

PATRICK BELLAMY

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EDUCATION

UNIVERSITY OF MELBOURNE

Bachelor of Science, Major in Mathematical Physics (Advanced Track)

Concurrent Diploma in Computer Science

Jakarta Intercultural School

International Baccalaureate Diploma

EXPERIENCE

UNIVERSITY OF MELBOURNE ROCKETRY TEAM:

Feb 2023 – Present

Team Lead

- Developed mathematical and computational models which improved the simulation accuracy of supersonic rocket trajectories by over 5% whilst reducing simulation times by nearly 10x relative to existing models.
- Worked in a small team to develop software for dynamically deployed air-brakes capable of controlling the apogee of supersonic rocket flight using Python, C++, and MATLAB Simulink.
- Constructed in-house validation and software-in-the-loop testing models consisting of exhaustive back-testing, Monte Carlo simulations, and manually constructed test cases.
- Led a team of nearly 100 students, overseeing multiple student researched and developed projects.

AMAZON:

Jan 2024 – Mar 2024

Machine Learning Summer Program

- Ranked within the top 100 in a nationwide mathematics and programming exam open to bachelor's, master's, and PhD students across Australia, earning a spot in Amazon's machine learning summer program.
- Discovered breakthrough innovations and methodologies, enhancing understanding and proficiency in machine learning paradigms through direct engagement with leading Amazon Scientists.

IMC

Apr 2024 – May 2024

Prosperity

- Worked with a team, trading in a variety of securities, including commodities, options, ETFs, and FX.
- Utilized machine learning paradigms to accurately predict the market value of a commodities
- Developed back-testing architecture to be used in validation of quantitative trading models.

CITADEL

JUN 2024

Trading Invitational

- Competed under high pressure in a simulated trading terminal against over 40 other selected participants
- Traded in equity markets, competing as both hedge fund managers and market makers
- Automated the market making process with Python to optimize strategies and performance

PROJECTS

SPORTS BETTING ARBITRAGE & MISPRICING EXPLOITATION

- Built high-frequency web scraping software to aggregate odds from Australia's top sports betting sites.
- Constructed and subsequently trained a machine learning model on historical and real-time data to establish accurate pricing models by predicting NBA head-to-head and player betting market fluctuations.
- Utilized mispriced odds, pricing differences, and delays across oddsmakers to safely maximise betting returns.

SUBWAY-AI

- Developed and trained a machine learning model capable of mathematically scoring the combinations of various sandwich ingredients through a supervised learning paradigm.
- Designed and employed genetic algorithms for the combinatorial optimization of Subway sandwich combinations, reducing the computational load of finding the best possible Subway sandwich by over 450 quintillion computations.

Extracurriculars

- University Network for Investing and Trading - Research Analyst
- University of Melbourne Quantitative Trading Society - Industry Liaison Officer