

# Alexander De Costa

ML Engineer — U of T Mathematics & Probability Graduate  
Toronto, Ontario

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Current modeling work confidential; please contact for details.

## Experience

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### RiskScope

*Jun 2025 – Present*

Co-founder & Lead ML Consultant

- Designed a modular AutoML framework in Python using Optuna for Bayesian optimization, integrating adaptive feature transformations and robust preprocessing for sparse, imbalanced fraud data.
- Developed interpretable pipelines surfacing subtle signals in noisy data with calibrated models and drift-aware diagnostics.
- Engineered temporal features and redundancy-reduction logic to improve model generalization across heterogeneous datasets.
- Tuned models for rare-event detection using class imbalance-sensitive evaluation and nonstationary-aware cross-validation.

### Manulife

*Jan 2023 – May 2023*

Actuarial Student – Experience Analytics

- Maintained and validated experience monitoring reports using R, SAS, and SQL.
- Partnered with valuation and pricing teams to modernize analytics supporting actuarial assumptions and risk frameworks.

## Independent Research

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- Currently working on improving martingale bounds in adaptive algorithms.
- This aims to provide tighter theoretical guarantees for algorithms like SGD variants, online learning methods, and reinforcement learning policies—enabling more stable and efficient training on streaming, nonstationary data.

## Education

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### University of Toronto

*Sep 2020 – May 2025*

BSc, Mathematics and Its Applications (Probability/Statistics)

Relevant coursework: Measure Theory, Functional Analysis, Stochastic Processes, Mathematical Statistics, Operator Theory

## Professional Skills

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- 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.*