Balaena Quant.

Introduction to Quant Trading.

By Liana Ling

Liana Ling

BSc Software Engineering	TAR UMT, Malaysia
MSc Data Science & Machine Learning	UCD, Ireland
Head of Algorithmic Trading Campus	Balaena Quant, Malaysia

Fluent in human and machine languages.

Who are we?

Balaena Quant.

Vision & Mission

Vision

To **empower and nurture** Malaysian quantitative talents and the fintech industry.

To become one of the **most indispensable names** remembered in the algorithmic trading space across the globe.

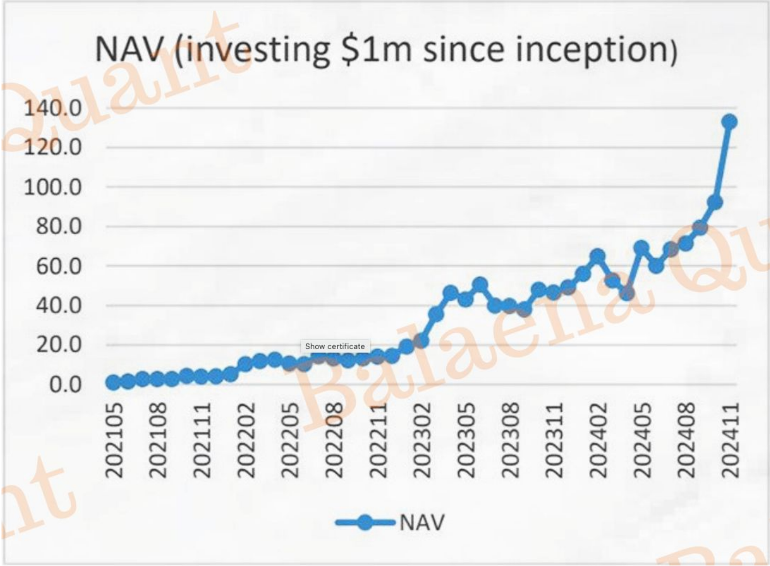
Mission

Achieve **$1 Billion USD** in Assets Under Management (AUM) by 2028.

Create **over 200 high-value job opportunities** in Malaysia.

Deliver **cutting-edge solutions** for wealth management.

Why Us?



Annualized Returns	**404%**
Sharpe Ratio	**2.9**
Calmar Ratio	12
Monthly MDD	-21%
Time Period	>2.5 years
Turnover	~2× daily

Assets Under Management (AUM): 70 million USD

Monthly Trading Volume: 9 billion USD

Past Performance

%	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YTD
2021						64	69	4	-3	54	-7	8	324
2022	22	98	16	6	-15	-3.8	38.8	-7.3	-6.9	8	7.2	2.1	242
2023	32.2	15	61	30.5	-7.1	17.3	-21	-0.3	-4.5	27.6	-2.8	5.4	238
2024	14	16	-19	-12	49	-13	14	4	11	16	44	2.5	187

This is a systematic CTA fund trading on crypto **perpetual contracts**, mainly on **BTCUSDT** and **ETHUSDT**. It adopts a multi-factor model by quantitatively using factors such as price, volume, funding rate, on-chain data and sentiment to predict price trends in **mid-high frequency**.

More Details

Assets Under Management (AUM): 70 million USD

<u>Monthly Trading Volume</u>

Binance	5 billion
OKX	2 billion
Bybit	2 billion

trading

/ˈtreɪdɪŋ/

noun

a financial game where the winners understand probabilities, and the losers call it a scam.

"How does one profit from *trading*?"

Arbitrage

Buy

Store A $5

Store B $10

Sell

Buy low, sell high.

100 limited edition bottles of milk.

If you buy a large enough quantity, you will affect market prices.

Market Cycles

Bull

Bear

Sideways


0.9%
0.12%
0.1902

```
Backtest 2
Backtest mode:  mr_return_mean
Number of trades:  2009.0
Long trades:  492
Short trades:  513
Average holding time in seconds:  89361679.07538381
Cumulative MDD:  -0.46524680080780273
Cumulative:  2.302475571489892
Sharpe Ratio:  1.8861062878383215
Success Rate:  0.4934482351552355

Backtest 3
Backtest mode:  mr_return_mean
Number of trades:  3179.0
Long trades:  785
Short trades:  805
Average holding time in seconds:  90314768.50496888
Cumulative MDD:  -0.46524680080780273
Cumulative:  2.880543856768102
Sharpe Ratio:  1.6460495658842746
Success Rate:  0.4905878406083423

Backtest 4
Backtest mode:  mr_return_mean
Number of trades:  1167.0
Long trades:  292
Short trades:  292
Average holding time in seconds:  91642869.53760667
Cumulative MDD:  -0.4363711446632138
Cumulative:  0.5633242700353625
Sharpe Ratio:  1.1057294619778142
Success Rate:  0.48580697485806973
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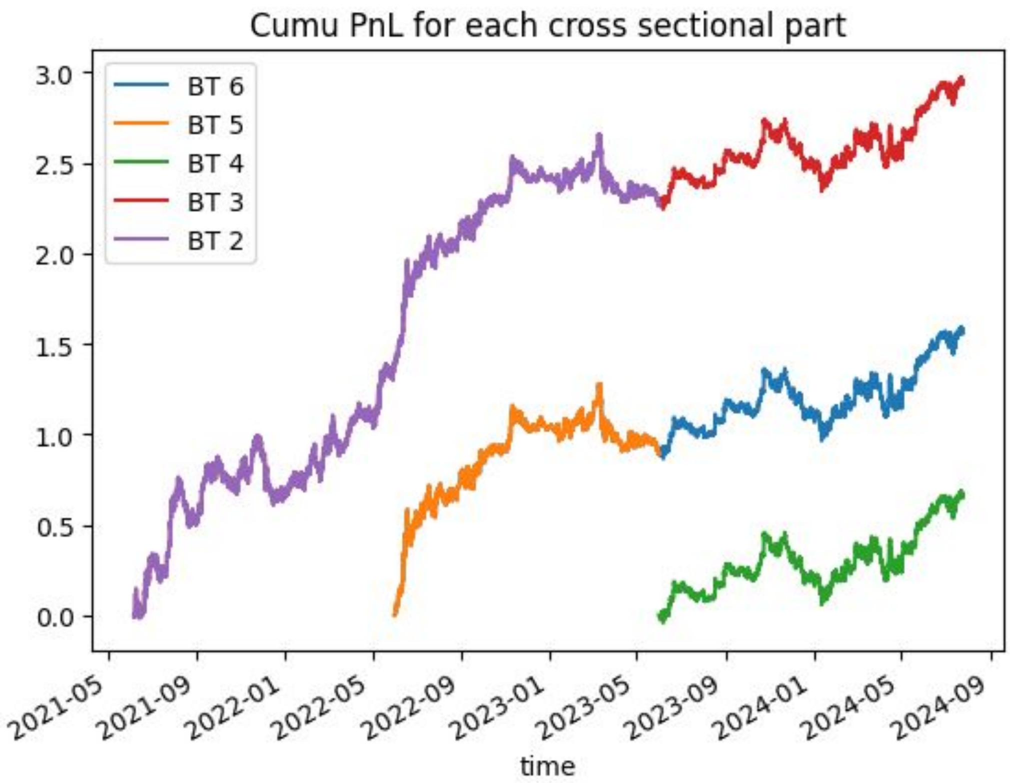


quant trading

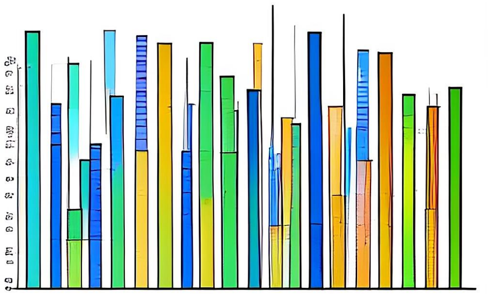
/kwɒnt ˈtreɪdɪŋ/

noun

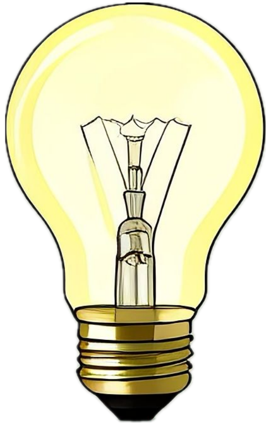
trading on steroids.

“What is this *quant trading* about?”

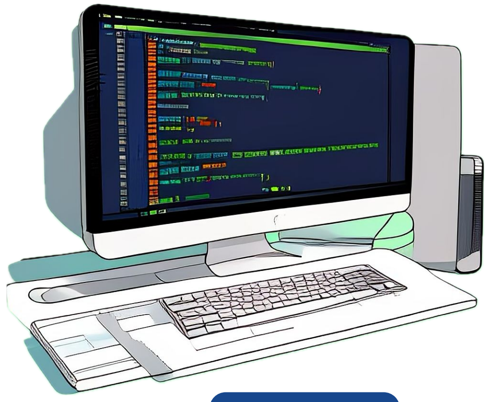
Quant Trading



Data



Insights



Code

Manual vs Quant Trading

	Manual	**Quant**
Speed	Slow; up to minutes	Fast; sub-micro seconds
Emotional Factors	Intense	None
Income	Active; takes a lot of time	Passive; automated

How many orders can you manually place in 1 second?

Quant traders can place much, much more than 1000.

If you can't beat them, join them.

Balaena Quant.

Finding Quant Strategies.

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How to Find Strategies?

1. Strategies Ideas/Assumptions
2. Hypotheses
3. Converting Into Formula
4. Backtesting & Permutations
5. Forward Test & Equity Curve Analysis
6. Optimization

How to Spark Strategy Ideas

Theory-based

- Get inputs/ideas from others quant traders (Twitter, Patreon)
- Read papers or books
- Research on market underlying and structure

Data-based

- Follow smart money
- **Data is key**; study and analyze the data
- On-chain data, market data, options data

Leading vs Lagging Factors

Leading Factors

- Predictive & non-price data
- Examples: Options IV, Premium Index, Netflow

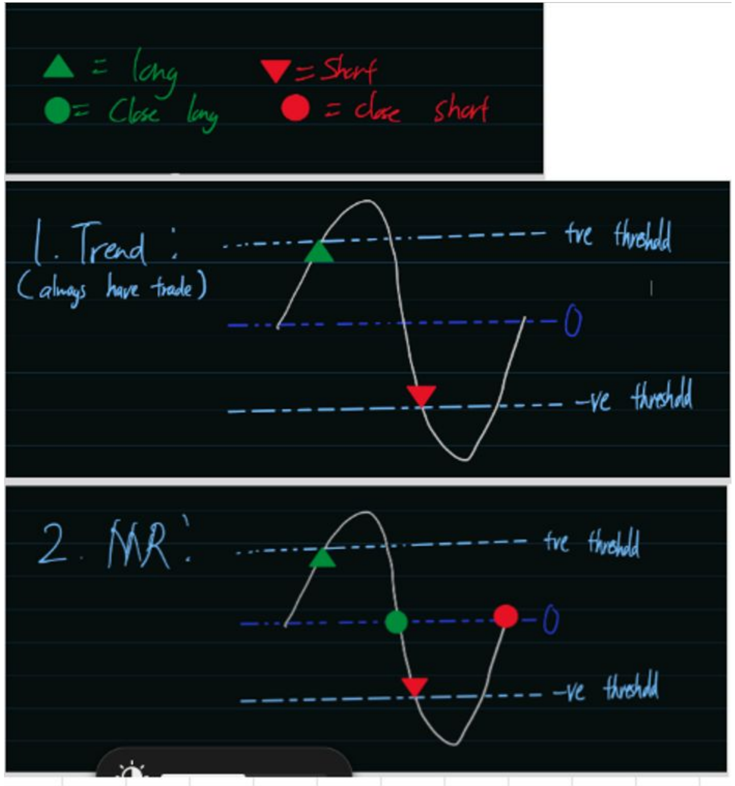
What we want

Lagging Factors

- Non-Predictive
- Examples: Price, Fear & Greed Index, News Sentiment

Backtesting & Optimization

- Formula creation
  - Based on hypothesis
- Data preprocessing
  - Based on data analysis
- Modeling
  - Normalization
  - Standardization
- Entry-exit logic
- Parameter optimization
  - Grid search
  - Evolutionary algorithms
- Performance metrics
  - Sharpe Ratio
  - MDD
  - Heatmap Analysis
- Avoiding overfitting
  - Forward testing
  - In/out sampling



Entry-Exit Logics

How to Evaluate a Strategy

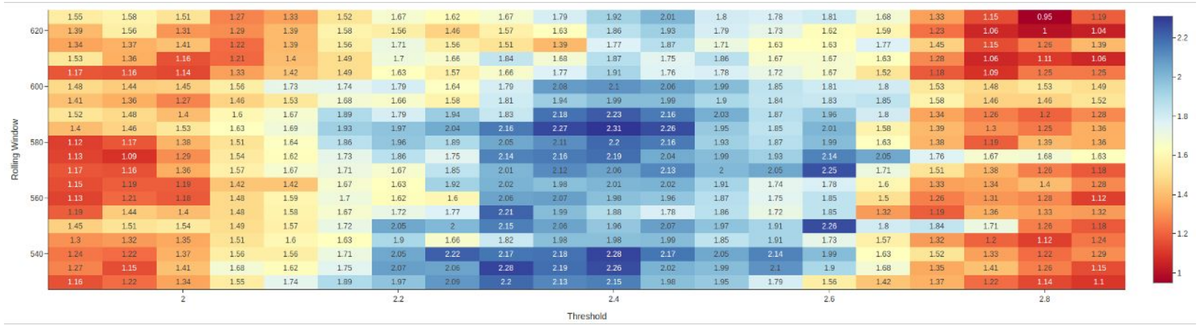
Sharpe Ratio: ratio of risk-to-reward by measuring returns against volatility.

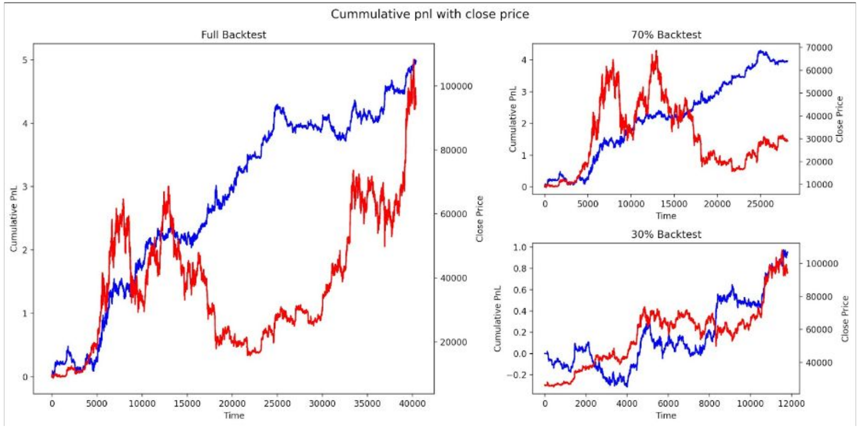
Sortino Ratio: ratio of risk-to-reward, but by measuring returns against negative volatility. Positive volatility is desirable for higher returns.

Maximum Drawdown (MDD): the worst peak-to-trough decline in a portfolio before recovering.

Recovery Period: time to recover from MDD.

Permutation Heatmap & Equity Curve





Portfolio Management

More Strategies: lower risk due to diversification of different strategies.

More Models & Preprocessing Methods: increase the chances of identifying an alpha.

Low PnL Correlation: to avoid making a huge loss, each alpha should make money at different times.

Regime Analysis: analyse whether the market is bullish/bearish/sideways. Only run alphas that run well during a regime.

Bet Sizing: to control each alpha's trade size.

Wallet Management: how much capital is allocated to each alpha.

To Wrap It All Up.

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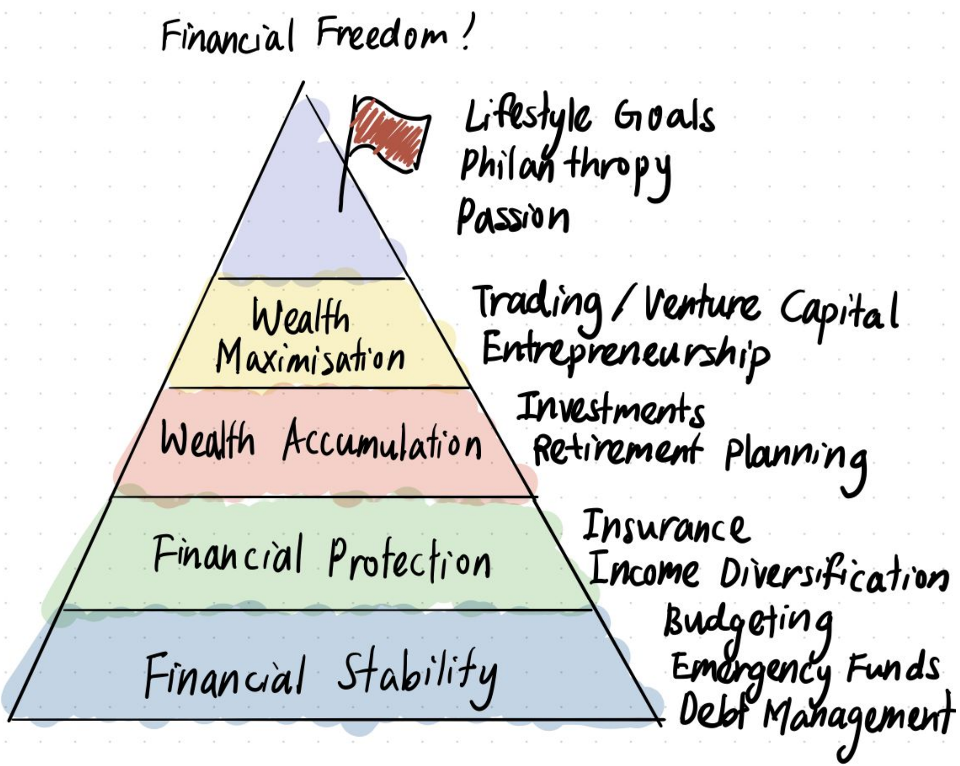
Financial Management Hierarchy



Algorithmic Trading Campus (ATC)

What's this about?

Self-learning: we still provide handouts and assignments, but participants are expected to do their own research.

Self-paced: you can go slower or faster without waiting for your peers.

Free-of-charge: we want to educate more Malaysians about quant trading with a lower barrier.

What's in it for you?

Certified programme: receive a certificate from Lincoln University College upon graduation.

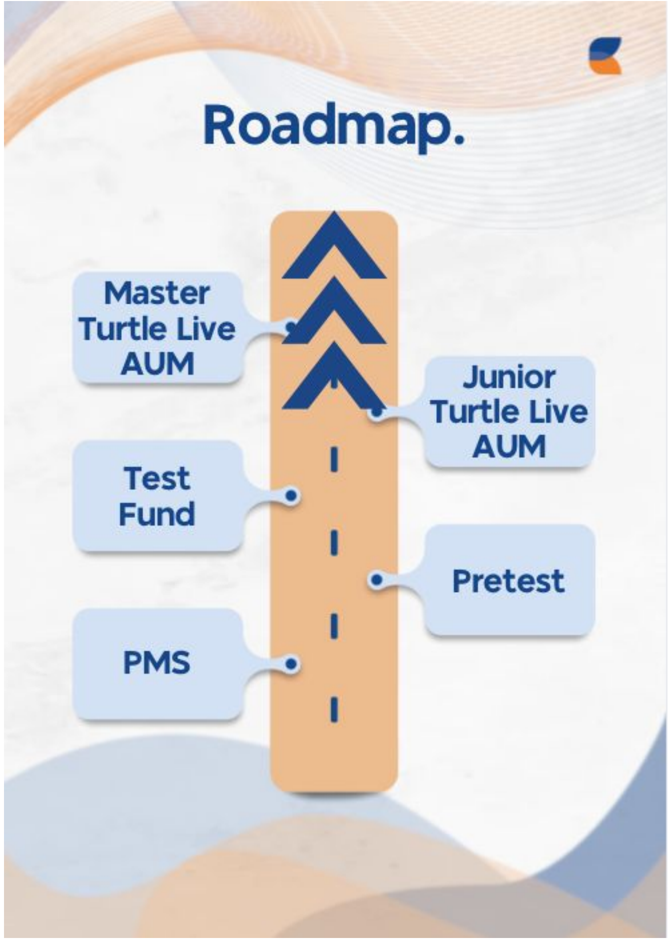
Quant strategies: learn how to find your own profitable quant strategies and build quant trading algorithms.

Initial capital investment: become our partner and receive **$100k – $ 2 mil USD** of investment from us for your valid strategies.

The End Goal

Roadmap

1. Pass ATC's **Phase 3**
2. Undergo our **Performance Management System (PMS)**
3. Yield strategies that pass the **Pretest**
4. Run strategies live on the **Test Fund**
5. Deploy strategies in either the **Junior Turtle** or **Master Turtle live AUM** funding pool
6. **Profit sharing** with turtles



How to Join

Steps

1. Register a Discord account
2. Join our algo trading campus' Discord
3. Tap the 🔥 Start Your Journey button
4. Add "(UM Hack)" to your name

Tips

1. Be active in the community
2. Help each other out
3. You will eventually need to form groups of 2 – 5 to research for strategies, so start looking for a teammate now!

🔗 discord.gg/BalaenaQuant

Zero cost to start
Millions to gain.

QnA

Thank you.