enterprise data and analytics platform serving Medical Affairs organization, aligning technical architecture with business objectives and growth initiatives across commercial and medical functions

- Architected and delivered centralized data lake as single source of truth, designing scalable cloud-based infrastructure that consolidated disparate data sources, enabled self-service analytics, and accelerated data-driven research and decision-making
- Built business intelligence platform in Spotfire from scratch, leading team of dashboard developers and establishing technical standards, governance frameworks, and best practices for analytics delivery across the organization
- Established comprehensive data governance, quality, and security frameworks by design, implementing access controls, validation processes, and audit trails that ensured compliance with FDA regulatory requirements
- Led hiring, mentorship, and performance development for technical team, fostering culture of continuous learning, technical rigor, and innovation while building consensus across cross-functional stakeholders
- Developed strategic partnerships with technology vendors and managed external consultants to leverage expertise and accelerate platform capabilities

### **Takeda Pharmaceuticals**

2021 – 2022

#### *Associate Director, Digital & Data Science*

Lexington, MA

- Led strategic roadmap and execution for digital and data science platforms supporting manufacturing and quality operations, managing teams of data scientists, engineers, and statistical analysts
- Architected and deployed predictive ML models in production for manufacturing forecasting, quality risk detection, and process optimization—designed infrastructure, implemented monitoring, and ensured models met performance, security, and compliance requirements
- Served as Spotfire system administrator and platform architect, designing integrations with enterprise systems (ERP, MES, LIMS), implementing security controls, and maintaining platform compliance with 21 CFR Part 11 and GxP standards
- Built self-service analytics capabilities enabling data scientists and engineers across manufacturing and quality organizations to develop dashboards, explore data, and deploy insights into operational workflows
- Drove adoption of advanced analytics and ML methodologies by establishing best practices, providing technical mentorship, and collaborating with cross-functional teams to identify high-impact use cases
- Led technical design and governance for real-time monitoring platforms that enhanced manufacturing processes and product quality, demonstrating ability to deliver scalable, high-performance systems in regulated environments

### **Regeneron Pharmaceuticals**

2016 – 2021

#### *Senior Process Data Scientist*

Rensselaer, NY

- Architected automated data engineering pipelines for biopharmaceutical manufacturing, designing ETL infrastructure that ingested data from multiple enterprise systems (ERP, MES, LIMS), transformed and validated data, and delivered analytics-ready datasets
- Developed and deployed production ML models (ensemble methods, PLS, PCA) that accelerated research, enhanced manufacturing processes, and improved product quality—models ran in production for automated limit calculations, feed optimization, and quality prediction
- Designed data architecture supporting both operational reporting and advanced analytics, implementing data quality controls, lineage tracking, and governance standards that ensured compliance with GxP and regulatory requirements
- Collaborated with Quality Assurance, Manufacturing, Process Development, and IT teams across matrixed organization to integrate analytics capabilities into operational workflows and drive adoption of data-driven methodologies
- Presented technical solutions and analytics findings to senior leadership and cross-functional stakeholders, demonstrating ability to influence at all levels and communicate complex concepts effectively

### **Mathematical Biosciences Institute**

2014 – 2016

#### *Postdoctoral Research Fellow*

Columbus, OH

- Conducted advanced research on computational models of biological systems, developing optimization algorithms and multi-objective methods using genetic and evolutionary algorithms—published 5 peer-reviewed papers plus 1 textbook chapter

## **EDUCATION**

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## **Doctor of Philosophy (PhD) in Mathematics**

2014

### *Virginia Polytechnic Institute & State University*

Dissertation: Optimization and control methods for agent-based models in biological systems. Research involved designing computational algorithms, implementing scalable simulation architectures, and applying optimization methods to complex systems.

## **SKILLS & TECHNOLOGIES**

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**Cloud Platforms & Data Infrastructure:** AWS (S3, data storage) • Azure (Databricks) • Snowflake • Databricks • Data Lake Architecture • ETL/ELT Pipelines • Data Modeling • Platform Integration

**AI/ML & Software Development:** Python (Advanced) • ML Model Deployment • Scikit-Learn • TensorFlow • PyTorch • HuggingFace • OpenAI API • Production ML Systems • Model Validation • Performance Monitoring

**Data Engineering & Architecture:** Data Engineering (10+ years) • Database Design • Data Pipelines • SQL • Data Quality & Governance • Metadata Management • System Integration • API Design

**Full-Stack & Web Technologies:** JavaScript/TypeScript • React • Node.js • Vite • Tailwind CSS • Google OAuth • Supabase • REST APIs

**Regulatory & Compliance:** GxP Compliance • FDA Regulations • 21 CFR Part 11 • HIPAA (Awareness) • Data Governance • Quality Standards • Audit Trails • Security Controls

**Leadership & Strategy:** Team Leadership (3-7 direct reports) • Strategic Roadmap Development • Cross-Functional Collaboration • Stakeholder Influence • Vendor Management • Hiring & Mentorship • Matrixed Organizations

## **PRESENTATIONS & PUBLICATIONS**

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- CHPA Regulatory, Scientific & Quality Conference (2025) — Solo Presenter: The Impact of AI on FDA-Regulated Industries
- Redica Systems Webinar (2025) — Solo Presenter: From Reactive to Proactive: Leveraging AI/ML to Improve the Quality Unit
- ISPE Annual Meeting & Expo (2025) — Solo Presenter: Navigating FDA Compliance - Outsourcing Facility Inspections

## **PUBLICATIONS**

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- "Optimization and control of agent-based models in biology: a perspective" — Bulletin of Mathematical Biology, 2017
- "A computational model of invasive aspergillosis in the lung and the role of iron" — BMC Systems Biology, 2016
- "Optimization of agent-based models: scaling methods and heuristic algorithms" — Journal of Artificial Societies and Social Simulation, 2014