

Ryan N. Lichtenwalter, Ph.D.

GenAI and Data Science Engineering Leader

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SUMMARY

Engineering leader with a Ph.D. in computer science and two decades spanning defense software, machine learning and network science research, human genetics, insurance, and financial regulation. Has led teams of 5–10 for more than five years, turned FINRA’s research-grade regulatory GenAI platform into an enterprise product used weekly by more than 1,800 employees, and developed staff into leaders. Stays hands-on in LLM systems, evaluation, and production engineering.

EXPERIENCE

Financial Industry Regulatory Authority (FINRA)

Director of Technology – Enterprise GenAI Solutions Engineering Training

Denver, Colorado, USA

May 2026 – Present

- **Enterprise GenAI Training:** As curriculum designer and sole content developer, built FINRA’s corporate GenAI curriculum in five months with Kiro-accelerated development: 6 tracks, 20 courses, and 87 modules, with 617 slides, more than 190 code sandbox exercises, 83 interactive widgets, and 695 concept-check questions, tailored to FINRA’s mindset, toolset, and skillset. Topics span prompt engineering, retrieval techniques, agents and MCP, evaluation, production LLM concerns, and GenAI for leaders.
- **Technologies:** Kiro, MCP, agents, RAG, DeepEval

Director of Technology – Regulatory GenAI

January 2025 – May 2026

- **Platform Turnaround:** Assumed leadership of FILLIP, FINRA’s regulatory GenAI platform, as a research-grade application and re-engineered it into an enterprise product while it served live users. Within a year it was FINRA’s most widely adopted platform, with more than 1,800 weekly active users, over half of all employees.
- **Delivery and Reliability:** Instituted CI/CD, automated testing, blue-green deployment, and test hygiene, moving from ad hoc to weekly releases and eliminating recurring production outages.
- **Architecture:** Defined the platform architecture: an LLM gateway (LiteLLM) over Amazon Bedrock, a programmatic API at parity with the UI, and agentic retrieval (Google ADK, Strands) spanning LLM map-reduce over long and many documents, agent-generated queries over structured data, and RAG.
- **Hands-On Engineering:** Wrote high-leverage core code the team built on: LLM architecture, cross-stack structured logging and error handling, a unit-testable system prompt framework, core libraries, tooling, and CI.
- **Leadership:** Hand-picked and led a team of eight, hiring two. With the Senior Director, aligned Product, Operations, Legal, and the Enterprise Data Privacy Office on human-in-the-loop controls and user training.
- **People Development:** Identified and invested in high-potential staff on the data science and FILLIP teams, overseeing five promotions (one skip-level), and recommended the successor now leading FILLIP as Director.
- **Technologies:** Python, Amazon Bedrock, LiteLLM, Google ADK, Strands, RAG, DeepEval, CI/CD

Director of Technology – Data Science

September 2022 – January 2025

- **Center of Excellence:** Led a team of seven as FINRA’s natural language data science center of excellence, mentoring the team in setting technical direction as the work moved from classical NLP to LLMs. Hired three team members, managed a multi-million-dollar budget, and conceived the seed of FINRA’s flagship GenAI platform, FILLIP, to demonstrate LLM capabilities quickly and drive business results.
- **Regulatory Workflow Delivery:** Delivered summarization, extraction, and classification solutions across regulatory workflows, including regulatory summaries, reports, and SEC filing processing, saving thousands of hours.
- **Innovation:** Technical lead of the [2024 FINRA Createathon](#) team that won the hackathon’s grand prize and its challenge division among 32 teams from 11 departments with NITRO, an LLM-assisted regulatory document-tagging prototype advancing FINRA’s machine-readable rulebook.

Transamerica

Manager Data Science

Denver, Colorado, USA

March 2021 – August 2022

- **Team Leadership:** Led a data science team of five to seven, hiring three full-time employees, four interns, and a rotation program participant in a challenging market. Rebuilt strained stakeholder relationships through responsiveness and repeated on-time delivery.
- **Portfolio:** Sales forecasting, advisor and customer segmentation, organizational network analysis, underwriting automation, claims fraud detection, and call center transcription.
- **Platform Migration:** Led the migration of two analytics teams from Domino Data Lab to Amazon SageMaker to cut costs, personally building compliant custom images and S3 project synchronization.

Lead Data Scientist

December 2019 – March 2021

- **Project Leadership:** Technical lead and project manager for underwriting automation (team of four plus contractors); mentored a colleague on a tiered sales-lead model (geospatial, PU learning, and bipartite models).
- **Core Library:** Built the team’s shared Python library, including cryptographic pandas extensions with automatic key management, C++ geospatial indexing and POPC clustering with Python bindings, a SQL reader with 5× lower time and memory than pyodbc, and a model and cost monitoring framework.
- **Technologies:** Python, pandas, scikit-learn, C++, pybind11, SQL, Amazon SageMaker, Amazon Redshift, Docker

Human Pain Genetics Lab, McGill University

Researcher

Montreal, Quebec, Canada
January 2014 – December 2019

- **Machine Learning and Statistics:** Developed high-performance machine learning methods and software for multivariate genetic analysis on TB-scale data and served as statistical advisor to collaborating researchers.
- **Data Systems:** Designed an efficient PostgreSQL genotype representation (published and open source) and built database-driven web portals for clinical studies and collaborators.
- **Infrastructure:** Ran the lab’s secure compute and network infrastructure end to end, from Linux servers, virtualization, and storage to LDAP, Kerberos, and VPN.

Earlier Career

Network science research and defense software engineering

2006 – 2012

- **Post-doctoral Researcher, University of Notre Dame (2012):** Graph models and algorithms for large networks with Battelle and Pacific Northwest National Laboratory.
- **Engineering Leadership Development Program, Lockheed Martin (2006–2007):** Software architecture, mission-critical C, C++, and Ada systems, and configuration management; spot award.

EDUCATION

The University of Notre Dame

Ph.D., M.S., and B.S. cum laude in *Computer Science*

Notre Dame, Indiana, USA
2012, 2009, 2006

- **Dissertation:** Network analysis and link prediction: effective and meaningful modeling and evaluation

SELECTED PROJECTS

- **dir2text:** Python library and CLI on PyPI that renders directory trees and file contents in LLM-ready formats.
- **LPmade:** Open-source link prediction framework, published in *Journal of Machine Learning Research*.
- **Home Lab Platform:** Self-hosted platform of 28 services with separate DEV, QA, and PROD environments: Kubernetes (k3s) with Flux GitOps, Authelia and LDAP single sign-on, OpenBao secrets, Harbor with Trivy scanning, Renovate, Gitea CI, and shared LLM, embedding, speech-to-text, and text-to-speech gateways.
- **More:** An LLM memory benchmark, an agentic tax-preparation framework, a fast C++ **k-d tree**, C++20 **clustering**, and dozens of other private projects in GenAI, ML, systems, and infrastructure; glad to discuss any in depth.

SELECTED PUBLICATIONS

18 peer-reviewed publications with more than 1,650 citations (Semantic Scholar).

Lichtenwalter R.N., Lussier J.T., and Chawla N.V. **New perspectives and methods in link prediction**. In: *ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, 2010.

Yang Y., **Lichtenwalter R.N.**, and Chawla N.V. **Evaluating link prediction methods**. In: *Knowledge and Information Systems*, 2015.

Lichtenwalter R.N. and Chawla N.V. **Vertex collocation profiles: subgraph counting for link analysis and prediction**. In: *International World Wide Web Conference*, 2012.

Lichtenwalter R.N. and Chawla N.V. **LPmade: link prediction made easy**. In: *Journal of Machine Learning Research*, 2011.

Meloto C.B., Benavides R., **Lichtenwalter R.N.**, et al. **Human pain genetics database: a resource dedicated to human pain genetics research**. In: *Pain*, 2018.

HONORS, SPEAKING, AND TEACHING

- Ten FINRA BOND Awards (peer- and manager-nominated), 2022–Present
- More than two dozen internal FINRA talks on GenAI, several to all of FINRA Technology
- Arthur J. Schmitt Presidential Fellow (>\$140,000), 2007–2011; NSF GRFP Honorable Mention, 2009
- Timken Company Scholar (≈\$140,000), 2002–2006; National Merit Scholar, 2002
- Lecturer, Notre Dame: Data Structures (undergraduate); Directed Readings in ML and Computer Vision (graduate)