Jaka Widjaja

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https://www.linkedin.com/in/jaka-widjaja-07978118/ | https://github.com/JakaWidjaja/Python-IB-execution | widjaja.jaka@gmail.com

I am a quantitative analyst proficient in developing quantitative, statistical, and time-series models. I have a proven track record of creating effective mathematical models in both banking and hedge fund industries. My technical background in financial engineering, combined with diverse programming skills, enables me to solve complex models. My key **skills** include:

- Proficient in Python (numpy, panda, scipy and matplotlib) with a basic understanding of C++
- Building quantitative/statistical models and back-testing trading strategies
- Developing pricing models
- Hands-on experience with third-party software applications such as Bloomberg, Murex, Git, Jira, and BitBucket

Personal Project

Automated Trading System

https://github.com/JakaWidjaja/Python-IB-execution

Developing an algorithmic trading system in Python using Interactive Brokers. Currently in the process of implementing a strategy by optimising the assets weighting, in a portfolio, such that the portfolio's value shows a mean reverting behaviour.

Professional Experience

ASX November 2021 - Present
Quantitative Analyst – Quantitative Analyst Group

Conducting research and developing pricing models, analytics, and simulation platforms. Presenting model changes and new models to CRO and Risk committee for approval. Mentoring junior team member.
Key achievement:

- **Forward Margin Simulation**. Led the design and development of stress margin simulations in Python, to quantify margin requirements under stress scenarios.
- **OTC Back-testing**. Performed comprehensive research on interest rates OTC products, resulting in the creation of a new margin pricing model that mitigates the autocorrelation effect of overlapping returns.
- **Standard Error Model.** Developed statistical model in Python to estimate standard errors (of VaR), providing management and business units with the flexibility to adjust pricing margins for customers.

Westpac Bank January 2020 - November 2021
Quantitative Analyst - Model Validation

Conducted independent validation of quantitative models utilised for pricing and risk in Financial Markets and Treasury
Key achievement:

- **Bond normal model.** Developed a Bachelier model to price bond options using the Cox Binomial Tree method. The model is actively employed for pricing OTC and ETO American bond options

Mizuho Bank August 2018 – January 2020
Dealing Room Assistant Manager - Risk Management Department

Delivered quantitative solutions to the treasury and sales & trading team, with a focus on developing pricing models for valuing derivatives.

Key achievement:

- **CPI swap valuation.** Developed a pricing model for CPI swaps utilising Monte Carlo simulation to price path-dependent CPI swaps
- **Hedging Strategy.** Developed a hedging strategy for the front office to price structured loan deals with fixed interest and variable notional

Levitas Capital (Volatility Hedge Fund) Jan 2016 – August 2018
Quantitative Research Analyst

Conducted research & development, back-testing, and implementation of trading models.

Key achievement:

- **VIX Index Calculation.** Developed a novel method for calculating the VIX Index using a model-free approach (Taylor series expansion). Back-tested the model in Python, which revealed mean-reverting behaviour
- **Beta Model Development.** Developed statistical models to quantify the relationship between the VIX index and its futures, which improved trading performance
- **Live Monitoring Tools.** Developed real time P&L and risk measurement metrics tools to improve traders' decision making process

FreshFood Corporation Feb 2007 – Dec 2015
Project Engineer/Production Controller

Education History

Master of Quantitative Finance Dec 2015
University of Technology Sydney

Master's Degree Research Project:

Heston Volatility Model. Implementation and calibration of Heston's Volatility model. Implemented the model using Monte Carlo and closed form solution in C++. For Monte Carlo model I implemented antithetic variance method to reduce variance. I derived the closed form solution using characteristic function. Calibrated the closed form model using simulated annealing.

Certificate in Quantitative Finance Jul 2011
7City Learning London, England

Bachelor of Engineering in Mechanical Engineering Nov 2006
University of New South Wales

Thesis Project:

Diagnosis of Turbine Blades. Researching models to identify turbine blades conditions by analysing the vibration characteristics of the protective casing (curved surface). Developed finite element model to identify the vibration frequencies when the blades are subject to different stress conditions. This model allows real time blade diagnostics.

Other Qualification

- NFA Series 3 Registered (U2958632) July 2017