James Triveri

DATA SCIENTIST

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Summary

Experienced Data Scientist with 10+ years of insurance industry experience. High degree of expertise in Machine Learning / Deep Learning, predictive modeling and scientific computing, as well as geospatial data science and network analysis. Well-versed in both theoretical and applied aspects of machine learning, with deep knowledge of popular machine learning libraries and frameworks. Highest levels of competency with Python, R and C, with extensive real-world experience working with Spark and Dask. Contributor to popular open-source libraries and creator of `trikit`, an open-source library of actuarial reserving methods used by actuaries across multiple specializations.

Work Experience

The Mutual Group West Des Moines, IA

Senior Data Scientist 2024 – Present

- Designed and implemented real-time pricing guidance for underwriting to support new and renewal business decisions, improving pricing accuracy and consistency across the book.
- Developed and deployed internal application servers to host interactive web applications for Underwriting and Risk Control teams, enabling data-driven decision-making and delivering substantial cost savings compared to third-party solutions.
- Integrated third-party geospatial datasets (e.g., OpenStreetMap) to enrich modeling initiatives and produce market share insights at the U.S. county level.
- Enhanced the organization's technical hurricane model by incorporating new spatial features and exposure characteristics to improve regional risk differentiation.
- Led the migration of analytics workloads to AWS, establishing automated infrastructure pipelines for reproducible compute environments and accelerating deployment of analytical models.
- Facilitated a 10-week Python programming intensive for actuarial and analytics staff, demonstrating scalable alternatives to Excel-based workflows and elevating team technical proficiency.

Arity (Allstate) Chicago, IL

Senior Data Scientist 2021 – 2024

- Member of Arity's Data Science Research team, tasked with uncovering actionable insights for the purpose of making transportation smarter and safer. Focused on applied telematics research, exploring topics such as driving behavior, trip classification, driver vs. passenger prediction and trip synthesis.
- Responsible for RiskMap, a novel unsupervised learning framework designed to quantify intrinsic risk for every road in the United States. Implemented a highly robust solution targeting the 200 largest metropolitan regions in the U.S., assigning risk scores to 50M+ third-party connections.
- Designed and implemented a scoring routine to assign relative risk scores to third-party GPS data which addressed the high degree of noise in third-party location traces. Relied on space-partitioning data structures such as KD-Tree / BallTree to efficiently project GPS trajectories onto road links using a probabilistic approach.

- Leveraged Generative Adversarial Networks (GANs) to create synthetic GPS trajectories, proposed as a solution to gain insight into aggregate geospatial patterns while protecting user privacy. Gained deep familiarity with PyTorch and related deep learning libraries.
- Worked on scaling a driver-vs-passenger machine learning classifier. Designed a solution capable of scoring hundreds of millions of driver trajectories on a recurring basis with an order-of-magnitude reduction in runtime compared with legacy approaches.
- Collaborated with graduate students from the University of Wisconsin's Geospatial Laboratory and co-authored *Rethinking the regularity in mobility patterns of personal vehicle drivers: A multi-city comparison using a feature engineering approach.*

Guide One Mutual West Des Moines, IA
Lead Data Scientist 2020 – 2021

- Utilized Markov Chain Monte Carlo (MCMC) methods in order to quantify reserve variability for the annual Statement of Actuarial Opinion. Incorporated statistical techniques to account for correlation between various lines of business, allowing for more robust, accurate reserve estimates.
- Modeled size-of-loss distributions via censored / truncated maximum likelihood estimation which blended carrier experience with industry standards for use in financial planning, quarterly reserving projections and reinsurance analysis.
- Served as primary architect of a catastrophic modeling framework. Fused CAT-related datasets from NOAA, ISO and other publicly available artifacts into a single source used by actuaries to project future catastrophic losses based on prior experience.
- Designed and implemented a batch scoring framework that combined 100+ peril-specific rating factors with base loss costs to determine technical premium estimates for historical exposures.
- Developed web applications in Shiny and Dash used by underwriters to assist with rating decisions.
- Oversaw migration to AWS for 20+ analysts in Actuarial and Finance and was responsible for server maintenance and administration.
- Hosted bi-weekly Q&A sessions attended by 15+ analysts to provide a better understanding of R, Python, Linux, SQL and Git, and to introduce various concepts in big data, machine learning and predictive analytics.

CNA Financial Chicago, IL
Data Scientist 2015 – 2020

- Designed and implemented a revised approach for developing the annual incidence assumption for the Long Term Care book of business. Replaced an existing first-moment approach with a more robust, regularized GLM implementation and supplemented point estimates with ranges of probable outcomes to assist in quantifying future claim volatility.
- Key contributor to the Fraud, Waste and Abuse initiative, intended to identify and mitigate questionable claimant activity. Relied on four complementary models, including supervised and unsupervised machine learning methods, network analysis and optical character recognition in order to convert handwritten claim notes to searchable plain text for use by claim investigators.
- Developed frequency, severity and aggregate loss models to estimate large losses across the enterprise. Created a fully-autonomous, online solution capable of integrating new claims data on a recurring basis and updating projections to compare actual vs. expected development across lines of business.
- Established an environment for analyzing Quotes Not Taken data to highlight trends for the purpose of informing future rate revisions.
- Participated in a corporate partnership with Girls Who Code, a program intended to expose high school girls to real-world applications of technology and programming.

Centene Corporation Chicago, IL
Actuarial Analyst 2013 – 2015

- Determined rates for qualifying health plans in accordance with the Patient Protection and Affordable Care Act (PPACA), tailored for low-income individuals and available through the Federal Insurance Marketplace.
- Worked closely with the Departments of Insurance for multiple states, ensuring that health plans were in compliance with local, state and federal regulations, and responded to rate filing objections.
- Utilized data mining techniques to determine an aggregate risk score estimate based on the composition of an insurer's enrollment. Conducted an *a priori* analysis which used historical Medicaid data to determine whether a member lacking a diagnosis code for a medical claim suffered from a condition based on prescription history.

Core Competencies

Tools & Frameworks
Linux, AWS, AWS Glue, EMR Studio, PySpark, Dask, Python, C, CUDA, JupyterLab, NumPy, Xarray, SciPy, Pandas, scikit-learn, PyTorch, PyTorch Geometric, Pyro, NetworkX, GraphBLAS, OpenCV, scikit-image, Datashader, Folium, PySAL, QGIS, R, Scala, F#, SQL, Git

Education

Augustana College Rock Island, IL
B.A. Mathematics and Physics

Georgia Institute of Technology Atlanta, GA
M.S. Computer Science, Machine Learning Specialization

Miscellaneous

Computer Science Instructor, Des Moines Area Community College (DMACC): 2023 - Present

- Instructor for introductory Python courses and creator of the final Data Science Course required for DMACC's 3-course Data Science certificate program, focusing on classical machine learning, deep learning and natural language processing.
- Member of DMACC's AI Advisory committee, providing strategic guidance on curriculum design, emerging technologies, and industry-aligned skills for the college's AI and data science programs.