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John H. Ring IV

Full-Stack Data Science Leader

Acting head of Cyber Security & Fraud Data Science at MassMutual. Built the company's first in-house ML models for security and fraud detection, outperforming vendor solutions. Architect end-to-end solutions from data ingestion through real-time scoring to SIEM integration. PhD Computer Scientist experienced in creating greenfield data science portfolios from ideation through production deployment.

Experience

March 2021 – Present

Data Science - Cyber Security & Fraud, *MassMutual*, Remote
Acting Domain Head (August 2023 – Present) – *offered position, declined to re-locate*
Lead Data Scientist (March 2021 – August 2023)

- Created CATCH (Cyber Anomaly Threat Capture Heuristics)
  - To-date CATCH is involved in $\sim 40\%$ of detected true positives and is often the first or sole indicator of compromise
  - Became primary User and Entity Behavior Analytics tool at MM, exceeding vendor capabilities while saving $\$1.2M/\text{year}$
  - Addresses key coverage gaps across the ATT&K Framework and audit mitigations
  - Fully integrated into the SIEM and analyst workflows
- Led creation of FLAG (Fraud Anomaly Leads Generator) covering in-force fraud and customer account takeover
- Created the first in-house Fraud and Cyber Security Models at MM
- Lead a distributed team of 4-5 data scientists, established domain's portfolio, and collaborate with global partners
- Design and implement full-stack data science solutions: from raw data ingestion through transformation to near real-time production scoring
- Lead MassMutual's GenAI Guild, co-organized GenAI and Agentic AI hackathons, driving innovation and LLM adoption across the enterprise
- Conduct strategic vendor assessments for data platforms and AI capabilities, informing enterprise technology decisions
- Authored open source software policy, establishing governance framework
- Provide actionable metrics to stakeholder executive & senior leadership
- Serve as technical advisor for enterprise cloud and AI strategy, establishing MLOps standards and security frameworks

June 2017 – February 2021 **Modeling & Simulation Department**, *MITRE*, Burlington, VT
Computational Finance Engineer (May 2020 – February 2021)
Computer Science Graduate Fellow (June 2017 – May 2020)

- Develop metrics and software to quantify effects of geographic fragmentation on U.S. equities markets by analyzing petabytes of high-frequency financial data
- Authored empirical studies of U.S. equities market microstructure which led to creation of a new DARPA program and $2.6M SEC contract award to MITRE
- Met with SEC Commissioner and advisors to discuss key research findings

2013 – 2017 **Software Engineering Intern**, *Lord MicroStrain Sensing Systems*, Burlington, VT
Embedded systems firmware development for WSDA product line

Education

2018 – 2021 **Ph.D. Computer Science** , *University of Vermont*, Burlington, VT

- Fully funded by UVM Center for Computer Security and Privacy
- Co-founder of UVM – MITRE Computational Finance Laboratory
- Qualifying exams: Algorithms, Machine Learning, Differential Privacy, Compilers
- Thesis: Establishing behavioral baselines for computational systems: two case studies
- Research featured in Wall Street Journal: "Brief Price Gaps in Stocks Cost Investors $2 Billion a Year" (Feb 2019)

2016 – 2018 **M.S. Computer Science** , *University of Vermont*, Burlington, VT

- Fully funded graduate teaching fellowship; co-taught programming languages, and modeling complex systems

2012 – 2015 **B.S. Computer Science**, *University of Vermont*, Burlington, VT

Select Academic Publications

2022 **Ecological and coevolutionary dynamics in modern markets yield nonstationarity in market efficiencies**. Complexity

2021 **Methods for host-based intrusion detection with deep learning** (lead). Digital Threats

2020 **Fragmentation and inefficiencies in US equity markets**. PLoS ONE

2020 **Connected graphs with a given degree sequence** (lead). NetSci

2019 **Proof-carrying network code**. ACM CCS

Technical Summary

Domain Expertise: Cybersecurity and threat detection | Fraud detection and prevention | User and entity behavior analytics (UEBA) | Financial market microstructure

Leadership & Strategy: Data scientist development & mentorship | Develop enterprise ML solutions | Driving company-wide AI/ML adoption | Strategic vendor assessment | Roadmap development | Mapping DS solutions to business problems

ML & Analytics: Real-time streaming analytics | Production ML systems for anomaly detection and fraud prevention | Deep learning for security applications | Model deployment and monitoring at scale

Engineering & Infrastructure: Python (NumPy, SciPy, Pandas, Polars) | Rust | AWS Cloud Architecture | Docker | Kafka | Enterprise MLOps | PostgreSQL | DuckDB | SIEM (SumoLogic) | Git | Linux System Administration