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

ai to trade

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.

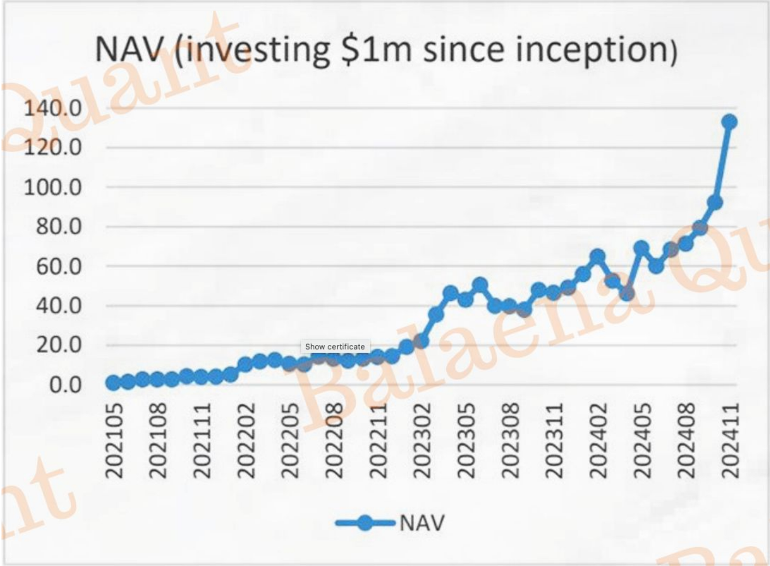
Mission

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 套利/套汇

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**

price goes up

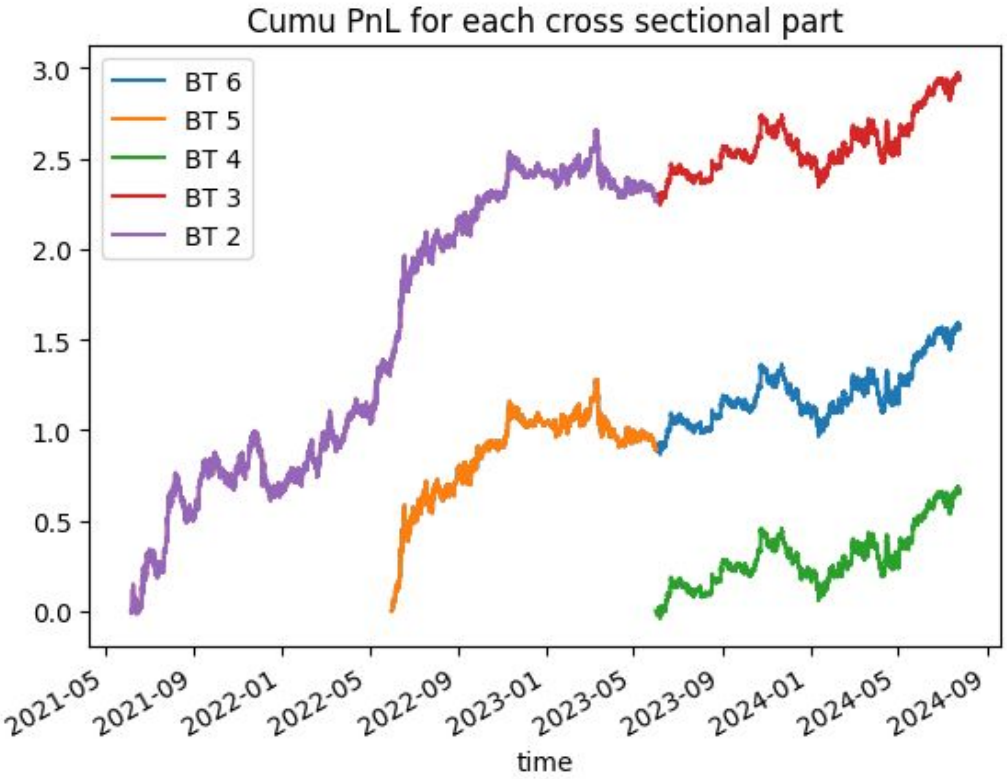
price start to drop


0.9%
0.12%
.1204
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
```



validate assumption

quant trading

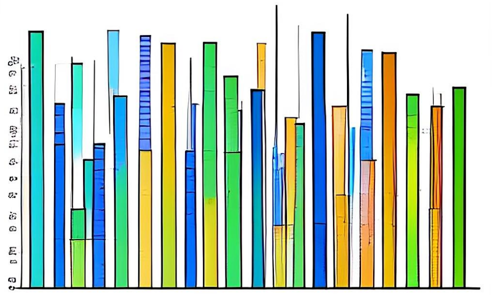
/kwɒnt ˈtreɪdɪŋ/

noun

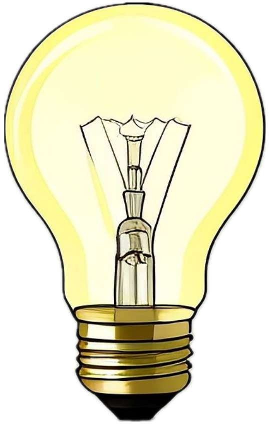
trading on steroids.

"What is this *quant trading* about?"

Quant Trading



Data



Insights

hunch about the market

Code

Manual vs Quant Trading

allow the code trade for us

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

backtesting

How many orders can you manually place in 1 second?

Quant traders can place much, much more than 1000.

speed is crucial

If you can't beat them, join them.

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

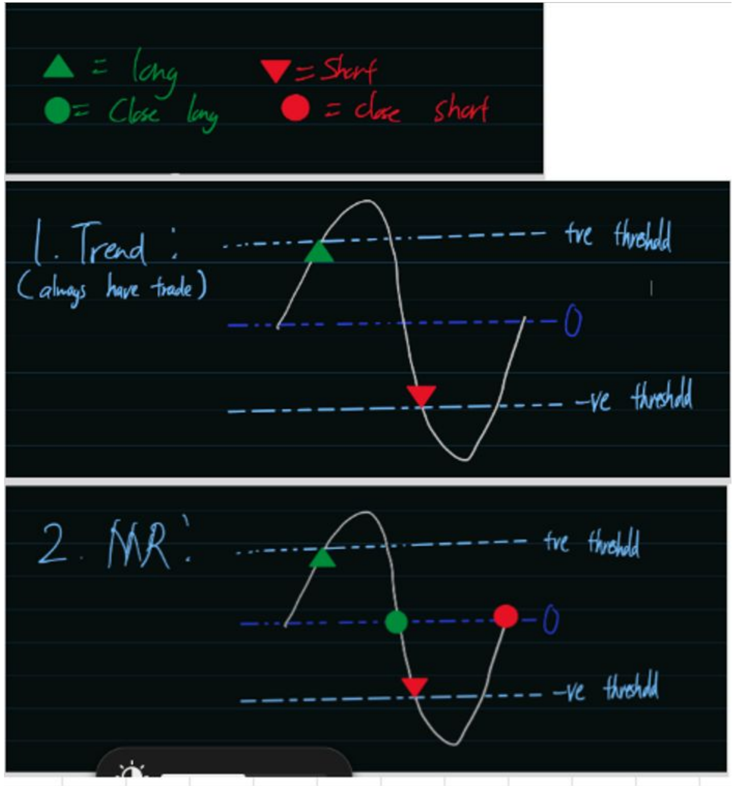
What we want

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

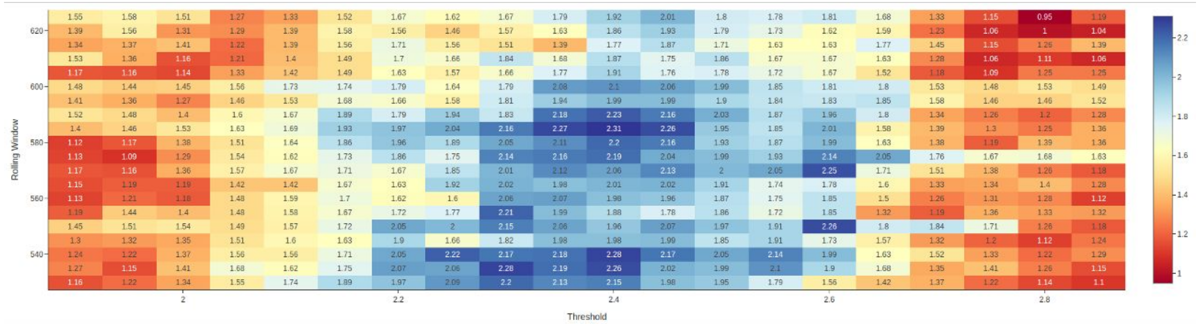
Sharpe Ratio: ratio of risk-to-reward by measuring returns against volatility.

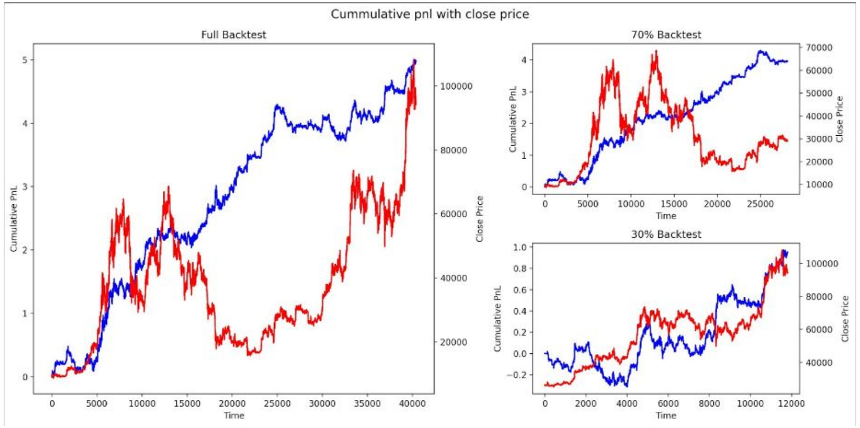
Sortino Ratio: ratio of risk-to-reward, but by measuring returns against negative volatility. Positive volatility is desirable for higher returns.

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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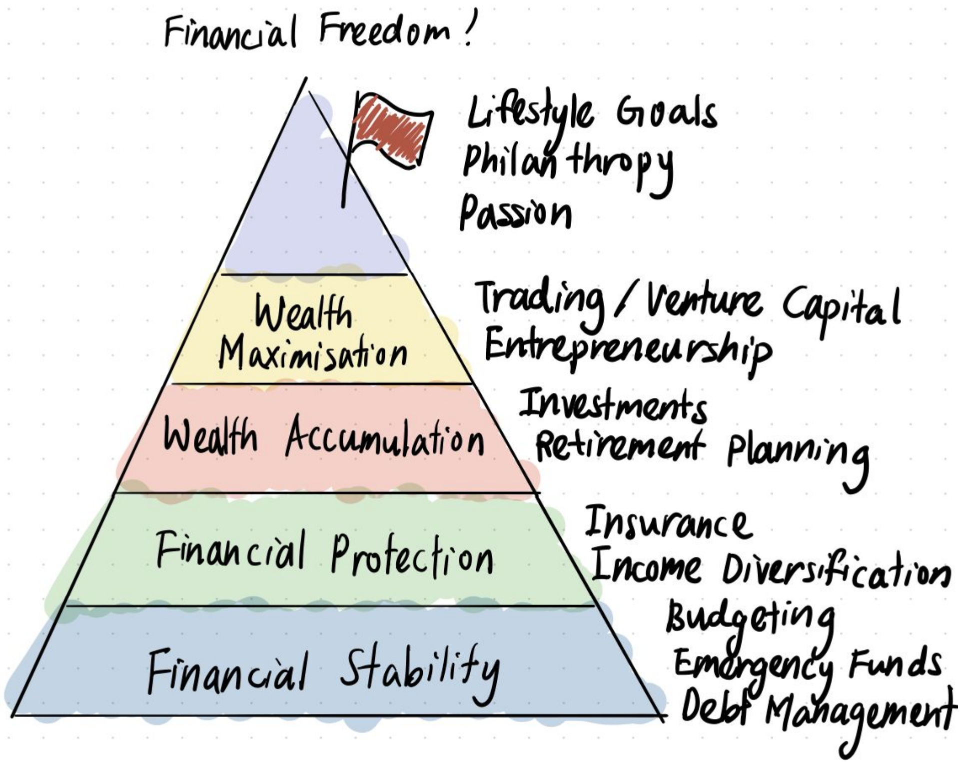
Financial Management Hierarchy



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.

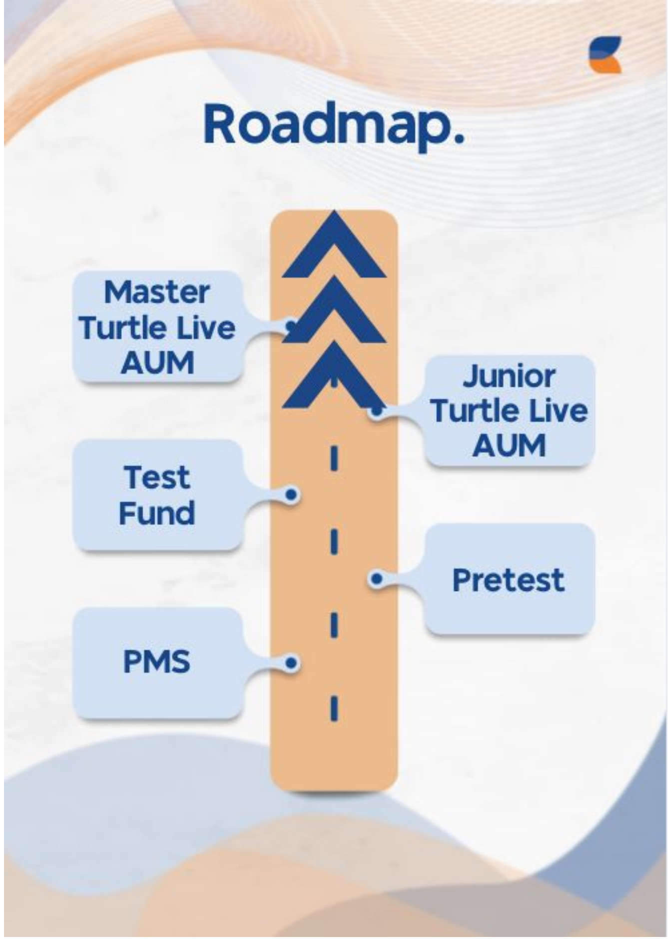
Quant strategies: learn how to find your own profitable quant strategies and build quant trading algorithms.

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.