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.
- Developed interactive dashboards and automated reports in Excel and QlikView, leveraging financial and risk analysis techniques to deliver actionable insights for business and actuarial teams.

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, AWS