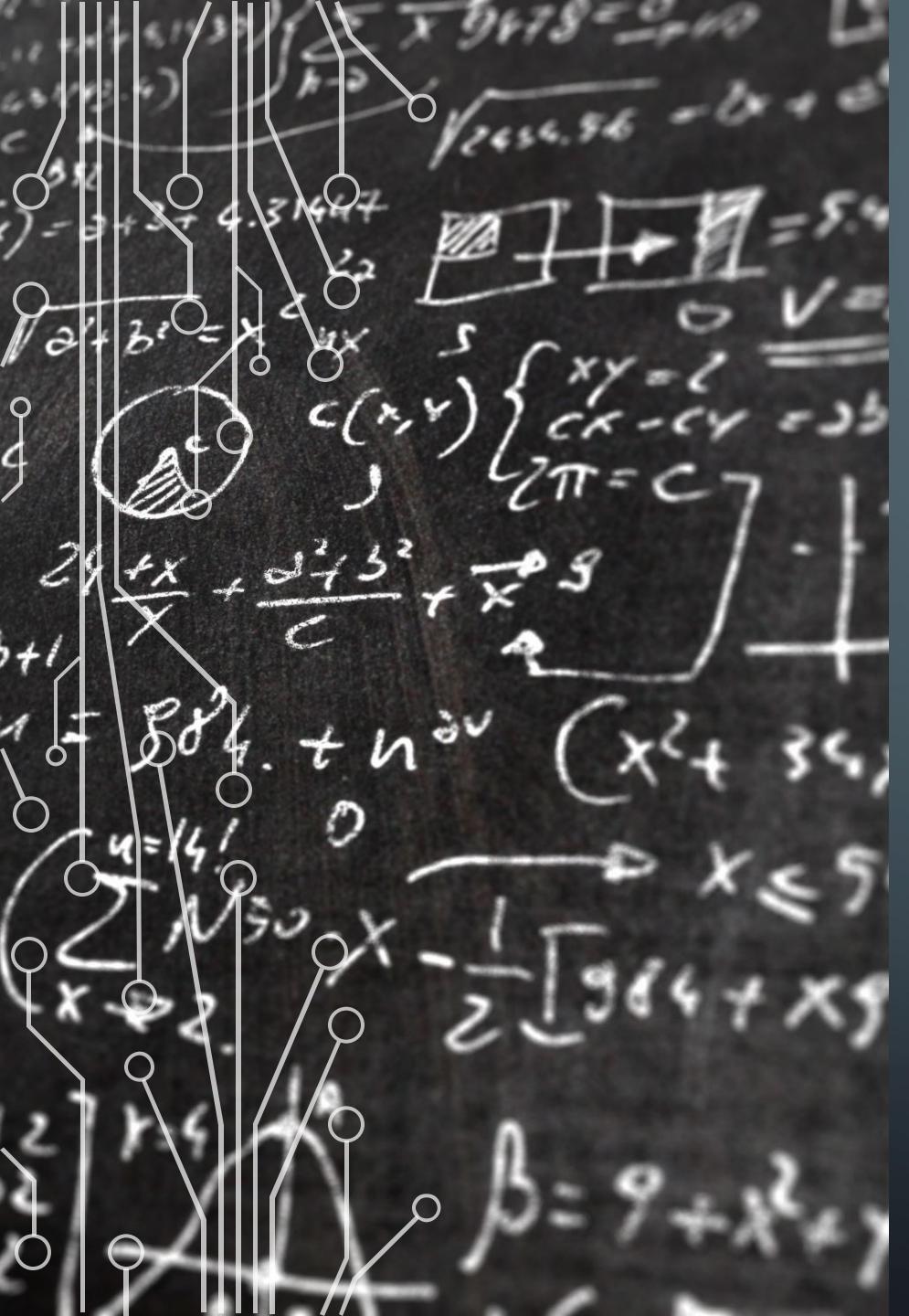


CRYPTOCURRENCY SENTIMENT & TRADING ANALYSIS

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FEBRUARY 26, 2022



AGENDA

1. Project Objectives
2. Updated Data Extraction (Binance)
3. Data Manipulation & Cleanup
4. NLTK Sentiment Analysis
5. Crypto Entry/Exit Point Analysis
6. Key Takeaways

PROJECT OBJECTIVES

- Update API to extract historical crypto prices from Binance US exchange.
- Refresh crypto portfolio dashboard with latest historical prices (hourly).
- Extract most relevant news articles for each crypto using the News API.
- Analyze sentiment of each crypto in portfolio using NLTK (VADER).
- Create trading algorithm to track potential entry & exit points for all cryptos. Analyze each cryptos performance and compare to sentiment.

DATA EXTRACTION (API)



CCXT LIBRARY:

- CryptoCurrency eXchange Trading library
- The CCXT library is used to connect and trade with cryptocurrency exchanges and payment processing services worldwide.
- It provides quick access to market data for storage, analysis, visualizations and algorithmic trading.

Binance US API:

- Used the Binance US exchange API to extract Open, High, Low, Close, Volume (OHLCV) historical crypto data for the last 1,000 hours.
- Extracted hourly data for more precise entry & exit point analysis.
- <https://github.com/binance-us/binance-official-api-docs>



DATA MANIPULATION & CLEANUP



OHLCV HISTORICAL DATA:

- Used for loop to loop through list of top 50 cryptocurrencies and extract OHLCV data using CCXT & Binance
- Used try & except to determine base currency denomination (i.e., BUSD, USDT, USDC, UST) for each cryptocurrency
- Used TQDM function to show a progress bar loading crypto data
- Appended crypto price data to a list and then converted into Pandas DataFrame

CUSTOM ALTCOIN PORTFOLIO:

- Created custom portfolio of altcoins selecting 6 of the top 50 cryptocurrencies (non-bitcoin)
- Established variables for initial total investment, portfolio weights, & number of days invested
- Created function to determine the units invested in each crypto as of the initial investment date
- Created custom Pandas dataframes of portfolio data to use for interactive charts, plots, and Monte Carlo simulations

NLTK SENTIMENT ANALYSIS



VADER SENTIMENT ANALYSIS:

- Used Vader Lexicon Sentiment Intensity Analyzer.
- Polkadot (DOT) scored the highest in terms of content score.
- Cardano (ADA) scored the highest in terms of title score.
- Ethereum (ETH) scored the lowest in terms of content score and title score.

Crypto Searched	content_compound	content_pos	content_neu	content_neg	content_sent
Binance	0.131100	0.05910	0.91725	0.02360	0.25
Cardano	0.215220	0.08720	0.88955	0.02325	0.35
Ethereum	0.090060	0.05650	0.91415	0.02940	0.15
Polkadot	0.169220	0.05815	0.91670	0.02520	0.60
Solana	0.043385	0.05220	0.91125	0.03660	0.20

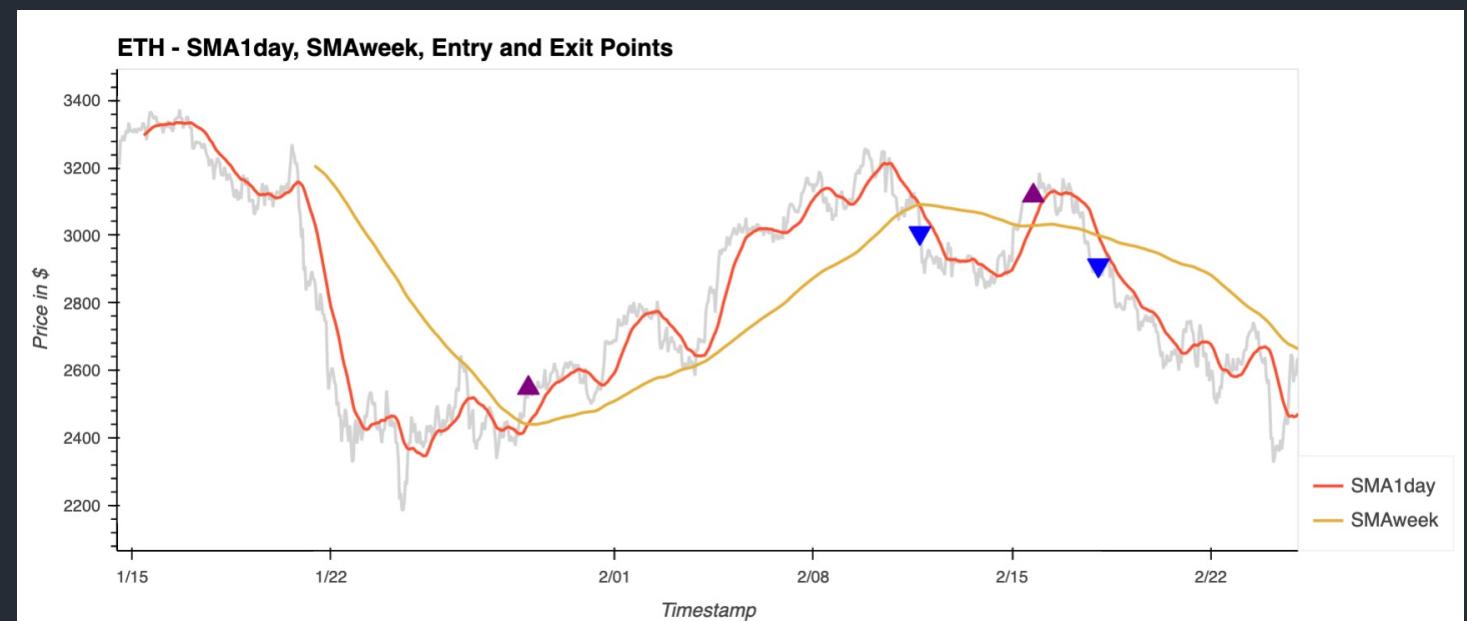
Crypto Searched	title_compound	title_pos	title_neu	title_neg	title_sent
Binance	0.040950	0.06795	0.87570	0.05635	0.10
Cardano	0.167915	0.11605	0.86940	0.01455	0.35
Ethereum	-0.000880	0.08245	0.84160	0.07600	0.00
Polkadot	0.070875	0.08870	0.88185	0.02945	0.25
Solana	0.044965	0.05640	0.88005	0.06355	0.05

CRYPTO ENTRY & EXIT POINT ANALYSIS



CRYPTO SMA CHART ANALYSIS:

- Created DataFrame for each crypto with 1-day and 1-week simple moving average (SMA) calculations.
- Created algorithm to track entry & exit points for each cryptocurrency based on the two SMAs crossing each other.
- 1-day SMA > 1-week SMA = Bullish (Enter)
- 1-day SMA < 1-week SMA = Bearish (Exit)

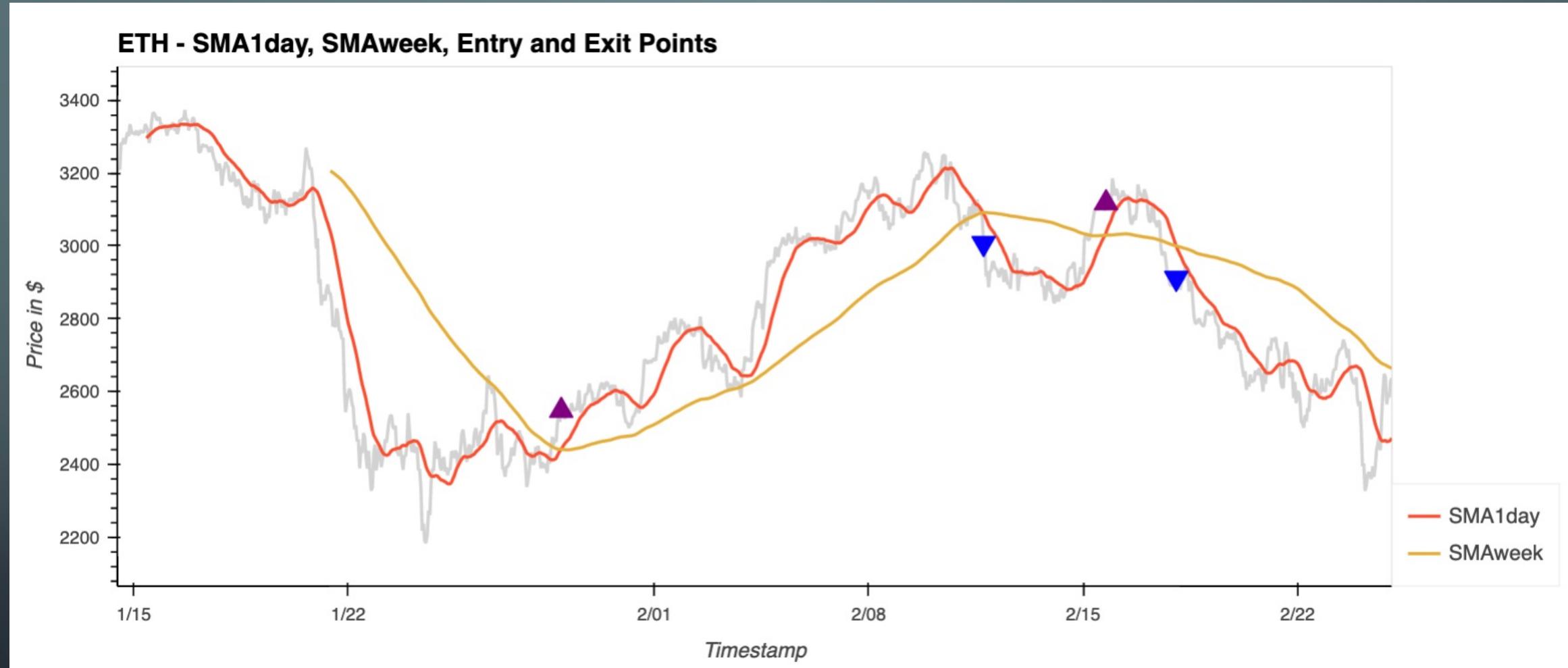




CRYPTO ENTRY/EXIT
POINT CHARTS USING
ALGORITHM BASED
ON 1-DAY SMA &
1-WEEK SMA.

ETH Entry & Exit Point Chart

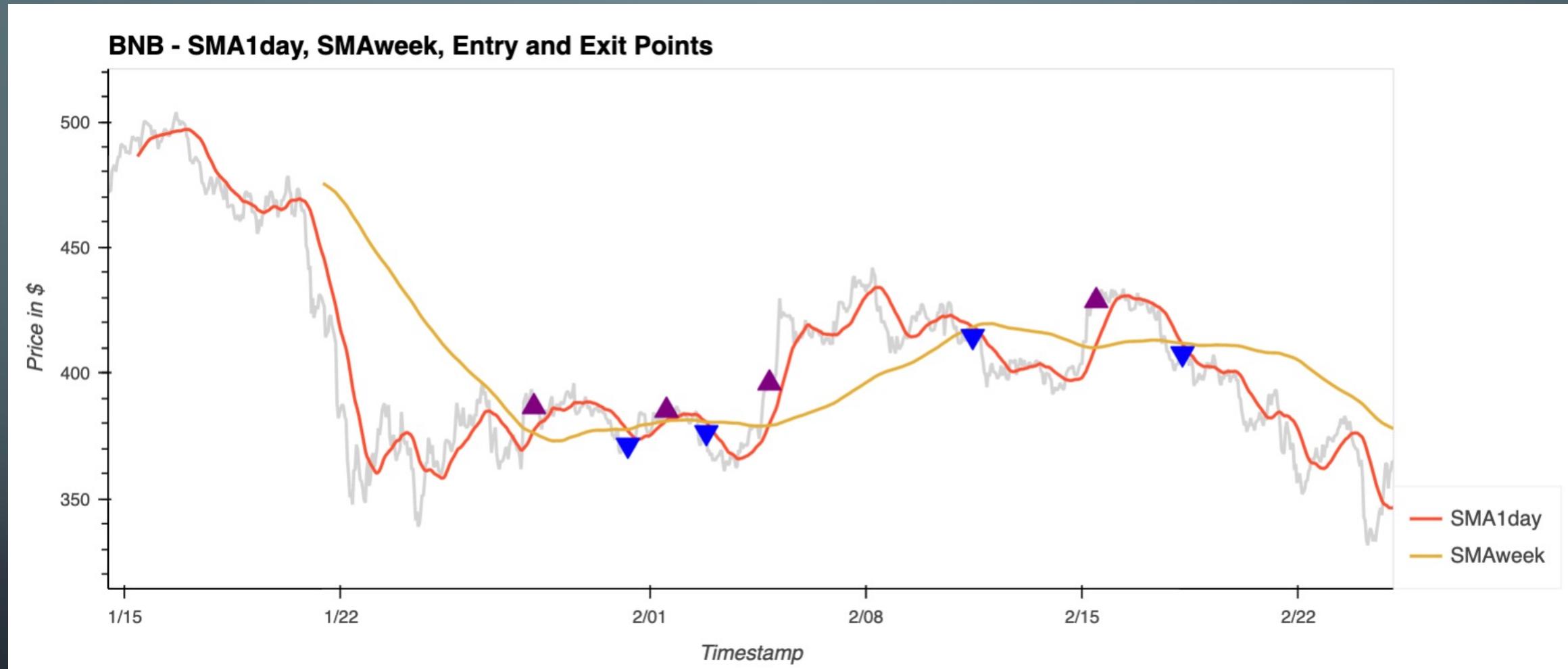
Title Sentiment Score	0.00
Content Sentiment Score	0.15



Lowest Sentiment Scores

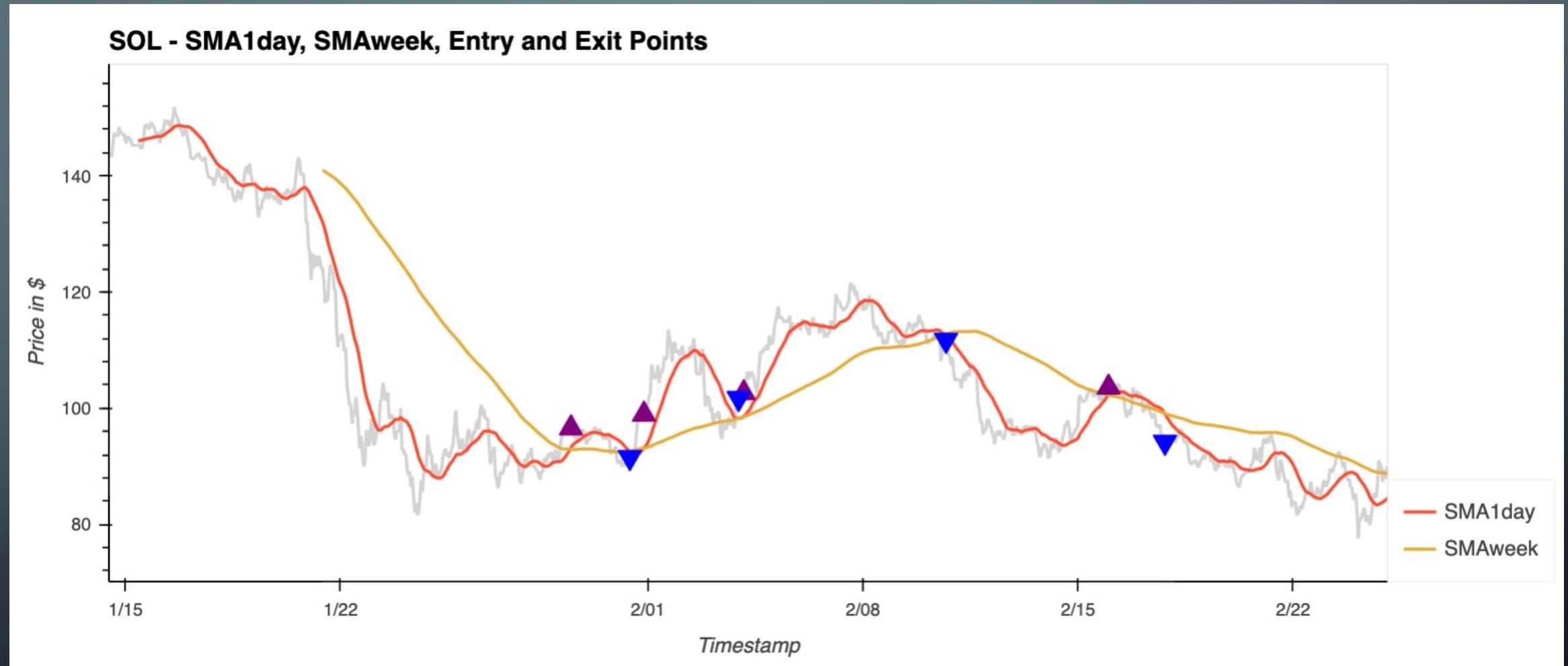
BNB Entry & Exit Point Chart

Title Sentiment Score	0.10
Content Sentiment Score	0.25



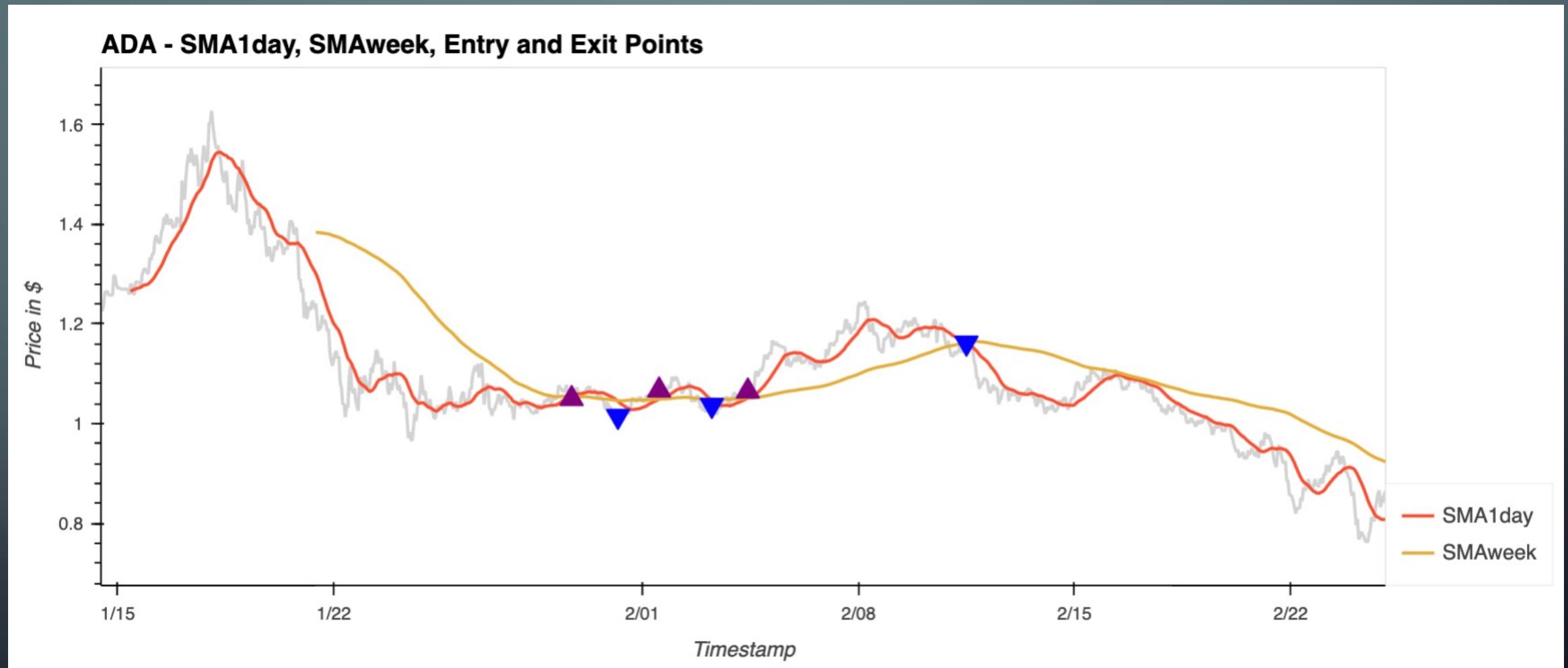
SOL Entry & Exit Point Chart

Title Sentiment Score	0.05
Content Sentiment Score	0.20



ADA Entry & Exit Point Chart

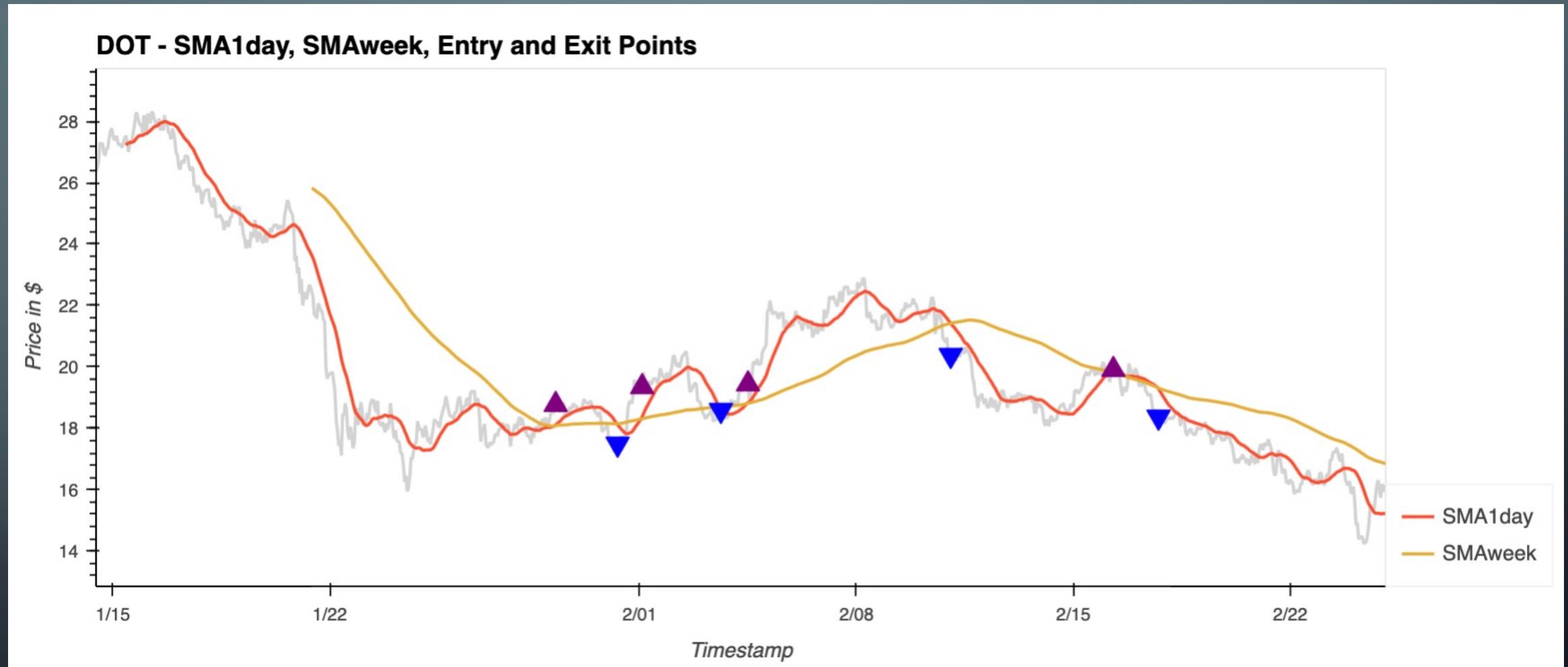
Title Sentiment Score	0.35
Content Sentiment Score	0.35



Highest Title Sentiment Score

DOT Entry & Exit Point Chart

Title Sentiment Score	0.25
Content Sentiment Score	0.60



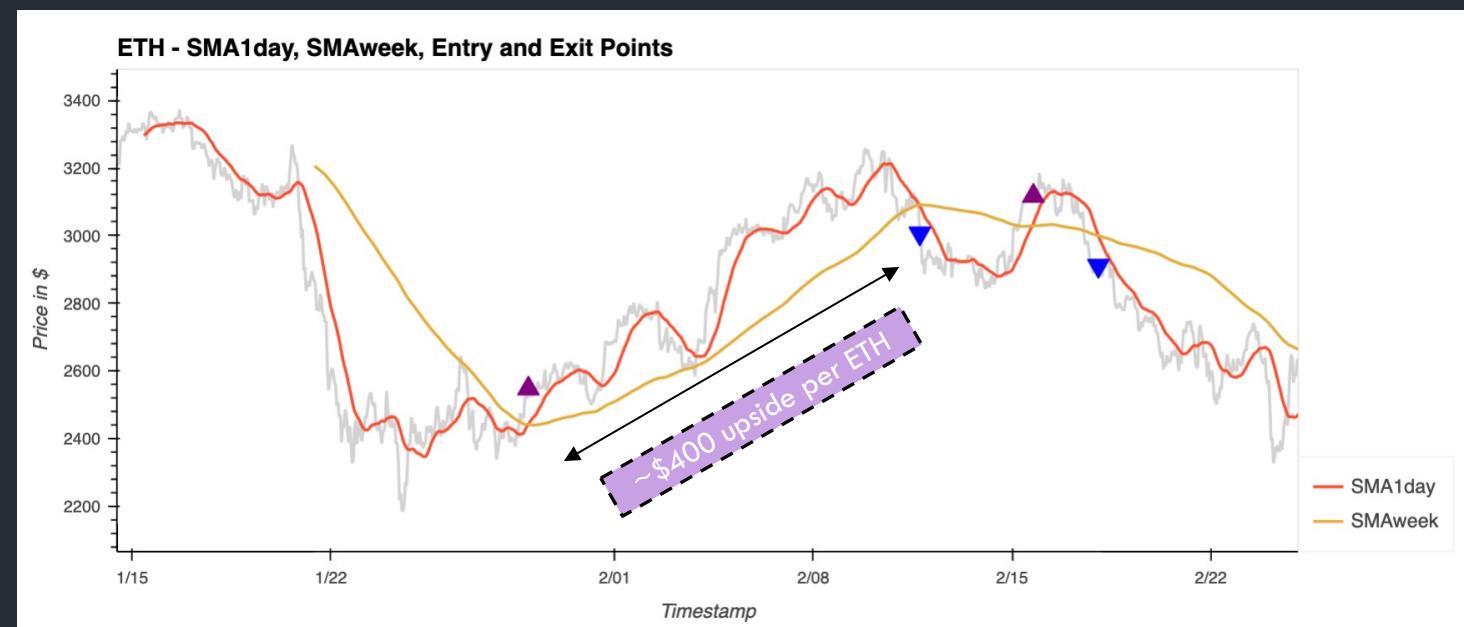
Highest Content Sentiment Score

KEY TAKEAWAYS



KEY TAKEAWAYS FROM ANALYSIS

- No meaningful impact when looking at positive sentiment coins and implementing a trading strategy around 1-day and 1-week SMA price intersections.
- Ethereum had the lowest sentiment score but ultimately would have had the largest potential profit from its first two trades.
- For most other coins in the portfolio, the algorithm would result in majority losses.



Data & Calculations	APIs	Packages
1. Data extraction via Binance US exchange (using CCXT)	Binance US API	Numpy, Pandas, TQDM, Hvplot, Matplotlib
2. Sentiment Analysis on 6 cryptos within portfolio dashboard	News API	NLTK, JSON, Pandas
3. Pick top 3 best sentiment scores (compound score on article & title)	N/A	NLTK, Pandas
4. Build entry & exit point chart analysis for each of the 6 cryptos within the portfolio dashboard	N/A	Custom functions, Hvplot