William Bourgeois

Quantitative Developer - Machine Learning

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EDUCATION

CFA Institute

Awaiting result: CFA Level III
Sat exam on Aug. 19, 2025
July 2023 – Present

McGill University

M.Sc. in Computer Science, Machine Learning
August 2025 – Present

University of Victoria

B.Sc. in Computer Science, Software Systems Option
May 2021 – April 2025
(With distinction: 8.4 / 9 GPA)

Cegep de Drummondville

Technical Diploma in Accounting & Management
September 2018 – April 2021

SKILLS

Languages

Fluent in English and French

Programming Languages

• Python • SQL • JavaScript

Data Science

• Pandas • PyTorch • sklearn
• Supervised learning models
• Search for hyperparameter tuning
• Model benchmarking
• Database management

Finance

• MVO Markowitz implementation
• Portfolio management & SAA
• Quantitative modelling
• Derivatives proficiency

Accounting

• Financial statements and reporting
• General ledger management

KEY COURSES

• Data Mining
• Algorithms & Data Structures
• Information Visualization
• Software Development Methods

WORK EXPERIENCE

Desjardins Securities (VMD)

May 2025 – Present

• Developed and maintained a multi-LLM research system (“Hydra”) leveraging generative AI, multi-step reasoning, and API-based ensemble querying to produce automated investment reports and insights for portfolio management decisions.
• Rebuilt a large-scale (70GB RAM) originally Excel-based quantitative asset allocation model into a scalable, well-documented Python/Pandas implementation, reducing runtimes from hours to seconds.
• Designed and documented data pipelines and flow diagrams, ensuring transparency, reproducibility, and long-term scalability of investment workflows.
• Engineered internal tools (Python, JavaScript, GUI) to automate reporting and streamline workflows, improving efficiency and accuracy across portfolio management processes.
• Applied capital budgeting (NPV/IRR) to evaluate business cases for internal tool adoption, supporting data-driven decision making.

PROJECTS

Credit Ratings Prediction Models

Developed and benchmarked supervised machine learning models to predict company credit ratings using financial data. Achieved high predictive accuracy (~98%) within one rating notch of the actual rating. Random Forest was the top-performing model, followed closely by a Multi-Layer Perceptron neural network.

Paper: "Predicting Credit Ratings Using Supervised Data Mining Models"

GitHub: Private (proprietary data)

Markowitz Efficient Frontier: MVO Python Implementation

Developed a Python-based implementation of Mean-Variance Optimization (MVO) to optimize portfolio composition and maximize the Sharpe ratio. Leveraged Pandas and matrix operations to efficiently evaluate millions of simulated portfolios. Designed Excel integration for ease of use by non-technical finance professionals, bridging advanced quantitative methods with practical accessibility.

GitHub: github.com/willburgir/PortfolioBuilder

Battlesnake: Multi-Agent AI Competition

Placed 2nd at UVic’s AI Club Battlesnake tournament by developing a Python-based model. Implemented a recursive flood-fill algorithm to evaluate moves and designed complex scoring functions that balanced resource collection, offensive opportunities, and risk avoidance in a multi-agent environment.

GitHub: github.com/willburgir/Battlesnake_The_Flood

ACHIEVEMENTS

• Passed CFA Program Levels I & II on first attempt
• Led my team at McGill x FIAM 2025 Hackathon to develop an ML-driven investment solution using Black-Litterman, XGBoost, FinBERT, and more.