

Introduction to Quant Trading.

By Liana Ling

Liana Ling

BSc Software Engineering

MSc Data Science & Machine Learning

Head of Algorithmic Trading Campus

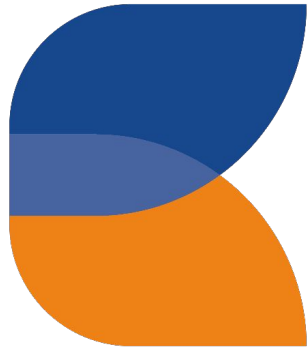
TAR UMT, Malaysia

UCD, Ireland

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.

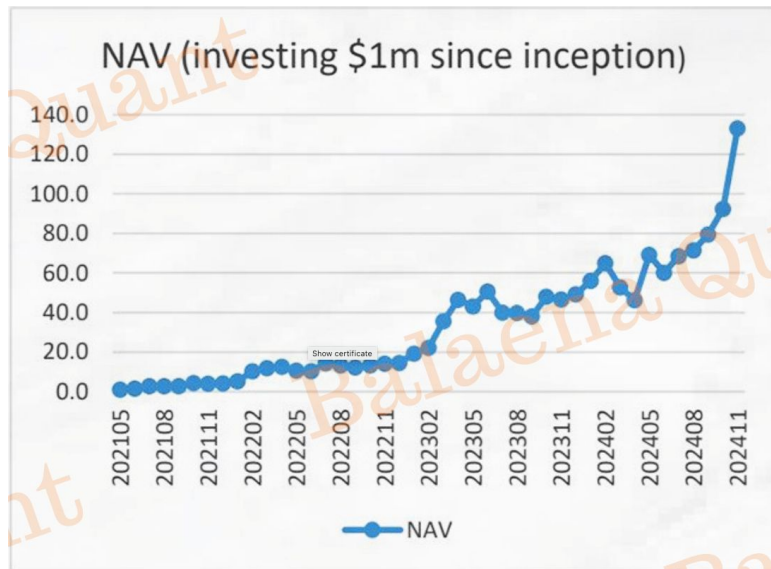
Mission

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**

Monthly Trading Volume

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

Sell



Store B \$10



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

price goes up



Bear

price start to drop



Sideways

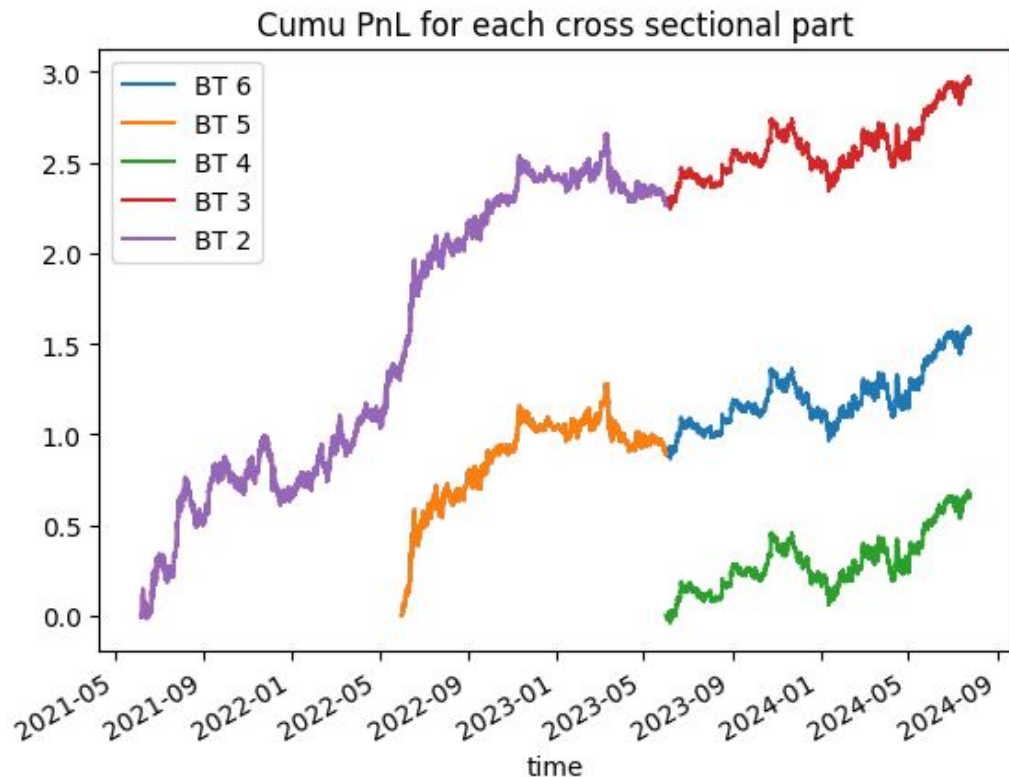




Backtest 2
Backtest mode: mr_return_mean
Number of trades: 2009.0
Long trades: 492
Short trades: 513
Average holding time in seconds: 89361679.07538381
Cumulative MDD: -0.46524680080780273
Cumulative: 2.302475571489892
Sharpe Ratio: 1.8861062878383215
Success Rate: 0.4934482351552355

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

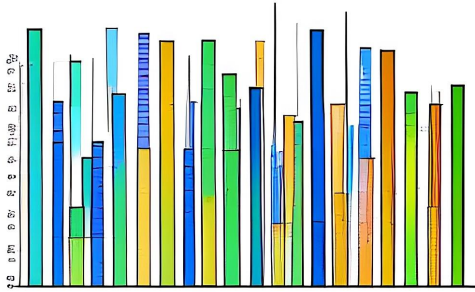
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noun

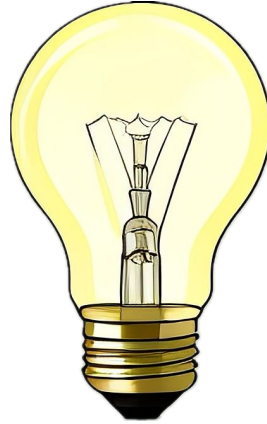
trading on **steroids.**

“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

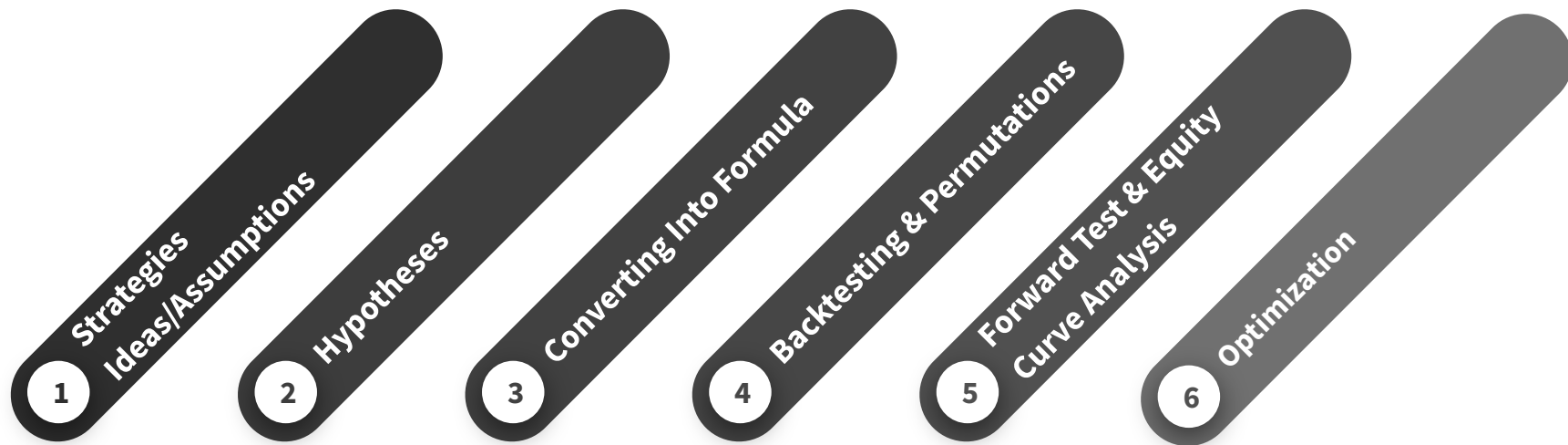


**If you can't beat them, join
them.**

Finding Quant Strategies.

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How to Find Strategies?



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

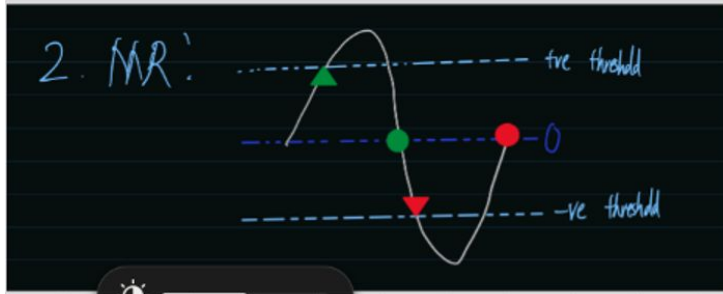
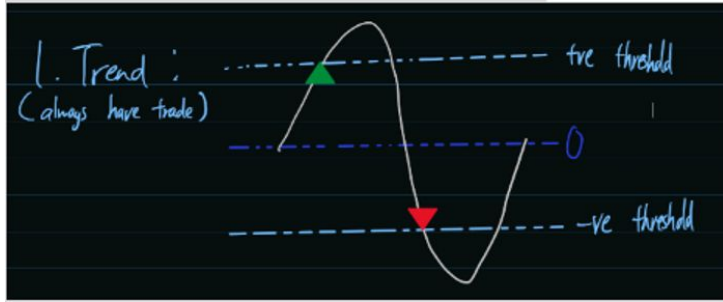


Backtesting & Optimization

- 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



▲ = long ▼ = short
● = close long ● = close short



Entry-Exit Logics



How to Evaluate a Strategy

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

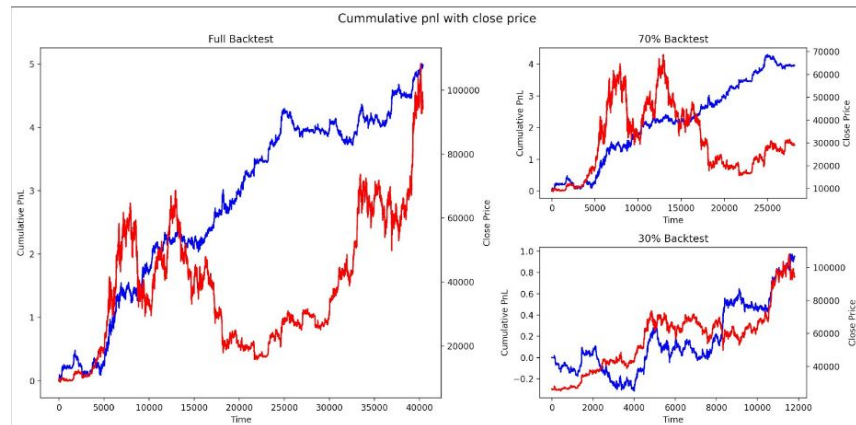
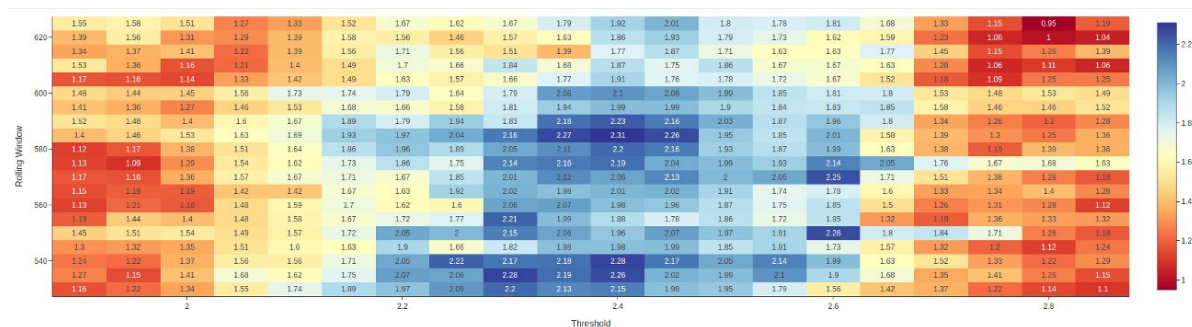
Sortino Ratio: ratio of risk-to-reward, but by measuring returns against negative volatility. Positive volatility is desirable for higher returns.

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.

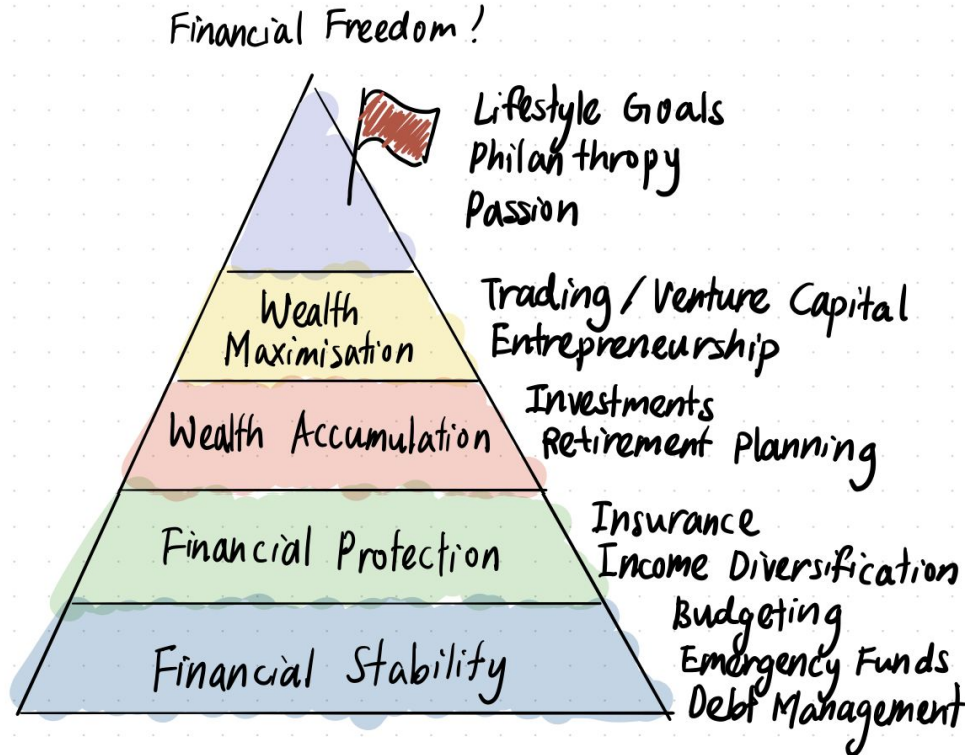
Wallet Management: how much capital is allocated to each alpha.



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.

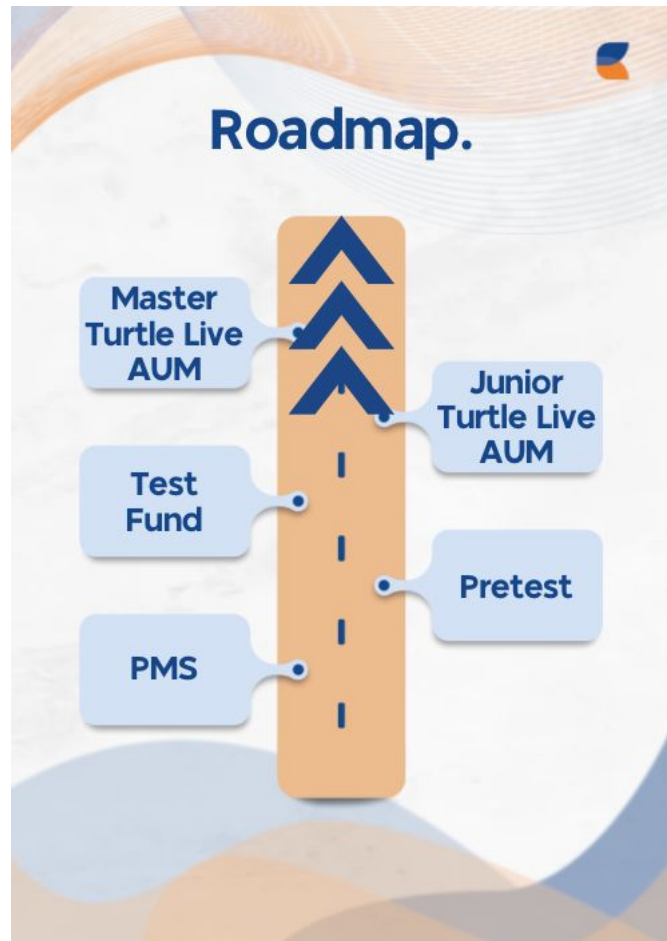
Initial capital investment: become our partner and receive **\$100k – \$ 2 mil USD** of investment from us for your valid strategies.



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



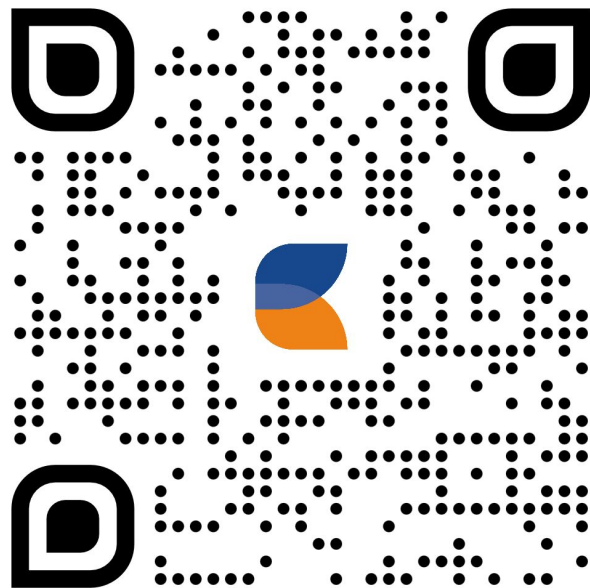
How to Join

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.