

Arthur Maffre

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Highlights

- Designing intelligent systems for **dynamic pricing** and **portfolio** generation
- Research funded by **IVADO** at **Mila** (20k/year)
- Finalist at **McGill-FIAM Hackathon** | 3rd place at **Polytechnique Datathon**
- Bridging **AI theory** and real-world impact — from **GFlowNet** to public spending

About Me

Graduate student at **Mila** (Université de Montréal), building intelligent systems that push the **boundaries of optimization** and decision-making. Currently exploring **GFlowNet**-based architectures for **pricing** and **portfolio generation**. I strive to turn complex ideas into actionable models — always aiming higher.

Education

MSC	Université de Montréal - Mila , Computer Science	Montreal, QC, CA
	Supervisor : Prof. Margarida Carvalho	Sept 2025 – Aug 2027
	<ul style="list-style-type: none">• Research on GFlowNet-based for dynamic pricing and portfolio generation• Focus on reinforcement learning, combinatorial optimization, and AI planning• Funded by a \$20,000/year IVADO research scholarship	
BS	Université de Montréal , Economics - Honours Program	Montreal, QC, CA
		Sept 2022 – Aug 2025
	<ul style="list-style-type: none">• Research assistant on a project supervised by Prof. Arbour• Worked in collaboration with the Chief Justice of the Quebec Superior Court (\$5,000 IQRDJ research grant) on public institution spending modeling• Teaching assistant for Microeconomics I (ECN-2040), a core 2nd-year undergraduate course• GPA: 3.825/4.3	

Research Projects

Meta-FlowNet 🔗	Mar 2025 – present
Mila – Master’s Research Project (2025–2027)	
<ul style="list-style-type: none">• Designed a novel architecture combining GFlowNets with Physics-Informed Neural Networks (PINNs)• Modeled the generation of CDF-like structures from reward-flow trajectories over continuous parameters• Introduced adaptive sampling and active learning mechanisms to boost efficiency in hard regions• Application: dynamic portfolio sequencing, stochastic optimization	
Bilevel Pricing with GFlowNet 🔗	Mar 2025 – present
Honours Thesis – Université de Montréal (2024–2025)	
<ul style="list-style-type: none">• Using a formulated a bilevel pricing model where consumers solve a knapsack problem to maximize utility• Used GFlowNets with Critic to simulate consumer response and improve leader pricing strategy• Integrated mixed-integer programming with generative flow dynamics	
Transformer-GFlowNet for Sequential Portfolio Optimization 🔗	June 2024 – present
Finalist – McGill-FIAM Hackathon 2024	
<ul style="list-style-type: none">• Developed a Transformer-based model to generate vectors of asset allocations• Modeled transaction costs, turnover constraints, and dynamic Sharpe ratio optimization	

- Used **MCMC**-based simulation for sequence interpretability and **XMAP** evaluation

Technical Skills

Languages: Python (advanced), LaTeX, Markdown, Bash, C (basic), Rust (beginner)

Machine Learning & Optimization Framework: PyTorch, Lightning AI, HuggingFace

Models: Reinforcement Learning (PPO, A2C), GFlowNet, PINNs, XGBoost

Tools & Dev environment: Git, Conda, Docker, JupyterLab

Competitions

McGill-FIAM Asset Management Hackathon - Finalist [🔗](#)

Montreal

- Top 10 out of 66 teams
- Built a **Portfolio Transformer** model that directly outputs allocation actions rather than predictions
- The objective function was the **Sharpe ratio**, optimized dynamically with transaction cost constraints
- Presented to a jury of finance professors and industry professionals

Nov 2025

Polytechnique Montreal Datathon - 3rd Place [🔗](#)

Montreal

- Designed an AI system to generate **financial reports** and commentary from raw data in 48 hours
- Focused on financial language generation, analytics, and visual presentation of results
- Awarded a **\$500** prize

Dec 2025

Experience

Brasserie Henri - Birks Hotel, Busboy – Fine Dining

Montreal, QC

Delivered high-end service in a fast-paced luxury restaurant environment

Aug 2023 – Dec 2023

- Maintained exceptional client satisfaction during high-pressure shifts
- Developed attention to detail, **communication**, and teamwork skills

Sabrosa Restaurant, Busboy

Montreal, QC

Assisted with front-of-house service in a casual dining setting

Apr 2023 – Aug 2023

- Managed multiple tables and coordinated with kitchen staff under pressure
- Built interpersonal and **multitasking** skills applicable to client-facing roles

Languages

French: Native

English: Fluent

Extracurricular Activities

- Enjoy strength training and gym **discipline** — consistency builds both body and mindset
- Love working on personal tech projects, especially around AI, optimization, and simulation
- Driven by a long-term goal of launching a **startup** that transforms ideas into real-world impact