

JANUS B. ADVINCULA

Summary

Quantitative Researcher / Algorithmic Trading Engineer with experience designing, backtesting, and deploying systematic trading strategies across cryptocurrency, forex, and equities. Skilled in feature engineering, volatility modeling, portfolio optimization, and reinforcement learning. Strong background in statistical analysis, time-series forecasting, and distributed computing pipelines. Demonstrated ability to translate research into production-grade trading models with robust risk controls, slippage modeling, and transaction cost analysis.

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 Taguig City, Philippines

EXPERIENCE

Algorithmic Trading Engineer

Algoforce Phils., Inc.

 June 15, 2023 – April 20, 2026  Taguig City, PH

- Built and optimized high-performance quantitative research and trading infrastructure from the ground up – assembled research workstations, fine-tuned BIOS and CPU parameters for low-latency computation, and deployed both Windows 11 and Ubuntu 24.04 environments.
- Set up full research environments including VS Code, Python, and quantitative-research libraries for machine learning, data processing, and statistical modeling (*NumPy*, *pandas*, *scikit-learn*, *statsmodels*, *XGBoost*, *SVM*, *TA-Lib*).
- Developed cross-machine database connectivity for distributed backtesting and research collaboration, migrating from MySQL to PostgreSQL for superior time-series partitioning and indexing performance.
- Built market-data ingestion systems integrating Binance, IBKR, and EODHD APIs, and implemented structured pipelines for intraday and daily OHLC data storage and synchronization.
- Deployed Airflow-based research orchestration system integrated with Celery, MLFlow, and PostgreSQL, automating large-scale parameter sweeps, hyperparameter tuning, and experiment tracking for strategy optimization.
- Provisioned cloud infrastructure on AWS – EC2 for live-strategy deployment, S3 for historical data storage, and ElastiCache/Redis for in-memory streaming, enabling real-time portfolio monitoring across distributed systems.
- Integrated fault detection and alerting subsystems to automatically log model exceptions, notify the team, and update a live matplotlib dashboard (*plt.ion*) for continuous visualization of portfolio performance and system status.
- Built full backtesting framework supporting position sizing, slippage, transaction costs, and portfolio-level P&L with mark-to-market evaluation.
- Implemented statistical bootstrapping engine to model distributions of maximum drawdown, monthly drawdown, monthly returns, Sharpe ratio, and other key performance metrics, providing empirical confidence intervals for strategy evaluation.
- Applied White's Reality Check across thousands of optimized strategies executed in Airflow to statistically validate the significance of backtested performance and eliminate data-snooping bias.
- Introduced Pareto frontiers and meta-scoring systems to evaluate strategies jointly on return, drawdown, sharpe ratio and other metrics, integrating these with White's Reality Check for a multi-objective model-selection framework.
- Designed and deployed cointegration-based trading strategies, initially using z-score signals from price spreads for entry/exit triggers, and later developing a custom signal based on complex analysis optimized via Airflow hyperparameter search.

EDUCATION / CERTIFICATIONS

MITx MicroMasters Certificate in Statistics and Data Science

Massachusetts Institute of Technology on edX

 Mar 2020

 Online

Master of Science in Physics

University of the Philippines

 Jun 2016

 Quezon City, PH

Bachelor of Science in Psychology

University of the Philippines

 Apr 2010

 Quezon City, PH

SKILLS

Python

Numpy

Pandas

TensorFlow

Matplotlib

R

Machine Learning

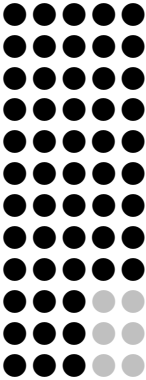
Data Visualization

Statistical Analysis

MySQL

Airflow

MLFlow



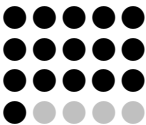
LANGUAGES

English

Filipino

Hiligaynon

Spanish



ORGANIZATION

MIT Alumni Association

Affiliate Member

 May 2020 – Present

- Achieved an annualized alpha of 0.115 against the BTCUSDT Futures benchmark, validating strategy robustness under live and simulated conditions.
- Extended cointegration framework to multi-asset domains, including forex pairs tested via IBKR API and dual-listed equities tested through Saxo Bank API, ensuring consistent cross-market execution performance.
- Implemented beta-hedging mechanism within pairs-trading strategies to dynamically determine relative position sizes based on hedge ratios, minimizing systematic exposure while preserving alpha.
- Developed reinforcement-learning agent to optimize take-profit (TP) and stop-loss (SL) thresholds per strategy, improving reward-to-risk balance and adaptive performance.
- Implemented research pipelines for statistical arbitrage, volatility modeling, feature engineering, and automated strategy benchmarking using in-house distributed computation infrastructure.

Financial Analyst / Python Developer

Alpha OpenSource

📅 May 2022 – June 14, 2023 📍 Quezon City, PH

- Developed machine-learning-based trading strategies leveraging ensemble methods and feature-engineered signals, improving simulated Sharpe ratios and robustness under transaction-cost constraints.
- Implemented volatility forecasting models using GARCH for position sizing and dynamic risk control in index futures.
- Built unsupervised clustering pipelines (k-means) to identify structurally similar strategies and enable cluster-based portfolio allocation and diversification.
- Collaborated with team lead on signal validation, walk-forward optimization, and feature selection using cross-validation and out-of-sample testing.
- Researched alternative alpha signals via statistical features, momentum asymmetries, and volatility clustering.
- Developed reinforcement learning prototypes for trading, focusing on dynamic stop-loss and take-profit adjustments under varying volatility regimes.

Physics Instructor

National Institute of Physics (UP Diliman)

📅 1 Aug 2016 – 31 July 2018 📍 Quezon City, PH

- Taught advanced mechanics, electromagnetism, thermodynamics, and quantum physics concepts emphasizing mathematical modeling.
- Guided senior thesis students on statistical data analysis and experiment design.
- Reinforced rigorous problem-solving frameworks applicable to stochastic systems and optimization.

Freelance Tutor

📅 10 Feb 2006 – 10 Dec 2013 📍 Mandaluyong City, PH

- Provided personalized instruction in mathematics, science, and English to high-school learners.
- Supported development of analytical reasoning and structured problem-solving skills.

PROJECTS

2020 SIIM-ISIC Melanoma Classification

- Developed a deep learning model for binary lesion classification using Keras/TensorFlow and Kaggle TPU acceleration.
- Performed feature extraction, data augmentation, cross-validation, and calibration of classifier probabilities.

Collaborative Filtering via Gaussian Mixture Model

- Built a recommendation model using Gaussian mixture clustering to learn latent user preference distributions (NumPy, SciPy).
- Evaluated model performance with log-likelihood and clustering purity metrics.

Django Backtesting Platform

- Full-stack web system for launching, tracking, and analyzing backtests.
- Backend: Django, Celery, Redis, PostgreSQL, Django Channels.
- Features:
 - Real-time progress visualization and asynchronous task updates
 - Performance metrics: annual returns, sharpe/sortino/calmar ratio, drawdown, trade stats
 - Portfolio-level analytics, mark-to-market tracking, and report exports
- Frontend: HTML/TailwindJS-based dashboard with charts and auto-refresh status updates.

ACHIEVEMENTS

- Ranked in the Top 1% of graduating high-school class.
- DOST-ASTHRDP Scholarship for Master's Degree
- Qualified for the national level competition of the Philippine Mathematical Olympiad (1999)

INTERESTS

- Algorithmic Trading
- Deep Learning
- Reinforcement Learning
- Statistical Analysis