Alexander De Costa

Data Scientist — U of T Mathematics & Statistics Graduate
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Current modeling work confidential; please contact for details.

Experience

RiskScope *Jun 2025 – Present*
Co-founder & Lead ML Consultant

- Building and deploying end-to-end machine learning pipelines for fraud and anomaly detection in production environments
- Achieved an average precision of 0.4 on a highly imbalanced dataset (0.129% fraud rate), with ongoing improvements targeting 0.6–0.7.
- Developed a flexible framework enabling rapid generation of strong fraud detection models for diverse use cases within 1–3 hours.

Manulife *Jan 2023 – May 2023*
Actuarial Student – Experience Analytics

- Maintained and validated experience monitoring reports used by senior actuarial leadership to inform assumption setting and risk decisions.
- Partnered with valuation and pricing teams to modernize analytics workflows, improving data accuracy and business impact.
- Enhanced reporting efficiency by streamlining data handling processes and improving code documentation across R, SAS, and SQL.

Personal Projects

Algorithm Development for Distributionally Robust Portfolio Optimization *July 2025 - Present*

- Implementing state-of-the-art DRO portfolio optimization methods that improve Sharpe ratio by 10–30% and reduce volatility by up to 15% compared to their non-DR counterparts, with especially strong gains in volatile markets.
- Applying advanced probability theory and custom concentration inequalities on ambiguity sets and risk measures to further enhance portfolio performance.

AutoML for Tabular Datasets *May 2025 - July 2025*

- Built a modular AutoML engine to reduce tuning time to under one hour on typical tabular datasets.
- Combined heuristic-driven feature/model selection with Bayesian optimization for efficient pipeline search.
- Continuously adding new models and feature engineering methods to boost performance and flexibility.

Education

University of Toronto *Sep 2020 – May 2025*
BSc, Mathematics and Its Applications (Probability/Statistics)
Relevant coursework: Measure Theory (Graduate course), Functional Analysis (Graduate course), Stochastic Processes (Graduate course), Operator Theory (Graduate course), Mathematical Statistics, Optimization

Professional Skills

- Strong communicator skilled at translating advanced math into actionable models for technical and business audiences.
- Collaborative, self-directed, and comfortable leading modeling efforts end-to-end.
- Experienced in technical writing, mentoring, and presenting models in high-stakes settings.

Primary tools used across projects: Python, PyTorch, scikit-learn, SQL, R, Optuna, Jupyter; basic experience with Docker, FastAPI, MLflow, and AWS for deployment and pipeline automation.