Miriam Friedel, Ph.D.

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EXECUTIVE SUMMARY

- Experienced executive who excels at navigating the complex and constantly changing landscape of ML and AI.
- Deep understanding of both the technical and organizational requirements necessary to build an AI-first culture and deliver solutions with tangible ROI.
- Proven ability to navigate conflicting stakeholder viewpoints, remove roadblocks, and facilitate progress on complex engineering efforts, particularly those that sit at the intersection of statistical rigor and engineering at scale.
- Clear, engaging communication skills that translate equally well to community engagement, highly technical discussions with scientists and engineers, and influencing decision-making at the EVP/C-suite level.

PROFESSIONAL EXPERIENCE

Capital One Machine Learning Experience Technology, Richmond, VA

Vice President, Machine Learning Engineering — *7/24-present*
Senior Director, Machine Learning Engineering — *1/22-7/24*
Director, Machine Learning Engineering — *4/21-1/22*

- Since 2021, I have been the leader of a multi-layered engineering organization responsible for enterprise tooling used in critical ML and AI models across all of Capital One. Under my leadership, the team has doubled in size from 35 to over 70 engineers, and has established a reputation for engineering excellence among our business partners with revenue impacts of over $100M annually and growing. Highlights:
    - Delivery and maintenance of a centralized marketplace of tooling for ML and GenAI capabilities. Marketplace features inner-sourced Python libraries, purpose-built Kubeflow components, template workflows used in common Capital One pipelines, and a CLI to enable contributions. Reduced data scientist onboarding time to enterprise platforms by 75%.
    - Engineering support in the development of high-value credit risk and valuations models. Improved scalability by leveraging distributed compute (Dask, Spark) and GPUs to improve both model training and data processing time by 90% across multiple use cases.
    - Delivery of an SDK to more easily enable the creation, storage, and representation of tabular data as a graph. Initial pilot to identify Small Business Card rings generated ~$7M in savings through the identification of fraud and scam rings that were previously undetected via more traditional methods.
    - Engineering support for custom embeddings, including tooling to train sequential embeddings and pipelines for production deployment.
- Responsible for multi-year replatforming effort of Capital One's loss forecasting framework. This framework enables Capital One's compliance with the Dodd-Frank act, tests economic scenarios to ensure adequate capital to sustain an economic downturn (CCAR), and provides input to shareholder quarterly financials.
    - Overcame significant organizational and technical hurdles to migrate complex

orchestration pipeline to Kubeflow 6 months ahead of schedule, while improving code quality and reducing technical risk.
    - Legacy system deprecation saves ~$1M/year and eliminates several technical risks and engineering anti-patterns.
    - Identified and delivered key ML/AI platform improvements to all data scientists and MLEs at Capital One, improving instance availability, scalability, and user experience in authoring and executing complex pipelines.
- Assumed leadership of an enterprise platform for analysts following a major reorganization in July 2025. Stabilized team after departure of a long-tenured leader and reduction in force of 50%. Aligned team around consolidation and deprecation of duplicative functionality and defined a roadmap to prioritize integration with existing AI/ML platforms. Maintained an NPS of 44 through change and disruption.

Director, Software Engineering *7/20-4/21*

- Leader of a 12-person, cross-functional team consisting of software engineers, machine learning engineers, and data scientists tasked with delivering ML-powered solutions supporting Capital One's Global Finance organization.
- Led the convergence of disparate time-series forecasting solutions into a single product while navigating personnel and engineering challenges, resulting in the successful delivery of a solution well-received by Senior Leadership, including the CFO.
- Enabled operationalization of an end-to-end ML pipeline executing daily anomaly detection across data sources that feed critical, federally-required reporting.

Skafos, LLC, Charlottesville, VA

Director of Data Science *5/18-6/20*

- Provided data science expertise and vision towards both product design and roadmap for early stage start-up, including identifying and testing new technologies and frameworks.
- Conference speaker and public liaison for the company, providing thought leadership and education around ML-powered mobile + retail solutions.
- Worked closely with the CEO, Director of Product, and VP of Engineering to determine product market fit, gather requirements, build prototypes, and execute marketing and sales strategy.
- Assisted customers and prospective customers by identifying, architecting, and helping to build the optimal ML-powered solutions for each use-case.
- Primary technologies and modeling techniques used: Python, Keras, TensorFlow, CoreML, AirFlow, Google Cloud, collaborative filtering, computer vision, neural networks.

Elder Research, Inc., Charlottesville, VA

Director and Senior Scientist *10/16-5/18*

- Responsible for P&L of a sixteen person team, with over $2M in annual revenue, including direct management of seven data scientists.
- Provided vision, direction, and leadership across multiple simultaneous engagements, translating stated client needs into actionable solutions and enabling my team to deliver exceptional data science products to our clients.
- Directly communicated with senior executives at multiple clients to explain findings, answer questions, and help guide overall analytics strategy.
- Worked closely with Business Development team to source new business, communicate value,

and write customized proposals and statements of work to meet the needs of each potential client.
- Contributed to key strategic organizational decisions as member of the Senior Leadership Team.

Research Scientist *10/14-10/16*

- Key team member for creation of user segments for high profile software client. Collaborated on ETL process, clustering and decision tree modeling, development of R code, and integration of software development best practices. Lead successful deployment and user training of custom software platform for follow-up project.
- Team lead for churn modeling for regional telecommunications client. Successfully refreshed existing model and deployed to production. Strengthened client relationship and created roadmap for future project work.
- Served as product manager for Kuri, the deployment platform for model management in R. Focused on model status reporting and R library deployment.
- Primary technologies and modeling techniques used: Python, R, SQL, SPSS Modeler, Spark, Docker, k-means clustering, classification and regression via decision trees, random forest, and logistic regression models

Mouse Imaging Centre (MICe), Toronto, ON

Research Analyst *10/12-07/14*
Programmer/Analyst *04/11-10/12*

- Responsible for the design, implementation, and maintenance of software used by 30+ researchers at MICe.
- Supported and trained students, post-docs, research staff and visiting scientists on software usage and statistical analysis methods.
- Leader of design, development, testing, and documentation for new pipelining and neuroimaging registration toolkit. https://github.com/Mouse-Imaging-Centre/pydpiper
- Responsible for image processing and data analysis of magnetic resonance images of mouse brains as part of multiple international collaborations. Identified and addressed errors in image processing; performed extensive statistical analysis and report writing; presented results to collaborators. Co-author on 8 papers.
- Primary technologies and modeling techniques used: Python, R, shell scripting, git, linear regression, linear mixed-effects models

Princeton Consultants, Inc., Princeton, NJ

Consultant *07/08-06/10*
Senior Associate *11/06-07/08*

- Business analyst for first deliverable of a multi-year, high-visibility project to build custom IT platform. Contributed to design sessions with client subject matter experts; documented requirements; trained clients on usage of product. Key member of support team after go-live.
- Assumed responsibility for GUI component of two applications used by high-profile client. Successfully executed major code restructuring that helped improve performance by over 200%. Implemented subsequent enhancements.
- Led design, development and testing for key software deliverable to transportation industry client. Main point of contact for client questions. Assumed role of in-house subject matter expert, providing guidance on development and testing.
- Primary technologies used: C++, C#, SQL, svn

SPEAKING AND COMMUNITY ENGAGEMENT

- **Invited Panelist,** 2025 AI Ready RVA Launch
- **Invited Keynote Panelist,** 2024 University of Virginia, Datapalooza 2024
- **Invited Panelist**, 2024 HITEC Leadership Summit
- **Invited Guest Lecturer,** 2023-2025 University of Virginia DS1001: Foundations of Data Science
- **Invited Podcast Guest,** 2023, *Delivering AI Systems in Highly Regulated Environments,* TWIML AI Podcast
- **Invited Panelist**, 2022 University of Virginia Datapalooza, Careers in Data Science Panel
- **Invited Panelist,** 2022 TwiMLCon, Culture and Organizational Strategies for ML Success
- **Invited Speaker,** 2022 Data Connect Conference
- **Invited Guest Lecturer,** 2019-2022, *Hot Topics in Analytics,* Darden School of Business, University of Virginia
- **Invited Speaker,** *Standardizing the Model Development Process,* 2021 Data Points Summit: Healthcare and Finance
- **Steering Committee Member + Keynote Speaker**, 2020 RVA Data Science Summit
- **Invited Panelist**, *DevOps in Data Science.* Tom Tom Applied Machine Learning Conference, Charlottesville, VA, April 2019
- **Invited Panelist**, *Panel of Women Executives and Founders in Data Science.* Women in Data Science Conference, Charlottesville, VA, March 2019

ACADEMIC EXPERIENCE

University of California, Santa Barbara, Santa Barbara, CA

Research Associate/Graduate Student Researcher *06/02-11/06*

- Performed computational research in protein folding and aggregation using simplified models and statistical physics. Projects emphasized understanding how external factors influence folding in a general way. Research involved significant programming, data analysis, presentations, writing and collaboration with other scientists.
- National Science Foundation Graduate Research Fellow (2003-2006)
- Primary technologies and methodologies used: FORTRAN, C, Perl, shell scripting, Langevin dynamics, statistical physics.
- Thesis Title: Using Molecular Dynamics Simulations of Proteins to Understand the Effects of Confinement

EDUCATION

University of California, Santa Barbara, Santa Barbara, CA *2001-2006*

Ph.D., Physics (2006)

Brown University, Providence, RI *1996-2000*

Sc.B., Physics (2000)

SELECTED PUBLICATIONS (Google Scholar)

C. Corre, **M. Friedel**, D. A. Vousden, A. Metcalf, S. Spring, L. R. Qiu, J. P. Lerch, M. R. Palmert. Separate effects of sex hormones and sex chromosomes on brain structure and function revealed by high-resolution magnetic resonance imaging and spatial navigation assessment of the Four Core Genotype mouse model. Brain Struct Funct. 221:997. (2016)

M. Friedel, M.C. van Eede, J. Pipitone, M. M. Chakravarty, and J.P. Lerch. Pydpiper: A Flexible Toolkit for Constructing Novel Registration Pipelines. Front. Neuroinform., 8:67. (2014)

A. L. Wheeler, J. P. Lerch, M. M. Chakravarty, **M. Friedel**, J. G. Sled, P. J. Fletcher, S. A. Josselyn, P. W. Frankland. Adolescent Cocaine Exposure Causes Enduring Macroscale Changes in Mouse Brain Structure. J. Neuroscience, 33 (5) 1797-1803 (2013)

M. Friedel, A. Baumketner, and J.-E. Shea. Stability of a protein tethered to a surface. J. Chem Phys. 126: 095101 (2007)

M. Friedel, A. Baumketner, and J.-E. Shea. Effects of surface tethering on protein folding mechanisms. Proc. Natl. Acad. Sci., USA. 103:8396-8401 (2006)

M. Friedel and J.-E. Shea. Self-assembly of peptides into a β-barrel motif. J. Chem. Phys. 120:5809-5823 (2004)

M. Friedel, D. J. Sheeler and J.-E. Shea. Effects of confinement and crowding on the thermodynamics and kinetics of folding of a minimalist β-barrel protein. J. Chem. Phys. 118:8106-8113 (2003)