BRUCE LAU

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EDUCATION

2022-2023 — **Imperial College Business School** — **London, UK**

MSc Risk Management & Financial Engineering

Expecting Merit

Relevant modules: Machine Learning for Finance (79.5), Text Mining (71.6), Empirical Finance (71.5), Financial Engineering (67.2), Advanced Options Theory (65.1)

2019-2022 — **University of Bristol** — **Bristol, UK**

BEng Computer Science & Electronics

Achieved Second-Class Honours (First Division)

Relevant modules: Data-Driven Computer Science (81), Discrete Maths (76), Engineering Maths I (74), Computer Systems B (68), and Computer Systems A (64)

WORK EXPERIENCE

2021
Jun - Sept

TTM Technologies OPCM — **Hong Kong**
Data Analyst Intern

- Implemented a machine learning model to forecast scrap yield percentages for various PCB designs, resulting in over 60% cost savings, averaging +$48k USD in revenue per batch, by preventing overproduction.
- Enhanced machine efficiency and reduced scrap output by 43% using quantitative techniques, including design of experiments, t-tests, and fractal regression; provided sound rationale for the modifications.
- automating statistical computations and production sheet generation using Python, saving the operations department an average of 30 minutes in manual labor.

2021
Mar - Apr

Bank of East Asia — **Shanghai, China**
Interbank Fixed-Income Intern

- Analyzed credit/default and liquidity risks for transactions exceeding ¥50m within China's electronics, PCB, and manufacturing sectors, partnering with prominent banks including Wuxi Rural Commercial Bank
- Developed Python scripts to automate comprehensive big data analysis, encompassing market data extraction, inflation rate application, and historical back-testing; additionally, mentored colleagues for consistent daily execution
- Assessed prior quarter trade outcomes and developed a visually compelling report with custom charts, prominently featured on Bank of East Asia's social media and distributed to premium clients

PROJECTS

2023
Aug - Sept

Numerical Options Pricing:

- Priced exotic options such as look-back, barrier, American and Asian in Python
- Solved PDE's with finite difference methods (Implicit, Explicit and Crank Nicolson scheme)
- Fitting and simulating stochastic processes (Heston model, Vasicek, Cox-Ingersoll-Ross) with MLE and priced path dependent options with Monte-Carlo simulations

2023
May - Jul

Market Neutral Trading Strategy:

- Attained average annual PnL of 71% and 1.16 Sharpe ratio through historical back-testing (2015 - 2023)
- Forecasting volatility of S&P 500 with GARCH and a linear stochastic factor model then shorting volatility with option combinations (straddle, strangle, iron-condor, iron-butterfly)

2023
Feb - Mar

NLP Sentiment Analysis:

- Trained XGBoost and BERT model to predict changes in implied volatility of tech stocks given weekly tweets, achieving an AUC of 0.61

ACHIEVEMENTS

2023 — **Level 4 Diploma in Applied Finance (Amplify Trading)**

- Competed against best performing students from Imperial, Oxford, Cambridge, LBS and LSE in Amplify Trading's Elite Traders Competition

2022 — **IPC Asia Scholars Program First-Class (TTM Technologies)**

- Received for proposing and presenting solutions to general managers and board directors around APAC and developing new standard manufacturing procedures

ADDITIONAL SKILLS

Technical skills:
Python, R, C, Golang, Java, Git, TensorFlow, SciPy, Matplotlib, NLP (word2vec, BERT), Probability and Statistics, Stochastic Calculus, PDE

Languages:
English (native), Cantonese (native), and Mandarin (conversational)