

# Quant Soc 23/24 Algothon

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	day	weighted_sentiment_indicator	sentiment_indicator	price_indicator	btc_open	btc_close	eth_open	eth_close
0	2018-01-01	1556.089049	120.256815	2.9271	14112.200195	13657.200195	755.757019	772.640991
1	2018-01-02	1356.531554	72.900820	2.8702	13625.000000	14982.099609	772.346008	884.443970
2	2018-01-03	217.703825	32.173808	2.8276	14978.200195	15201.000000	886.000000	962.719971
3	2018-01-04	2618.126816	122.988617	2.7650	15270.700195	15599.200195	961.713013	980.921997
4	2018-01-05	100.628503	24.739558	2.7639	15477.200195	17429.500000	975.750000	997.719971
...	...	...	...	...	...	...	...	...
2240	2024-02-19	1072.225168	223.338251	2.8956	52134.812500	51779.144531	2881.296875	2943.574707
2241	2024-02-20	4310.220187	463.635916	2.8672	51777.726562	52284.875000	2944.106445	3013.503662
2242	2024-02-21	2612.991254	416.897788	2.8527	52273.535156	51839.179688	3015.653320	2970.355469
2243	2024-02-22	2714.564591	419.613832	2.8600	51854.644531	51304.972656	2969.599854	2971.007324
2244	2024-02-23	2132.251858	362.996628	2.8488	51283.906250	50731.949219	2970.139648	2921.658203
2245 rows x 8 columns								

- You will get Bitcoin and Ethereum price data as well as 2 other *possible* leading indicators
- You have to determine if they are in fact leading
  - Next, employ data manipulation techniques to gauge the extent of relationships
- How would you use these leading indicators in your methodology?
- What we will provide is rudimentary, and is only meant to get you thinking. Look for your own patterns and datasets!

# Data

- You will get all relevant data from Jan-1-2018 to Feb-23-2024
- You will trade from Feb-1-2022 to Feb-23-2024
- The relevant data includes the price time series for BTC-USD and ETH-USD from Yahoo! Finance, along with custom spread data between BTC-USD and other coins, and custom sentiment data. This is all REAL DATA with real implications, so we cannot reveal the exact nature and source.
- Do not fall prey to the look-ahead bias. Any usage of forward-looking data will mean that the strategy is ineffective, and we will have to ignore the submission.

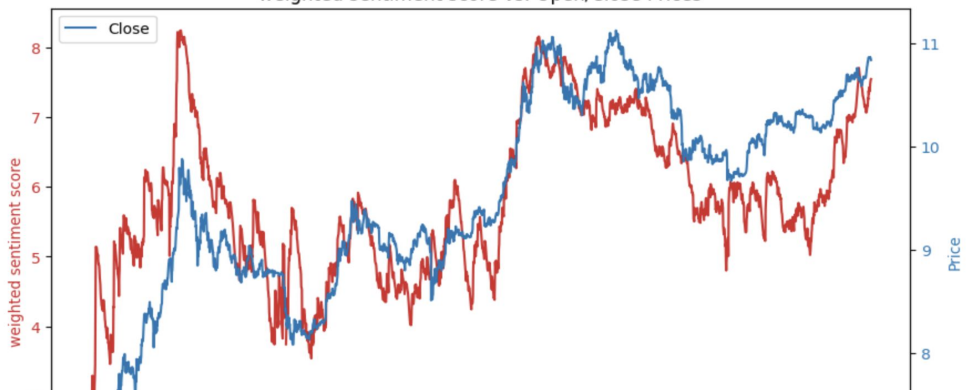
# Stuff that we've experimented with...

- Sentiment
- Price Action (not just technical indicators!)
- Correlation and cointegration with other indices and tickers
- A lot more...

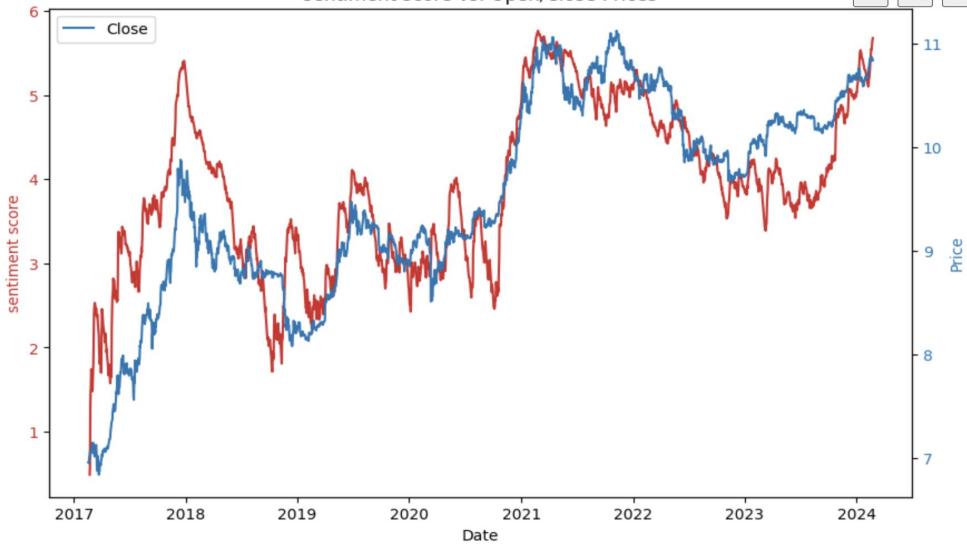
We've chosen this date range because we have detected alpha through our techniques - we're not just throwing you in the deep end of the waters!

# Some Ideas for Sentiment...

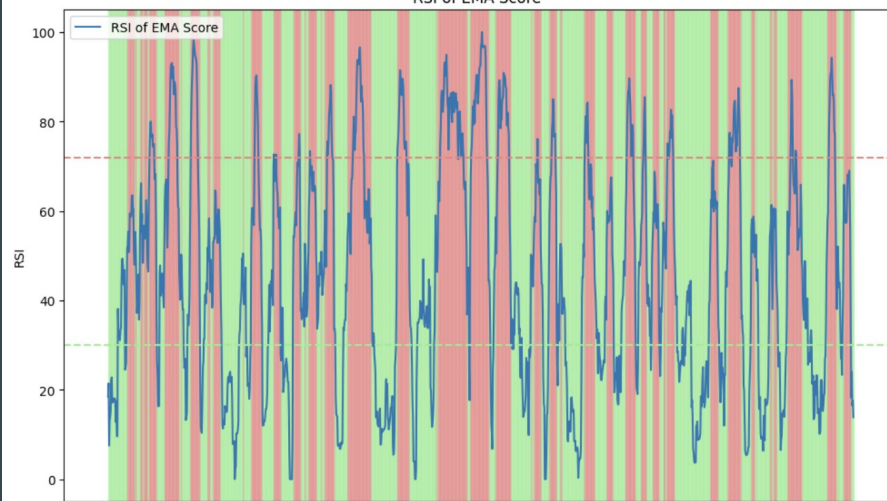
weighted sentiment score vs. Open/Close Prices



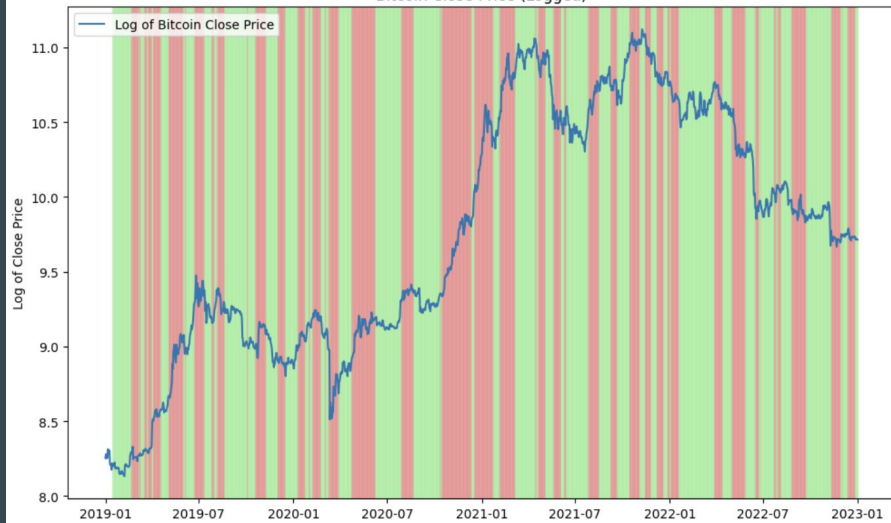
sentiment score vs. Open/Close Prices



RSI of EMA Score



Bitcoin Close Price (Logged)



## You can also look at price action!!

- Crypto markets are a lot more inefficient than other asset classes
- Time series forecasting models like SARIMAX and XGBoost
- Don't be afraid to experiment with relatively newer tech (LSTM / CNN)
- Regime detection with Hidden Markov Models (try simpler variants first, there's a reason RenTech is paying top-dollar for HMM expertise)

Alpha exists outside of price and sentiment too, so think hard. Combine multiple strategies to reduce drawdown!

# Send Report by Sunday 24th EOD

- Methodology (VERY IMPORTANT!!)
- Code (ideally Python, but feel free to develop in the language of your choice)
- Equity Curve (your PnL chart, and reasons why you bought or sold at a specific time)
- Metrics (Sharpe Ratio, Max Drawdown, Beta etc.)

Meet on Tuesday March 26th to present and there will be a group of judges to judge the winner. Please note that we cannot accept reports later than 11:59 pm GMT on Sunday.

# Rewards!

Prizes will be a £100 call/put option of your choosing, with no downside and 100% upside! We will judge reports based on multiple factors, and the team with the best methodology, risk-adjusted-returns, and presentation style will be declared the winner. Ensure your methodology is systematic and can be “codified” - discretionary strategies are often subjective and can fall apart. Spend some time on data visualisation!

- Stop loss of £50
- Take profit of your choice



Q&A