In [2]:
```
import ccxt
import pandas as pd
import numpy as np
import talib as ta
import ta
import matplotlib.pyplot as plt
import dash
import plotly.express as px
import plotly.graph_objects as go
import urllib
import socket
import os
from datetime import datetime, timedelta
from sqlalchemy import create_engine
from dash import dcc, html
from flask import Flask
```

In [3]:
```
# Initialize Kraken exchange via ccxt
kraken = ccxt.kraken()
```

In [4]:
```
# Download historical data from Kraken
def get_crypto_data(symbol, timeframe='1m'):
    # Calculate the 'since' timestamp to fetch data from 7 days ago
    seven_days_ago = datetime.now() - timedelta(days=7)
    since = int(seven_days_ago.timestamp() * 1000)  # Convert to milliseconds

    ohlcv = kraken.fetch_ohlcv(symbol, timeframe=timeframe, since=since)
    df = pd.DataFrame(ohlcv, columns=['timestamp', 'Open', 'High', 'Low', 'Close',
    df['timestamp'] = pd.to_datetime(df['timestamp'], unit='ms')
    df.set_index('timestamp', inplace=True)
    return df
```

In [5]:
```
# Statistical Analysis
def calculate_statistical_analysis(df):
    df['mean'] = df['Close'].mean()
    df['median'] = df['Close'].median()
    df['std_dev'] = df['Close'].std()
    df['skew'] = df['Close'].skew()
    df['kurtosis'] = df['Close'].kurtosis()
    return df
```

In [6]:
```
# Volatility Calculations
def calculate_volatility(df, window):
    df['returns'] = df['Close'].pct_change()
    df['volatility'] = df['returns'].rolling(window=window).std() * np.sqrt(window)
    return df
```

In [7]:
```
# Add Calculations for Support and Resistance Levels
def find_support_resistance(df):
    df['support'] = df['Low'].rolling(window=60).min()
    df['resistance'] = df['High'].rolling(window=60).max()
    return df
```

In [8]:
```python
# Moving Averages
def calculate_moving_averages(df, short_window=14, long_window=50):
    df['SMA_14'] = ta.SMA(df['Close'], timeperiod=short_window)
    df['EMA_50'] = ta.EMA(df['Close'], timeperiod=long_window)
    return df
```

In [9]:
```python
# Bollinger Bands
def calculate_bollinger_bands(df, window=20, num_std=2):
    df['BB_upper'], df['BB_middle'], df['BB_lower'] = ta.BBANDS(df['Close'], timepe
    return df
```

In [10]:
```python
# RSI Calculation
def calculate_rsi(df, period=14):
    df['RSI'] = ta.RSI(df['Close'], timeperiod=period)
    return df
```

In [11]:
```python
# VWAP Calculation
def calculate_vwap(df):
    df['vwap'] = (df['Volume'] * (df['High'] + df['Low'] + df['Close']) / 3).cumsum
    return df
```

In [12]:
```python
# Fibonacci Levels
def calculate_fibonacci_levels(df):
    max_price = df['Close'].max()
    min_price = df['Close'].min()
    diff = max_price - min_price
    df['fib_0.236'] = max_price - 0.236 * diff
    df['fib_0.382'] = max_price - 0.382 * diff
    df['fib_0.5'] = max_price - 0.5 * diff
    df['fib_0.618'] = max_price - 0.618 * diff
    df['fib_1'] = min_price
    return df
```

In [13]:
```python
# Main processing function to include statistical analysis
def process_symbol_data(symbol, timeframe, since):
    print(f"\nFetching data for {symbol}...")
    df = get_crypto_data(symbol, timeframe)
    if df is None or df.empty:
        print(f"No data returned for {symbol}. Skipping...")
        return None

    # Run data cleaning, analysis, and feature engineering
    try:
        df = clean_data(df)
        df = calculate_statistical_analysis(df)  # Add statistical analysis here
        df = calculate_moving_averages(df)
        df = calculate_bollinger_bands(df)
        df = calculate_rsi(df)
        df = calculate_volatility(df, window=14)
        df = find_support_resistance(df)
        df = calculate_vwap(df)
        df = calculate_fibonacci_levels(df)
    except Exception as e:
        print(f"Error processing data for {symbol}: {e}")
```

```
        return None

    return df
```

In [14]:
```
def process_symbol_data(symbol, timeframe, since):
    try:
        df = get_crypto_data(symbol, timeframe, since)
        print(f"Data for {symbol}:\n{df.head()}")  # Print the DataFrame for inspec
        # Ensure 'Close' column exists
        if 'close' not in df.columns:
            print(f"Warning: 'close' column missing for {symbol}")
            return None  # Return None if the 'close' column is missing
        df.rename(columns={'close': 'Close'}, inplace=True)  # Rename to 'Close' if
        return df
    except Exception as e:
        print(f"Error processing data for {symbol}: {e}")
        return None
```

In [15]:
```
# Database connection configuration
DATABASE_TYPE = 'mssql'
DBAPI = 'pyodbc'
SERVER = 'MARTIN'
DATABASE = 'crypto_data'
DRIVER = 'ODBC Driver 17 for SQL Server'

# SQLAlchemy engine for SQL Server connection
engine = create_engine(f"{DATABASE_TYPE}+{DBAPI}://@{SERVER}/{DATABASE}?driver={DRI

# Define function to save data to SQL
def save_to_sql(df, table_name):
    try:
        if df.empty:
            print("Data is empty after cleaning. Nothing to save.")
            return
        df.to_sql(table_name, con=engine, if_exists='replace', index_label='timesta
        print(f"Data successfully saved to SQL table: {table_name}")
    except Exception as e:
        print(f"Error saving to SQL Server: {e}")
    finally:
        engine.dispose()
        print("SQL connection closed.")
```

In [16]:
```
# Define function to save data to CSV
def save_to_csv(df, file_name):
    file_path = os.path.join(os.getcwd(), file_name)
    df.to_csv(file_path, index=True)
    print(f"Data saved to CSV file: {file_name}")
```

In [17]:
```
# Define function to fetch and process data for a specific symbol
def get_crypto_data(symbol, timeframe='1m', since=None):
    # Ensure kraken is defined and connected
    ohlcv = kraken.fetch_ohlcv(symbol, timeframe=timeframe, since=since)
    df = pd.DataFrame(ohlcv, columns=['timestamp', 'open', 'high', 'low', 'close',
    df['timestamp'] = pd.to_datetime(df['timestamp'], unit='ms')
```

```
    df.set_index('timestamp', inplace=True)
    return df
```

In [18]:
```
# Define function to process symbol data
def process_symbol_data(symbol, timeframe, since):
    try:
        df = get_crypto_data(symbol, timeframe, since)

        if 'close' not in df.columns:
            print(f"Warning: 'close' column missing for {symbol}")
            return None
        df.rename(columns={'close': 'Close'}, inplace=True)

        df['Signal'] = None
        df.loc[df.index[1:], 'Signal'] = [
            'BUY' if df['Close'].iloc[i] > df['Close'].iloc[i-1] else 'SELL'
            for i in range(1, len(df))
        ]

        df['Volatility'] = df['high'] - df['low']

        # Calculate indicators
        df['SMA_14'] = df['Close'].rolling(window=14).mean()
        df['EMA_50'] = df['Close'].ewm(span=50, adjust=False).mean()
        df['BB_upper'] = df['SMA_14'] + 2 * df['Close'].rolling(window=14).std()
        df['BB_lower'] = df['SMA_14'] - 2 * df['Close'].rolling(window=14).std()
        df['RSI'] = compute_rsi(df['Close'], 14)

        return df
    except Exception as e:
        print(f"Error processing data for {symbol}: {e}")
        return None
```

In [19]:
```
def compute_rsi(series, window):
    delta = series.diff(1)
    gain = (delta.where(delta > 0, 0)).rolling(window=window).mean()
    loss = (-delta.where(delta < 0, 0)).rolling(window=window).mean()
    rs = gain / loss
    return 100 - (100 / (1 + rs))

# Plot data points
def plot_data(df, symbol):
    plt.figure(figsize=(14, 8))

    plt.subplot(2, 1, 1)
    plt.plot(df['Close'], label='Close Price')
    plt.plot(df['SMA_14'], label='SMA 14', linestyle='--')
    plt.plot(df['EMA_50'], label='EMA 50', linestyle='--')
    plt.plot(df['BB_upper'], label='Upper BB', linestyle='--')
    plt.plot(df['BB_lower'], label='Lower BB', linestyle='--')
    plt.title(f'{symbol} Close Price with Moving Averages and Bollinger Bands')
    plt.legend()

    plt.subplot(2, 1, 2)
    plt.plot(df['RSI'], label='RSI', color='green')
```

```
    plt.axhline(70, color='red', linestyle='--', label='Overbought (70)')
    plt.axhline(30, color='blue', linestyle='--', label='Oversold (30)')
    plt.title(f'{symbol} RSI')
    plt.legend()

    plt.tight_layout()
    plt.show()

    # Plot signal and volatility
    plt.figure(figsize=(14, 8))
    plt.subplot(2, 1, 1)
    sell_signals = df['Signal'].value_counts().get('SELL', 0)
    plt.plot(df.index, [sell_signals] * len(df), label='Sell Signals')
    plt.title(f'{symbol} Sell Signal Counts')
    plt.legend()

    plt.subplot(2, 1, 2)
    plt.plot(df.index, df['Volatility'], label='Volatility', color='orange')
    plt.title(f'{symbol} Volatility')
    plt.legend()
    plt.tight_layout()
    plt.show()
```

In [20]:

```
# Main function
def main():
    symbols = [
        'ADA/USD', 'APE/USD', 'AUCTION/USD', 'BODEN/USD', 'BTC/USD', 'CPOOL/USD', '
        'EUL/USD', 'GMT/USD', 'LINK/USD', 'USDT/USD', 'MEME/USD', 'MNT/USD', 'MOG/U
        'NTRN/USD', 'PYTH/USD', 'RENDER/USD', 'SAFE/USD', 'SUPER/USD', 'TNSR/USD',
        'XMR/USD', 'ZRX/USD', 'LTC/USD', 'DOGE/USD'
    ]
    timeframe = '1m'
    since = kraken.parse8601('2024-01-01T00:00:00Z')
    risk_threshold = 0.05
    all_crypto_data = {}
    sell_counts = {}
    buy_counts = {}
    risk_labels = {}

    for symbol in symbols:
        df = process_symbol_data(symbol, timeframe, since)
        if df is not None:
            plot_data(df, symbol)

    for symbol in symbols:
        df = process_symbol_data(symbol, timeframe, since)
        if df is None or 'Close' not in df.columns or 'Signal' not in df.columns:
            print(f"Skipping {symbol}: Data not available or required columns missi
            continue

        sell_counts[symbol] = df['Signal'].value_counts().get('SELL', 0)
        buy_counts[symbol] = df['Signal'].value_counts().get('BUY', 0)

        avg_volatility = df['Volatility'].mean() if 'Volatility' in df.columns else
        risk_label = "High Risk" if avg_volatility and avg_volatility > risk_thresh
        risk_labels[symbol] = risk_label
```

```
        df['Risk'] = risk_label

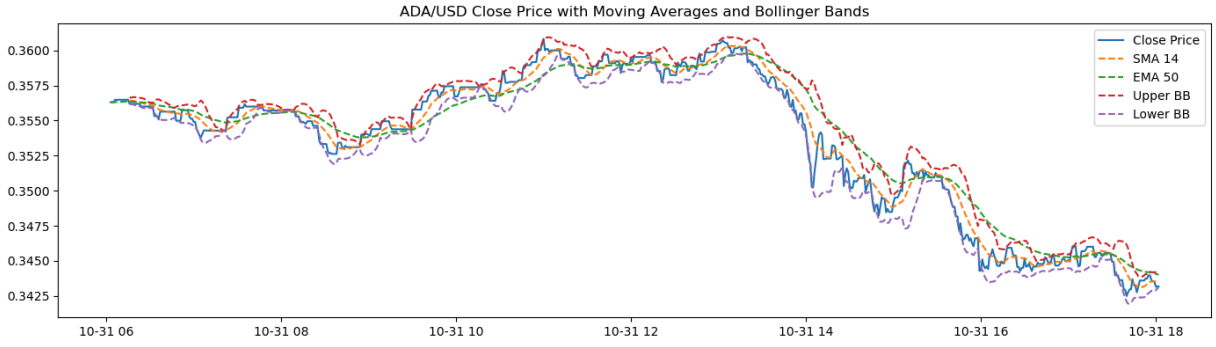
        all_crypto_data[symbol] = df[['Close', 'Signal', 'Risk']]
        table_name = f"{symbol.replace('/', '_')}_data"
        save_to_sql(df, table_name)
        save_to_csv(df, f"{table_name}.csv")
        plot_data(df, symbol)

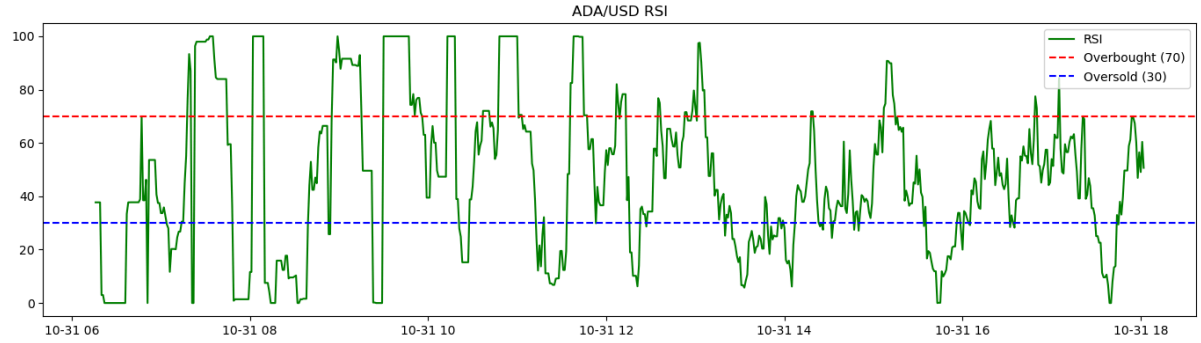
    top_sell_symbols = sorted(sell_counts.items(), key=lambda x: x[1], reverse=True
    print("\nTop 10 Symbols with Most 'SELL' Signals:")
    for symbol, count in top_sell_symbols:
        print(f"{symbol}: {count} 'SELL' signals")

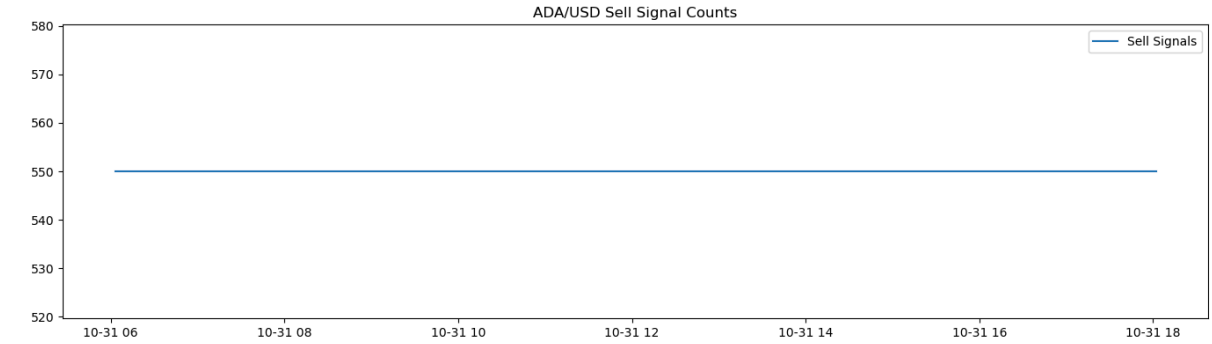
    print("\nRisk Classification:")
    for symbol, risk in risk_labels.items():
        print(f"{symbol}: {risk}")

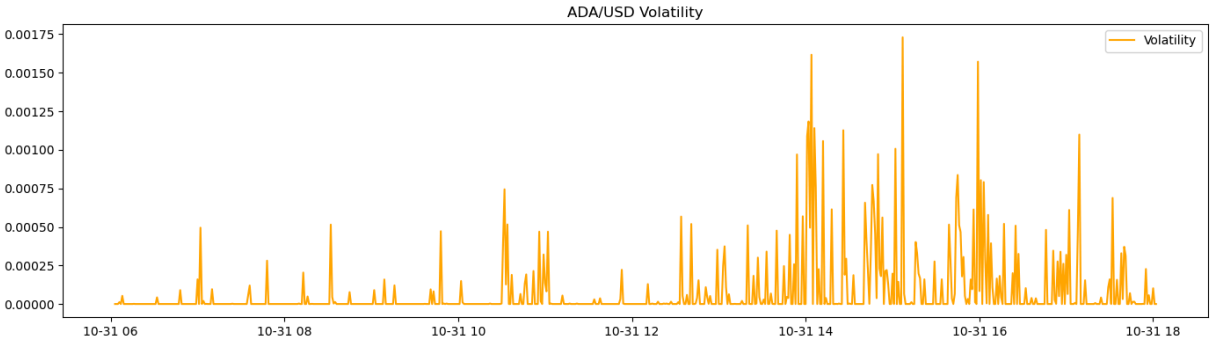
    return all_crypto_data

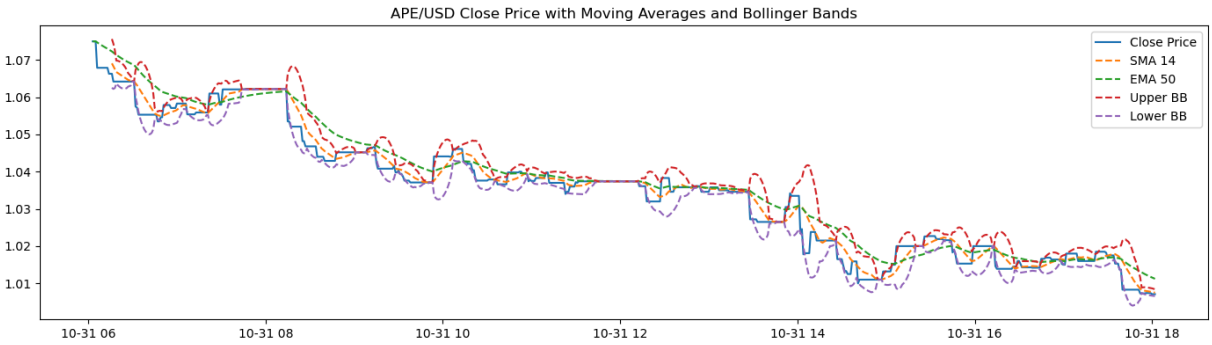
if __name__ == "__main__":
    all_crypto_data = main()
```

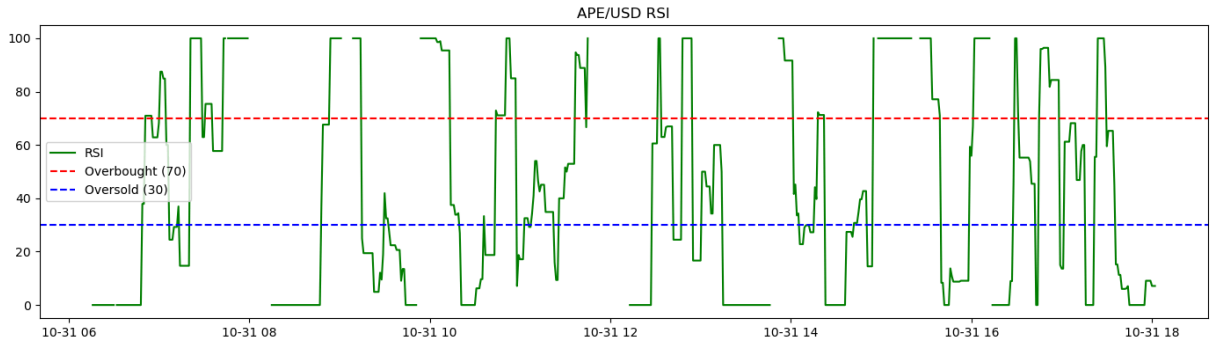


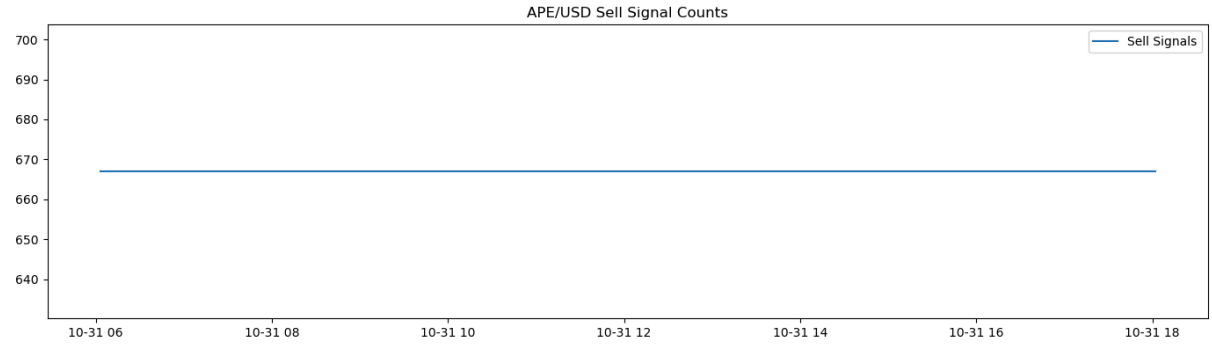


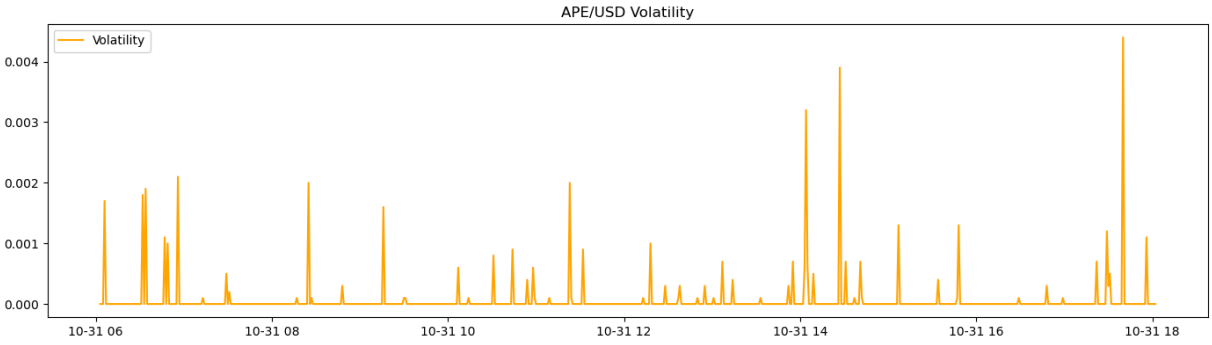

ADA/USD Sell Signal Counts
Sell Signals
580
570
560
550
540
530
520
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

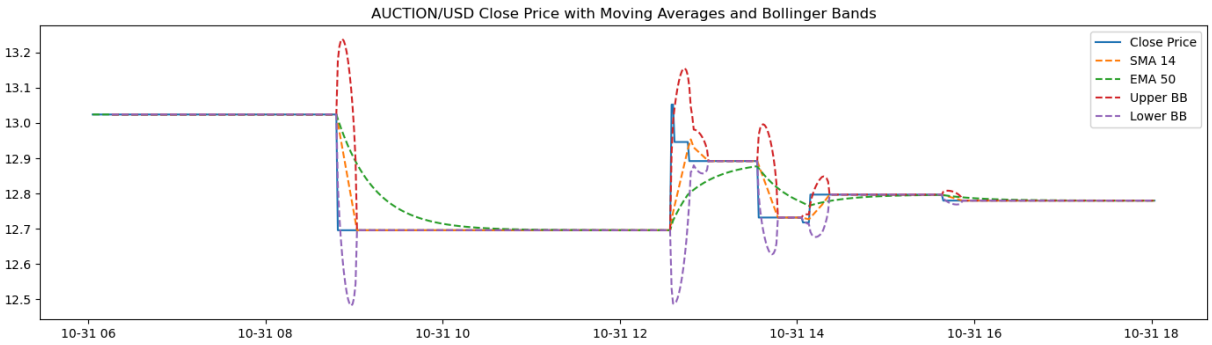

ADA/USD Volatility
Volatility
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

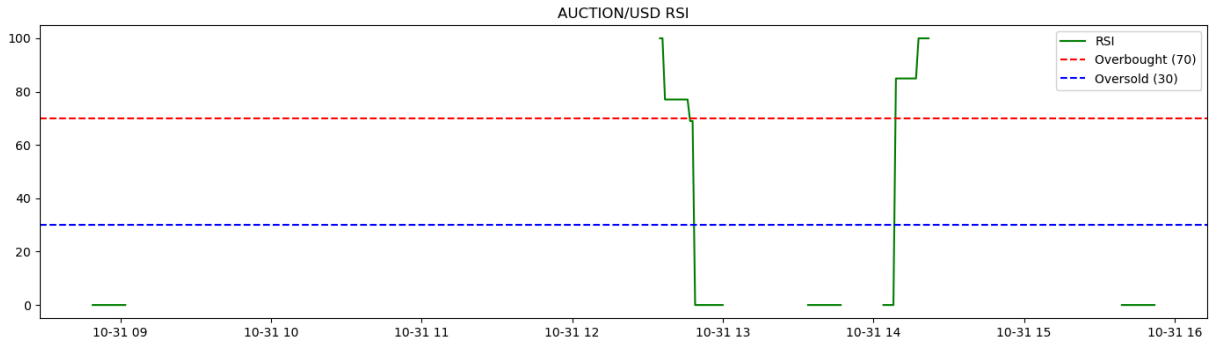

APE/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.07
1.06
1.05
1.04
1.03
1.02
1.01
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

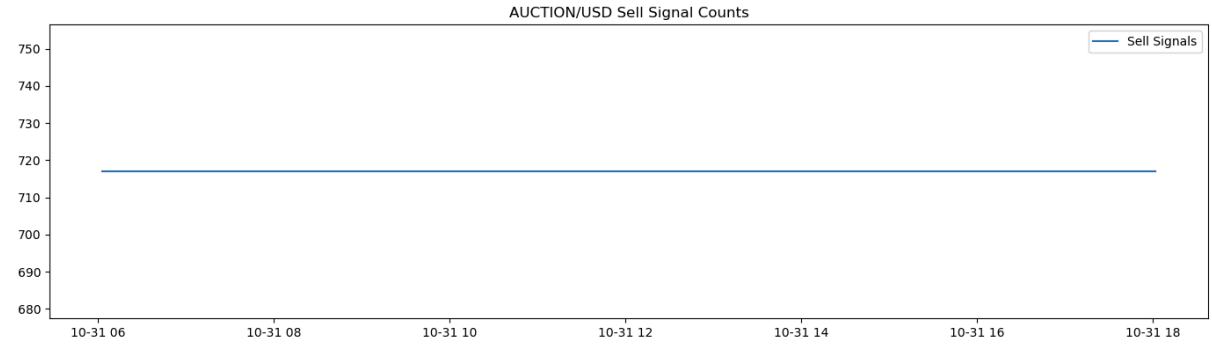

APE/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

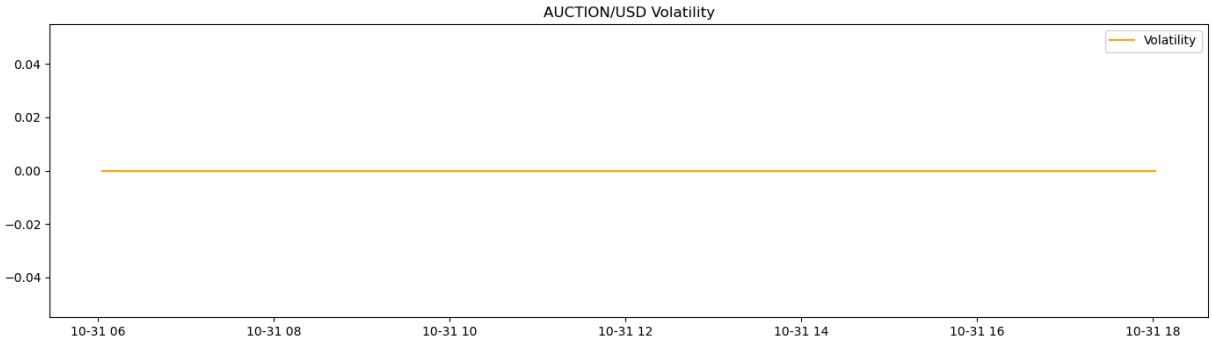

APE/USD Sell Signal Counts
Sell Signals
700
690
680
670
660
650
640
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

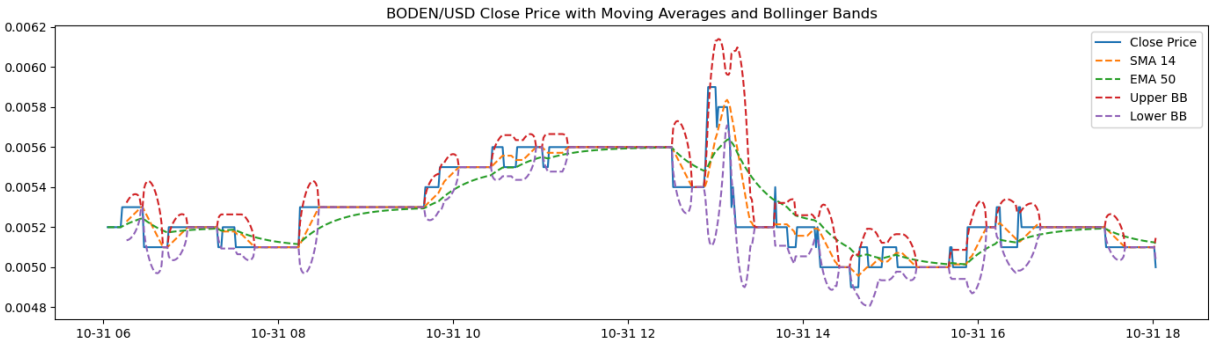

APE/USD Volatility
Volatility
0.004
0.003
0.002
0.001
0.000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

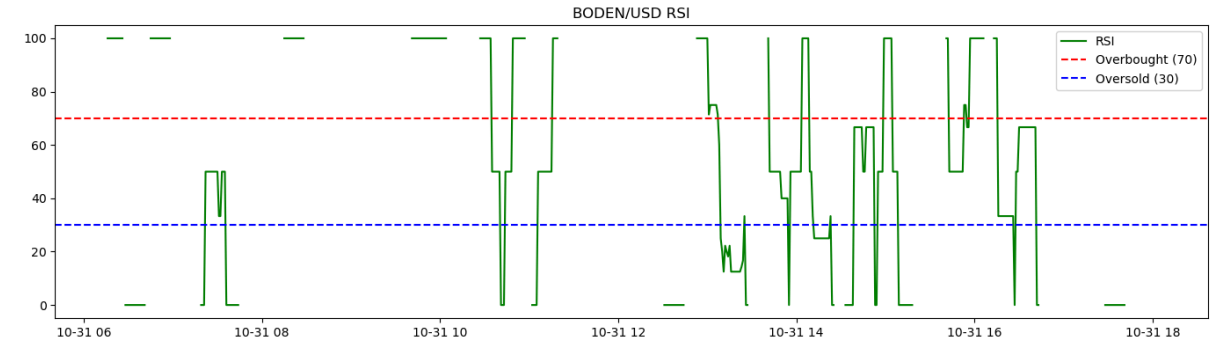

AUCTION/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
13.2
13.1
13.0
12.9
12.8
12.7
12.6
12.5
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

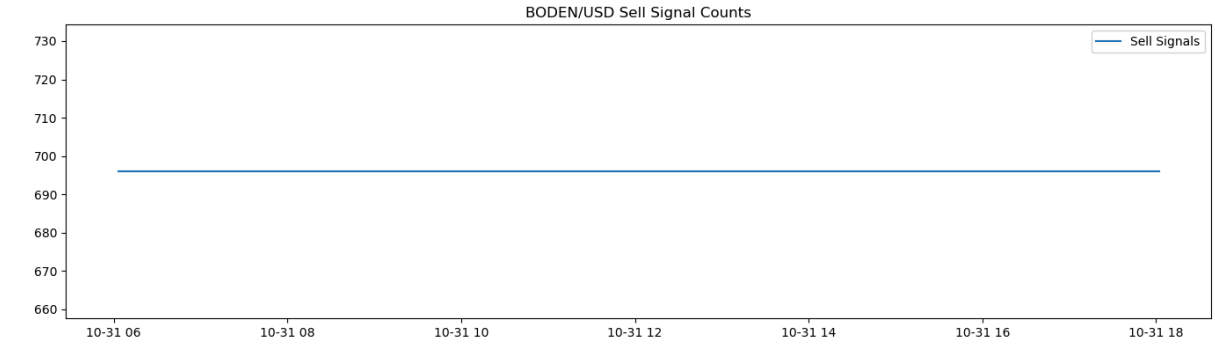

AUCTION/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16

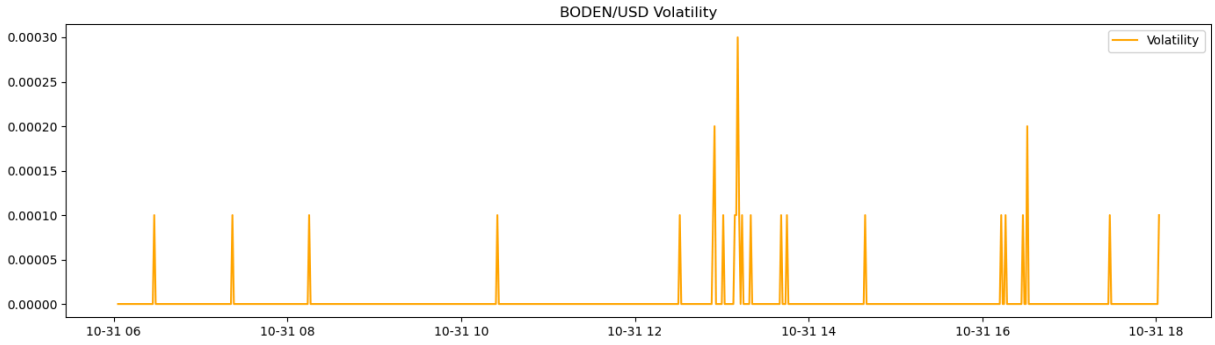

AUCTION/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

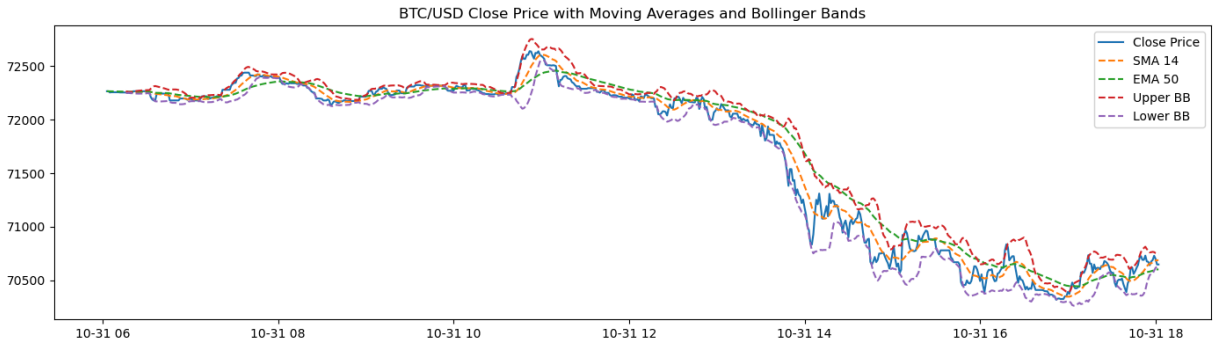

AUCTION/USD Volatility
Volatility
0.04
0.02
0.00
−0.02
−0.04
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

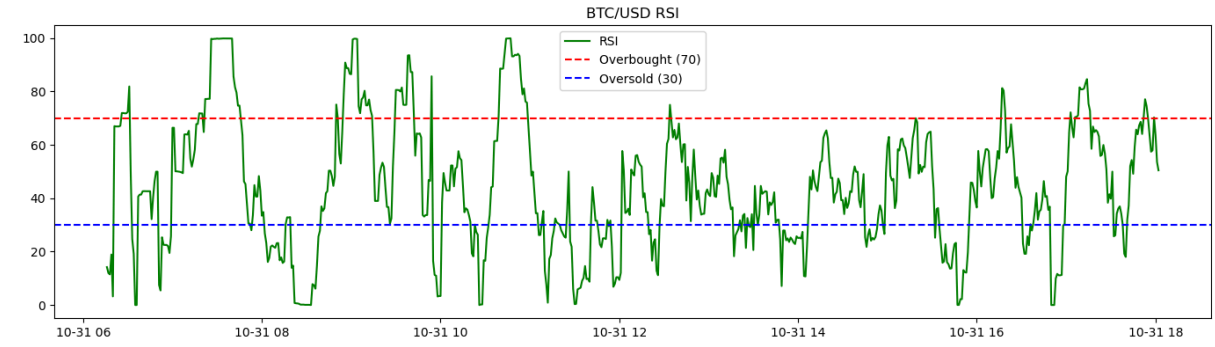

BODEN/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.0062
0.0060
0.0058
0.0056
0.0054
0.0052
0.0050
0.0048
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

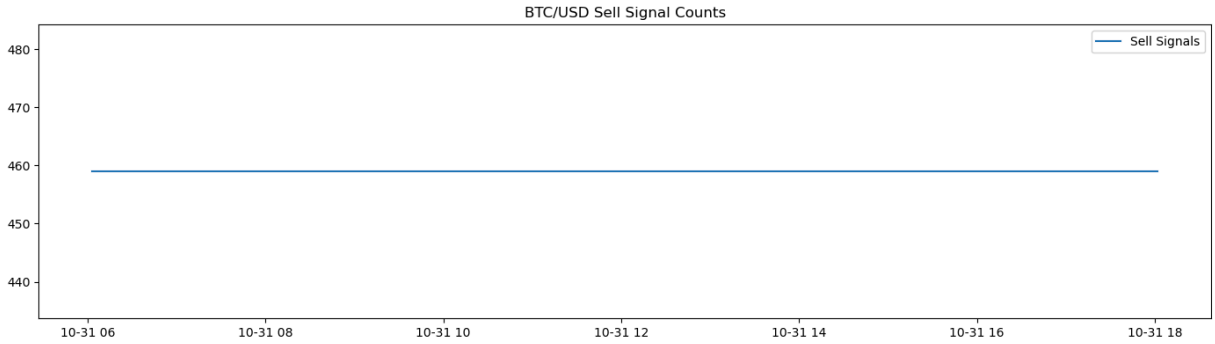

BODEN/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

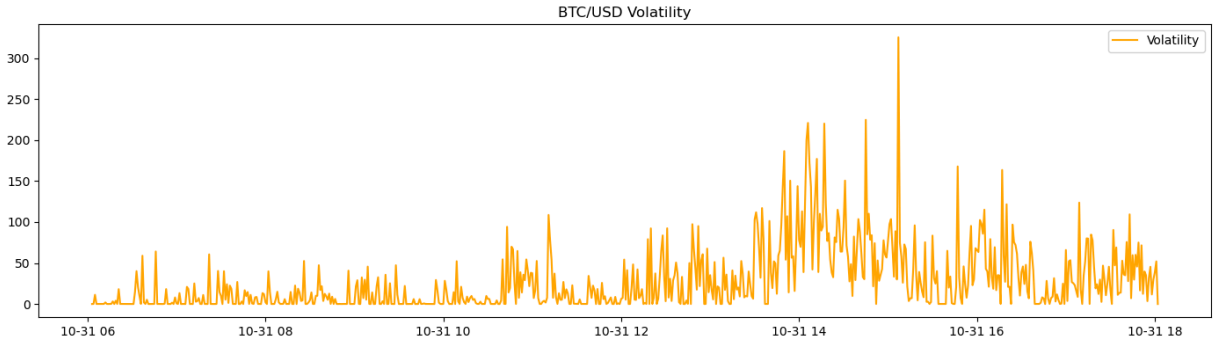

BODEN/USD Sell Signal Counts
Sell Signals
730
720
710
700
690
680
670
660
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

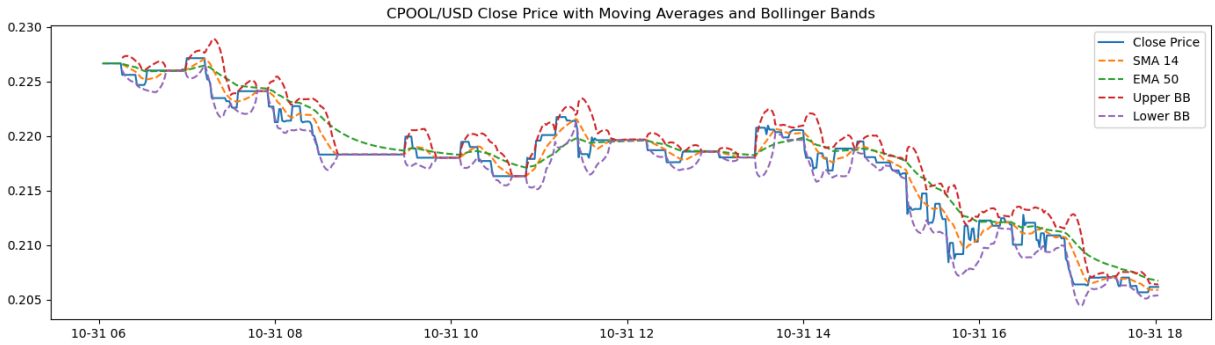

BODEN/USD Volatility
Volatility
0.00030
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

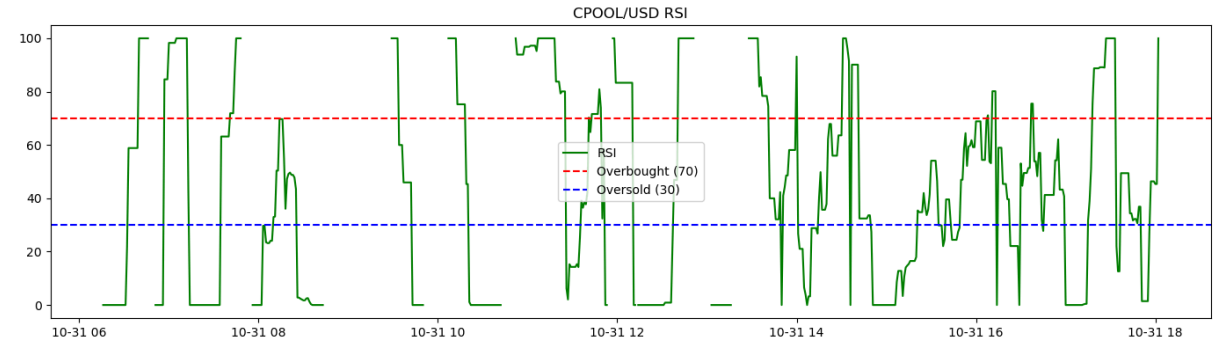

BTC/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
72500
72000
71500
71000
70500
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

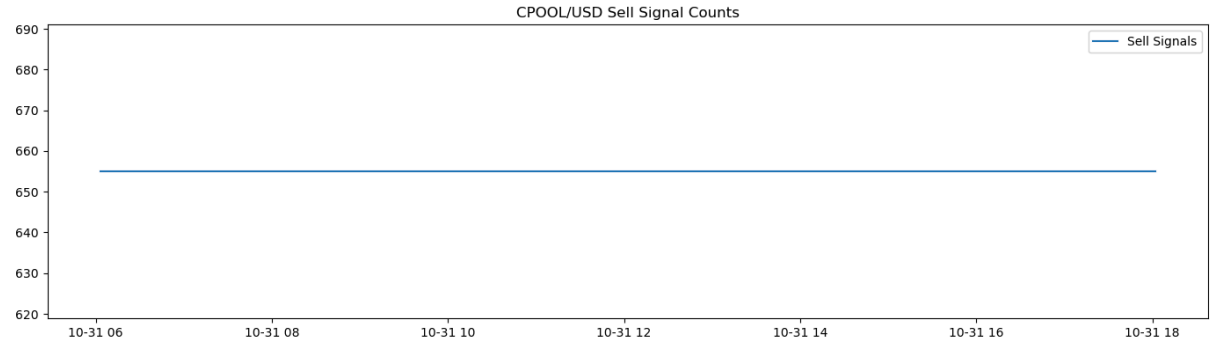

BTC/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

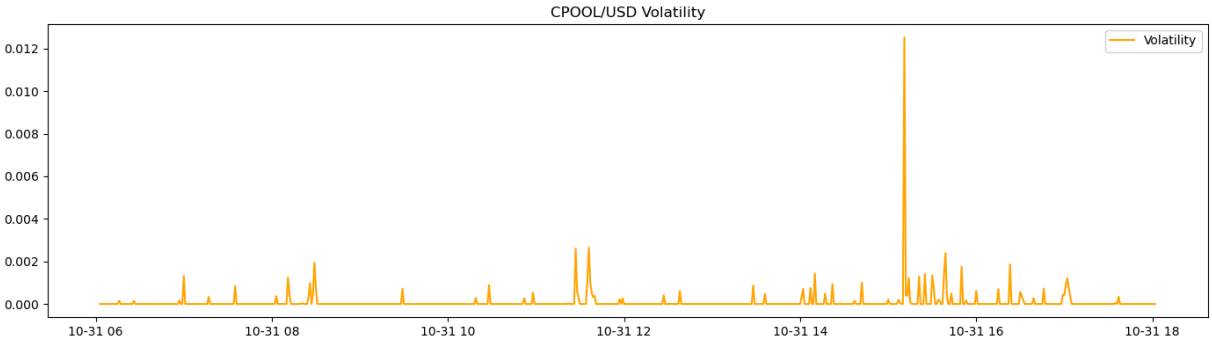

BTC/USD Sell Signal Counts
Sell Signals
480
470
460
450
440
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

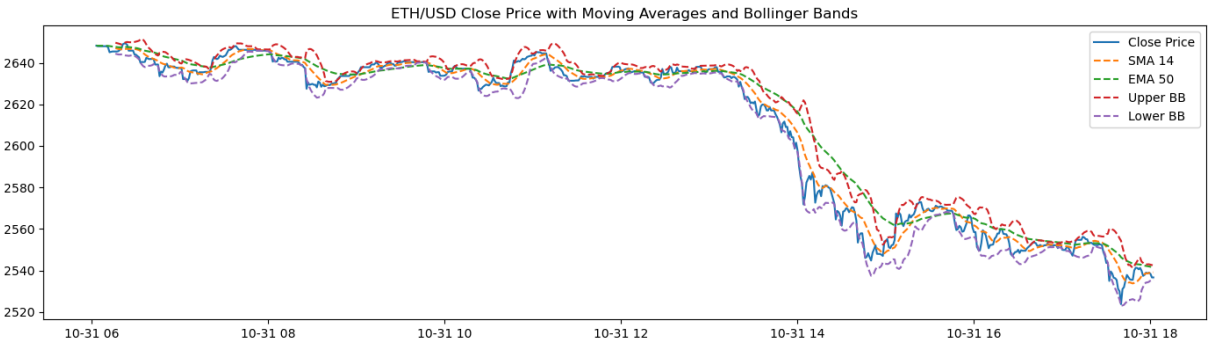

BTC/USD Volatility
Volatility
300
250
200
150
100
50
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

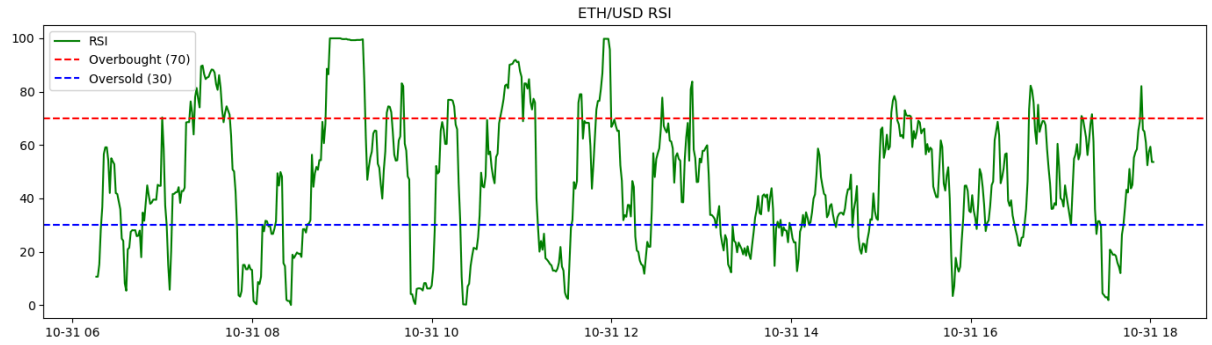

CPOOL/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.230
0.225
0.220
0.215
0.210
0.205
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

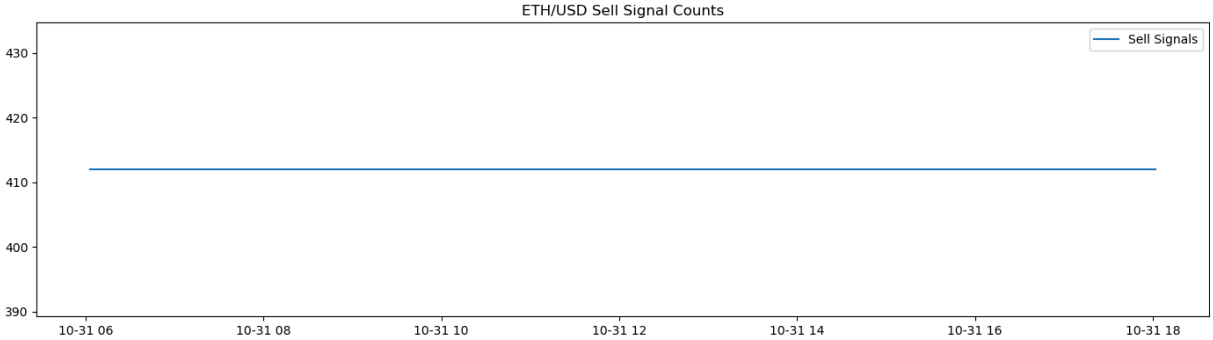

CPOOL/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

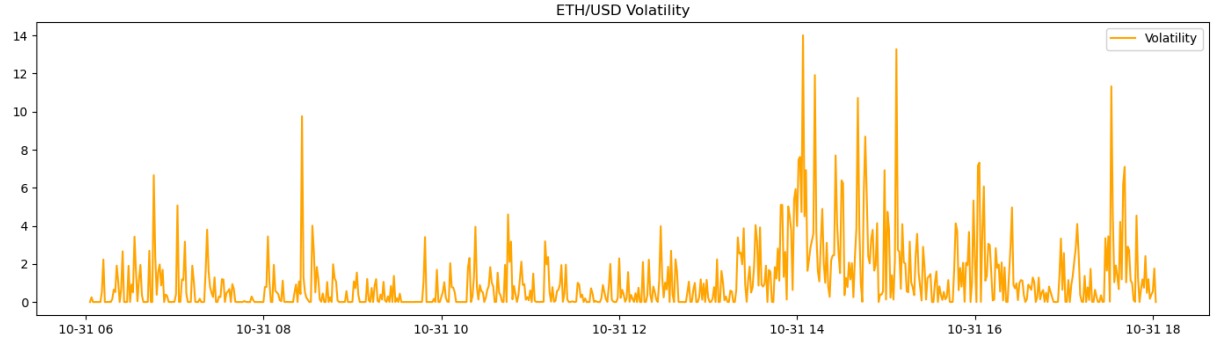

CPOOL/USD Sell Signal Counts
Sell Signals
690
680
670
660
650
640
630
620
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

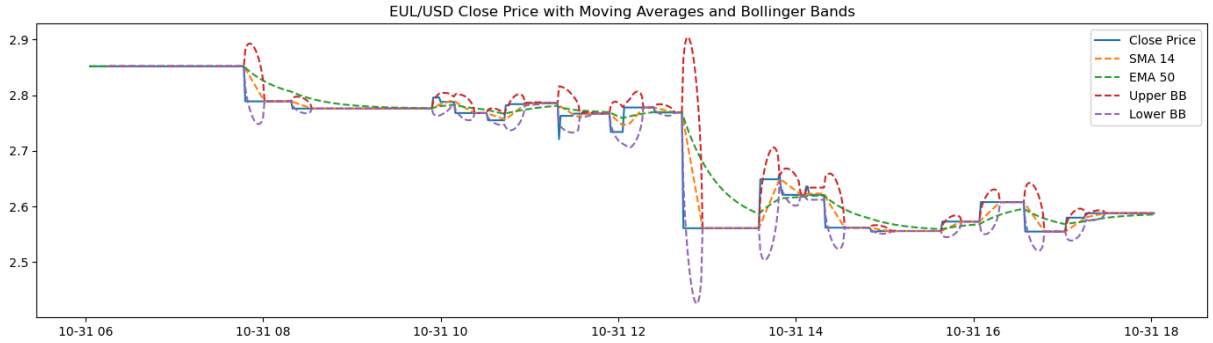

CPOOL/USD Volatility
Volatility
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

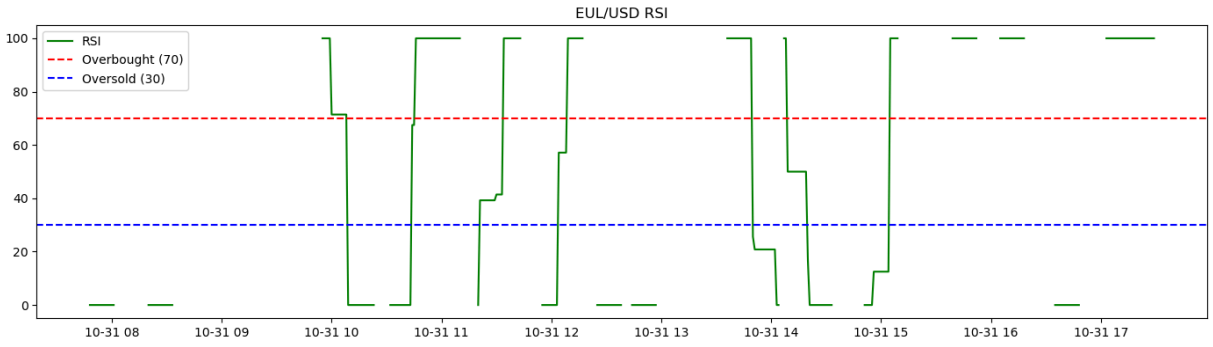

ETH/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
2640
2620
2600
2580
2560
2540
2520
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

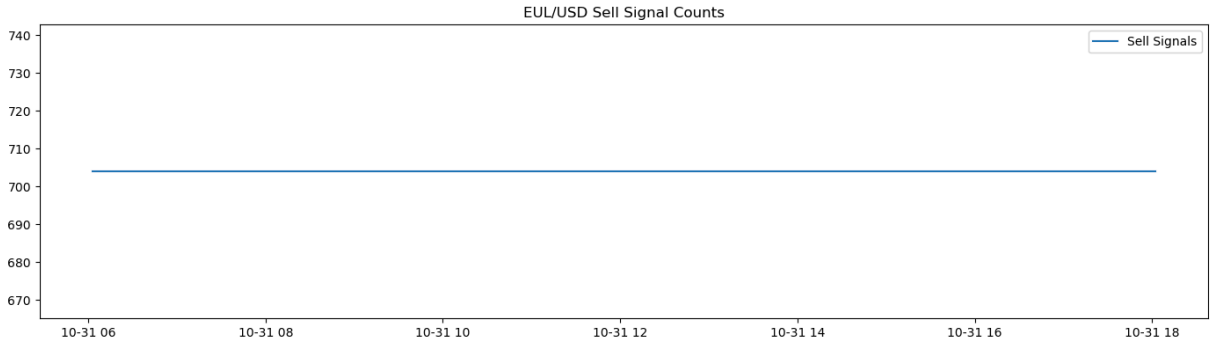

ETH/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

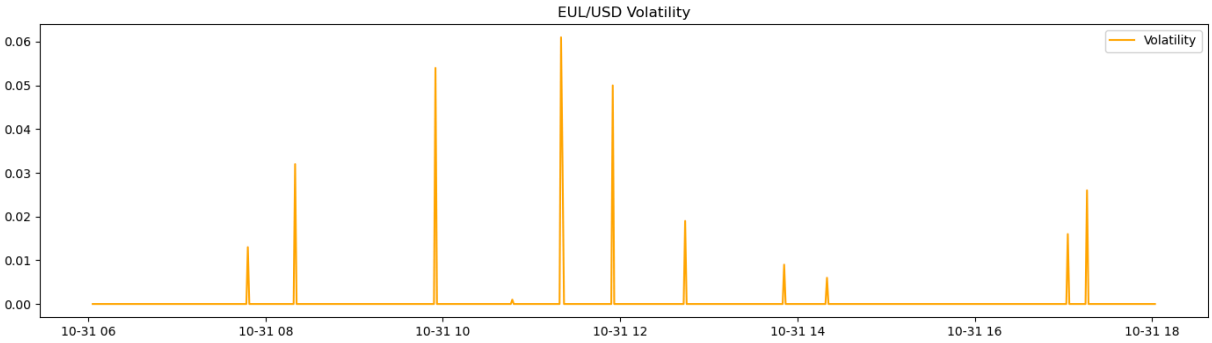

ETH/USD Sell Signal Counts
Sell Signals
430
420
410
400
390
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

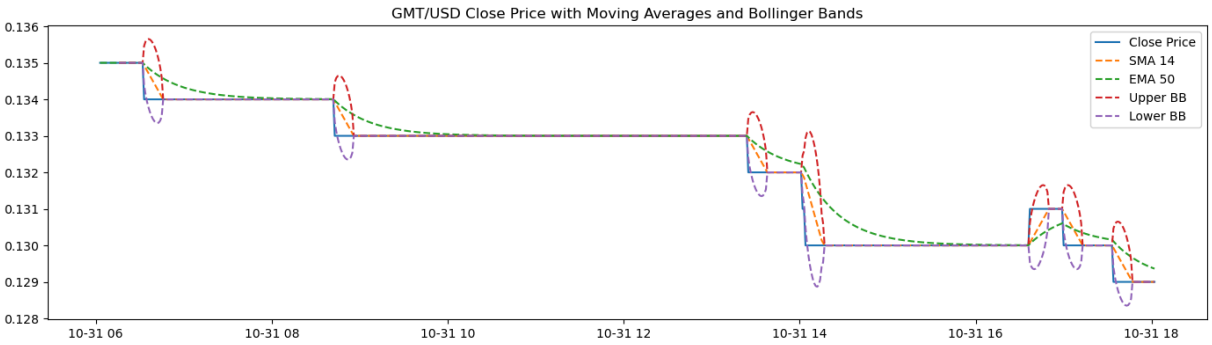

ETH/USD Volatility
Volatility
14
12
10
8
6
4
2
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

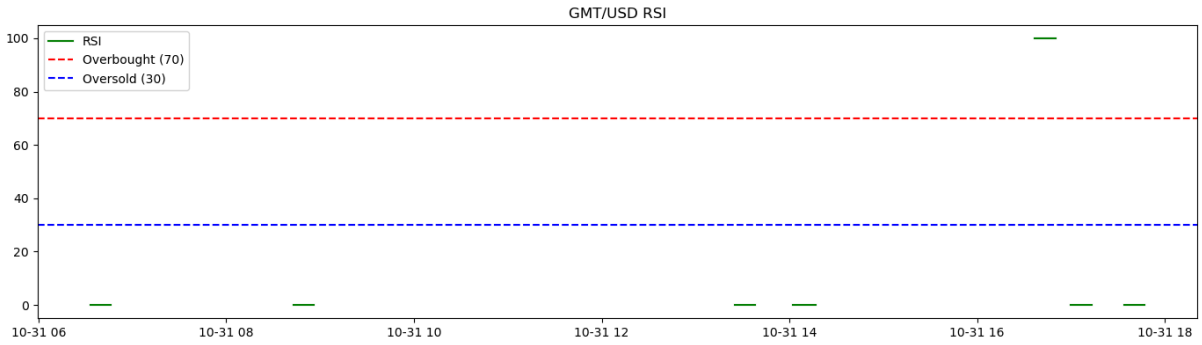

EUL/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
2.9
2.8
2.7
2.6
2.5
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

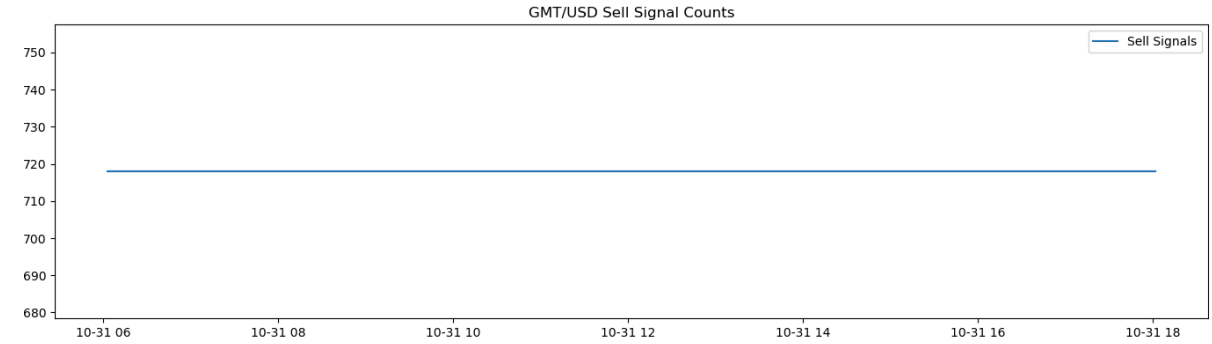

EUL/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16
10-31 17

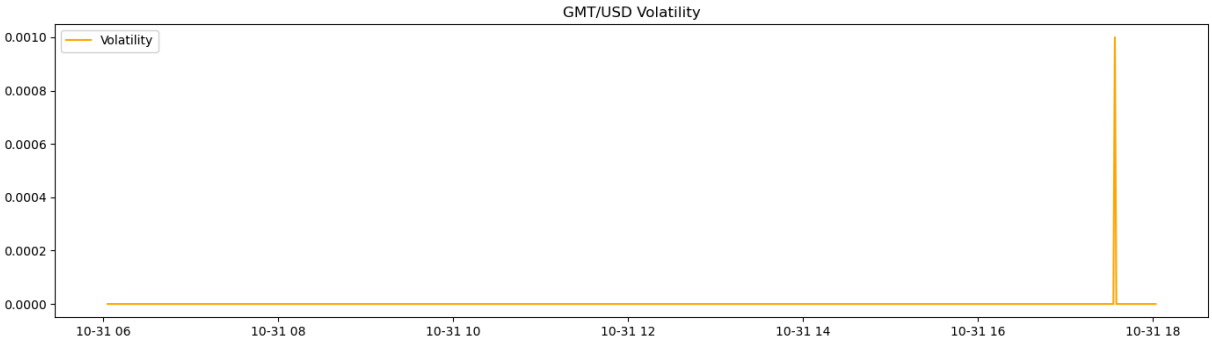

EUL/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
670
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

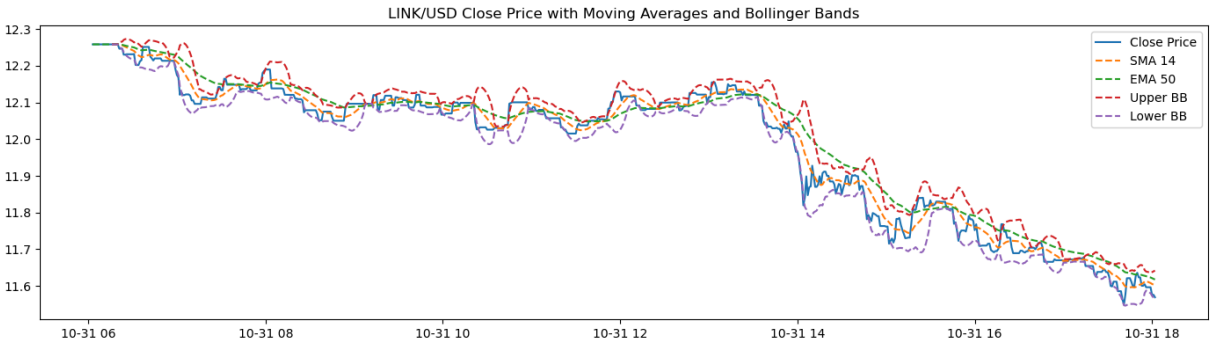

EUL/USD Volatility
Volatility
0.06
0.05
0.04
0.03
0.02
0.01
0.00
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

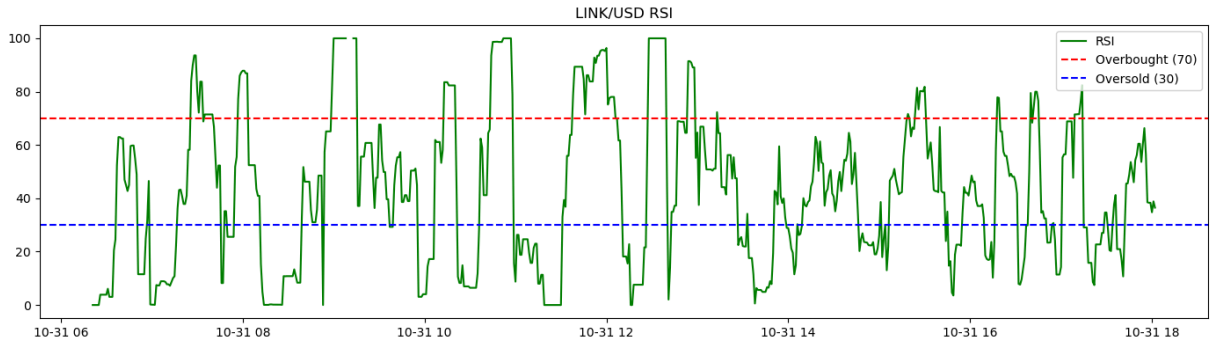

GMT/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.136
0.135
0.134
0.133
0.132
0.131
0.130
0.129
0.128
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

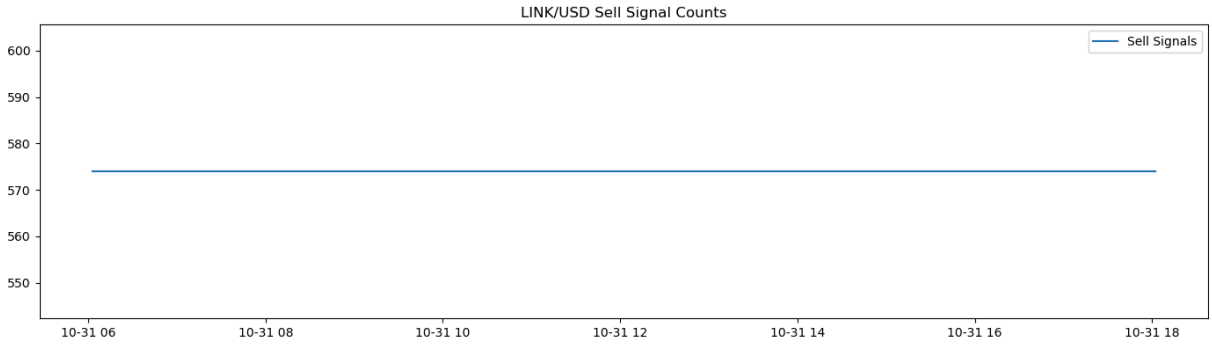

GMT/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

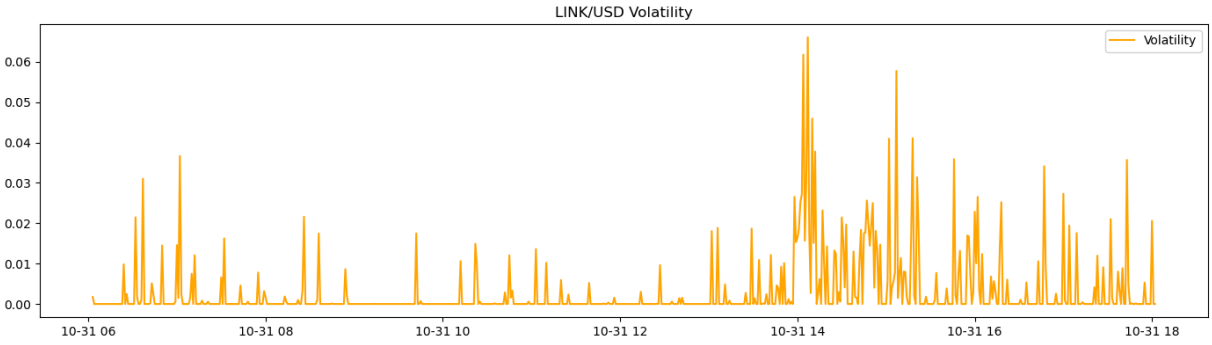

GMT/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

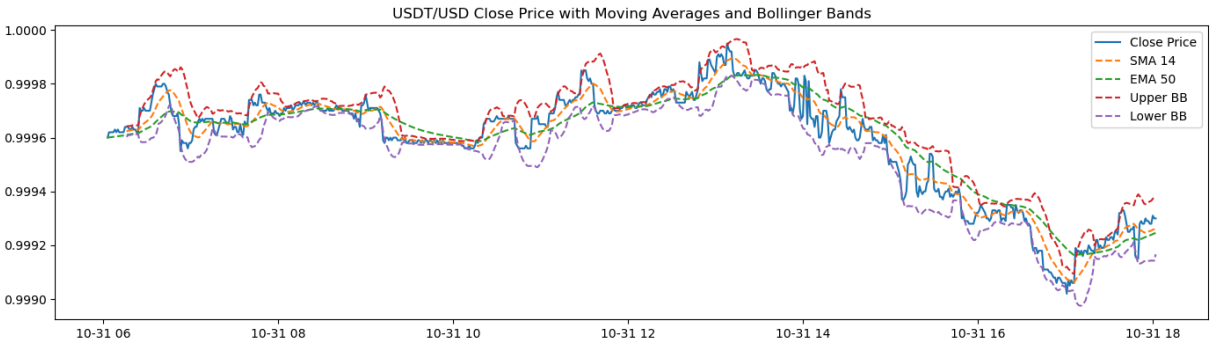

GMT/USD Volatility
Volatility
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

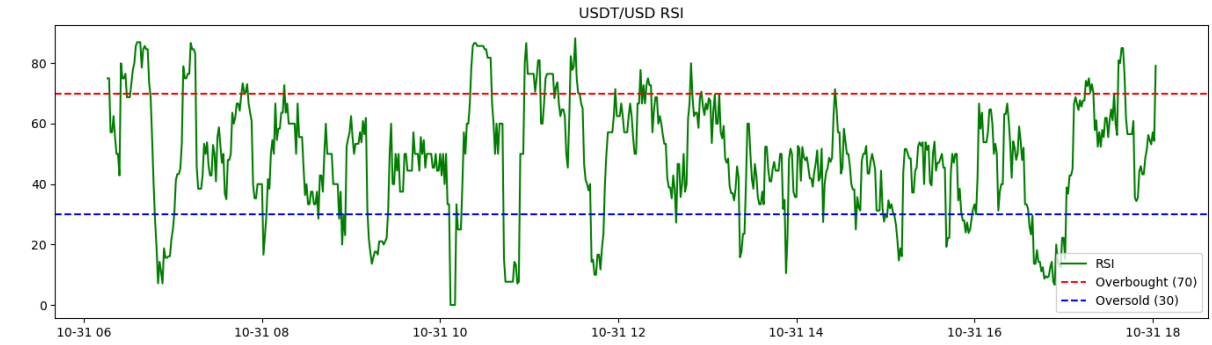

LINK/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
12.3
12.2
12.1
12.0
11.9
11.8
11.7
11.6
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

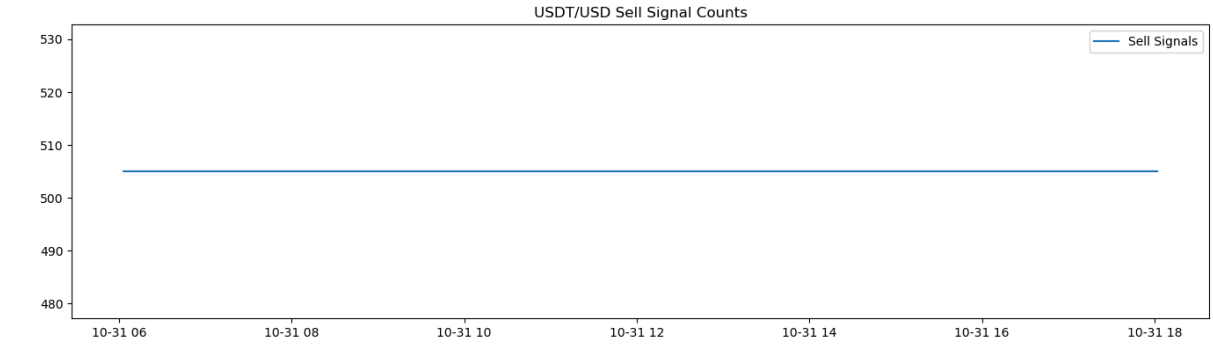

LINK/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

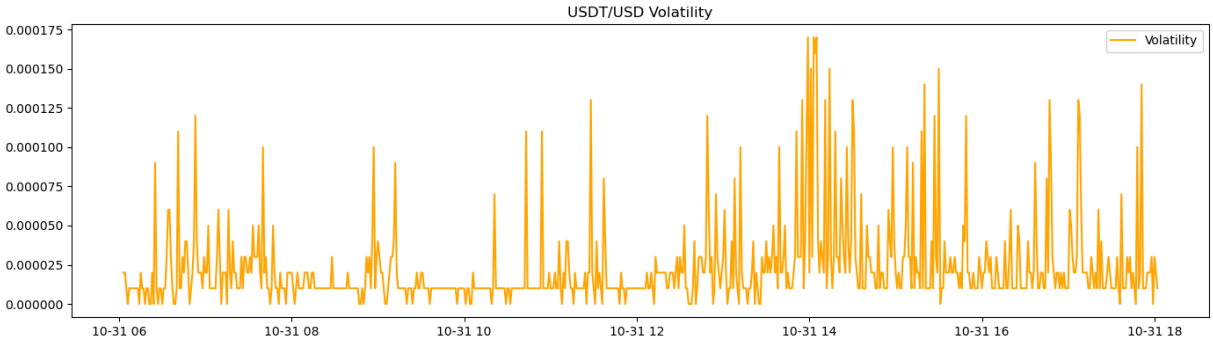

LINK/USD Sell Signal Counts
Sell Signals
600
590
580
570
560
550
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

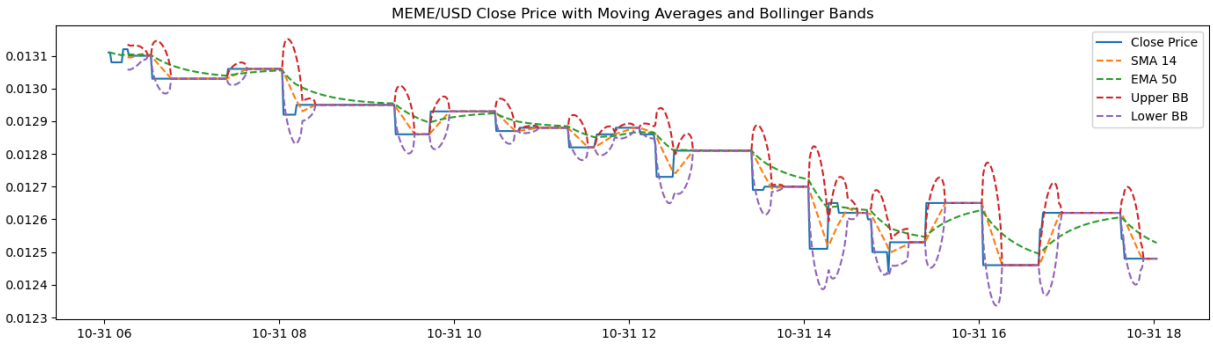

LINK/USD Volatility
Volatility
0.06
0.05
0.04
0.03
0.02
0.01
0.00
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

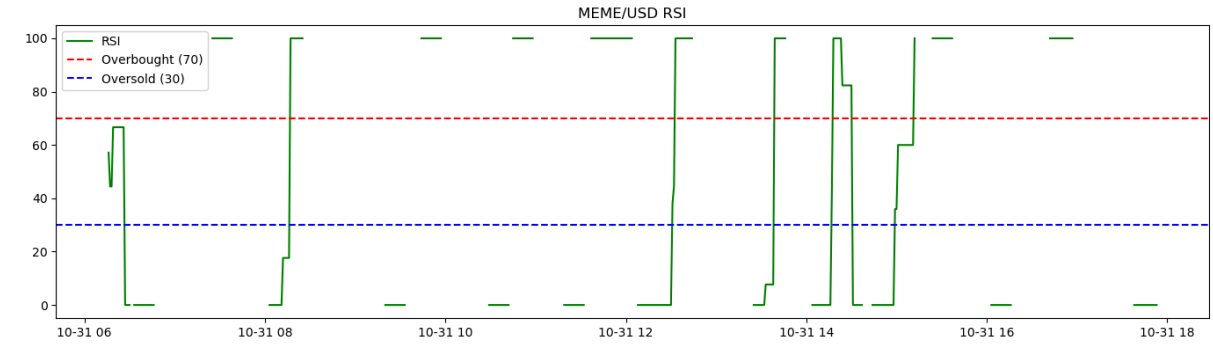

USDT/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.0000
0.9998
0.9996
0.9994
0.9992
0.9990
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

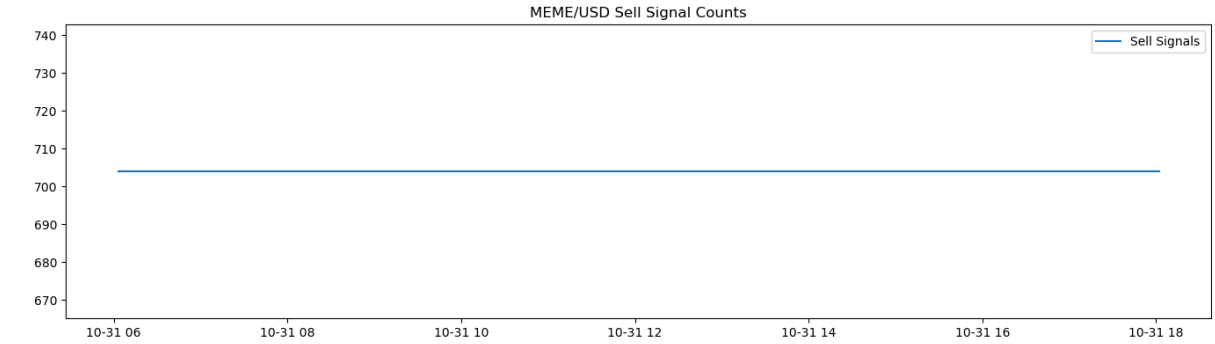

USDT/USD RSI
RSI
Overbought (70)
Oversold (30)
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

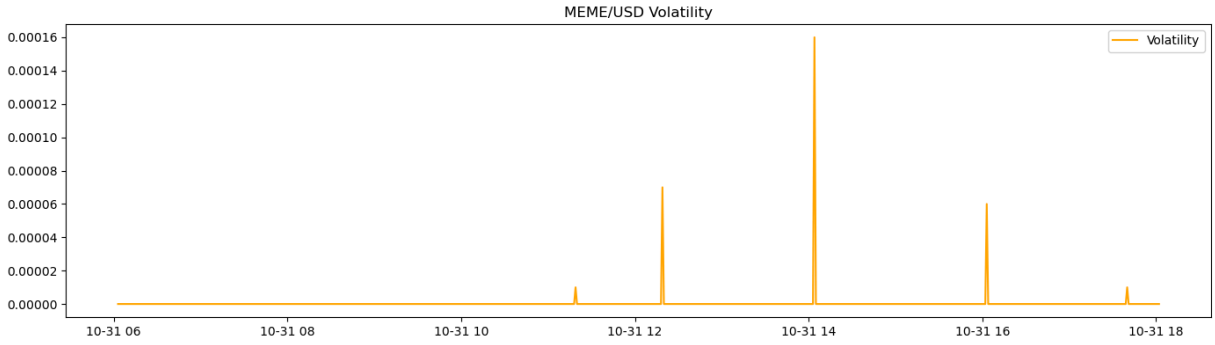

USDT/USD Sell Signal Counts
Sell Signals
530
520
510
500
490
480
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

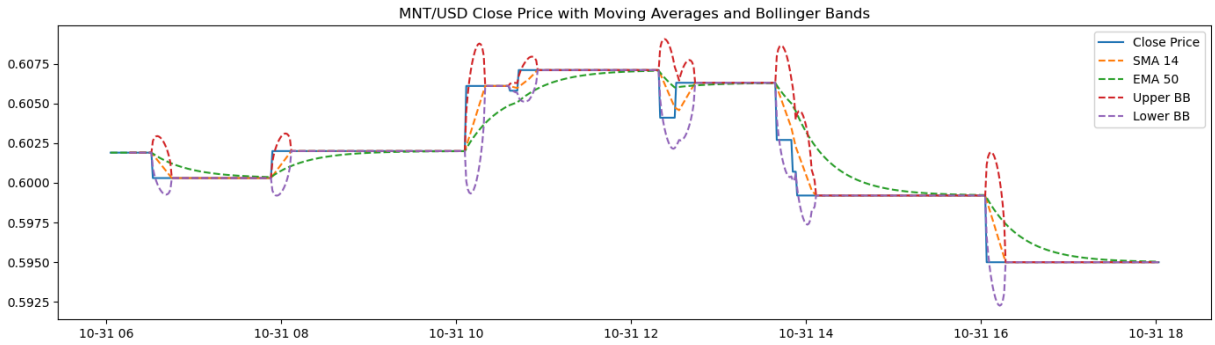

USDT/USD Volatility
Volatility
0.000175
0.000150
0.000125
0.000100
0.000075
0.000050
0.000025
0.000000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

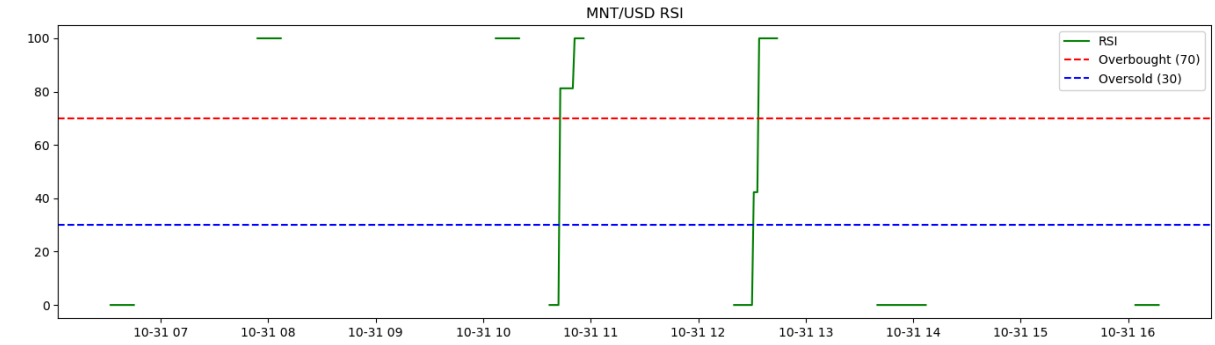

MEME/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.0131
0.0130
0.0129
0.0128
0.0127
0.0126
0.0125
0.0124
0.0123
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

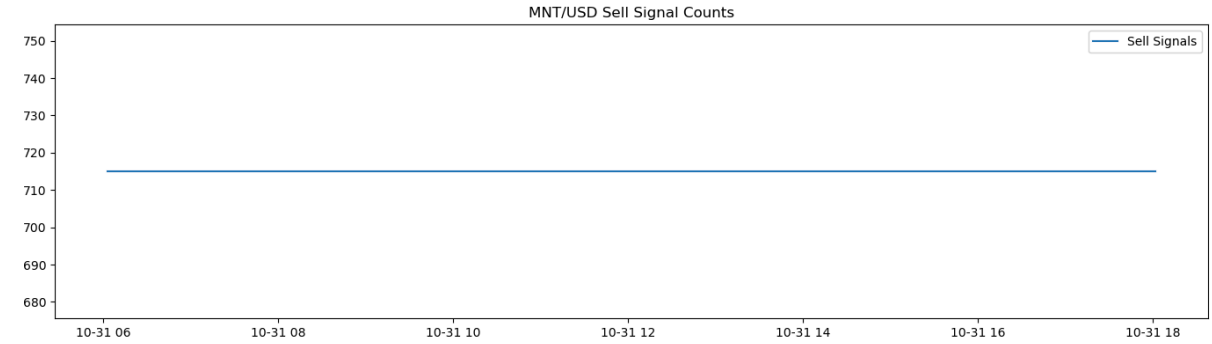

MEME/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

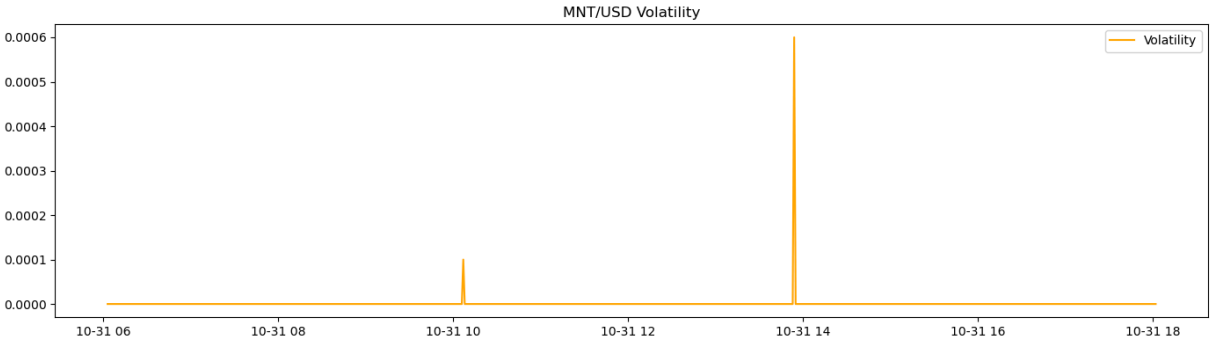

MEME/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
670
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

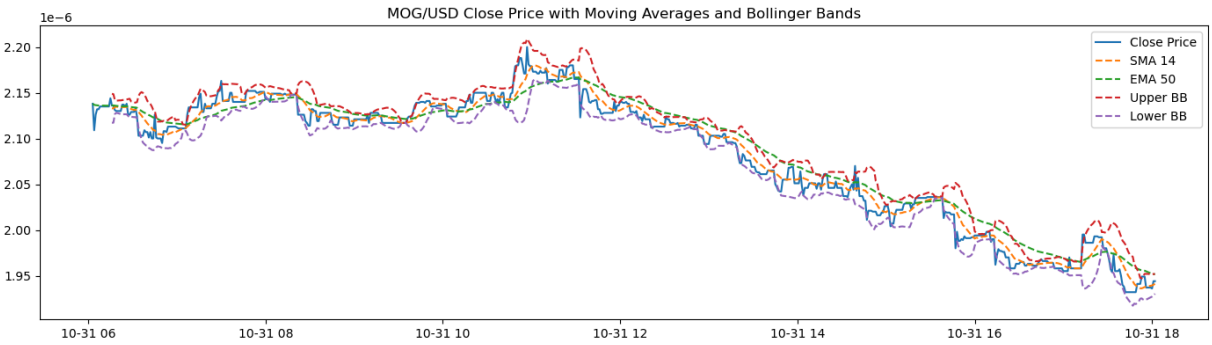

MEME/USD Volatility
Volatility
0.00016
0.00014
0.00012
0.00010
0.00008
0.00006
0.00004
0.00002
0.00000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

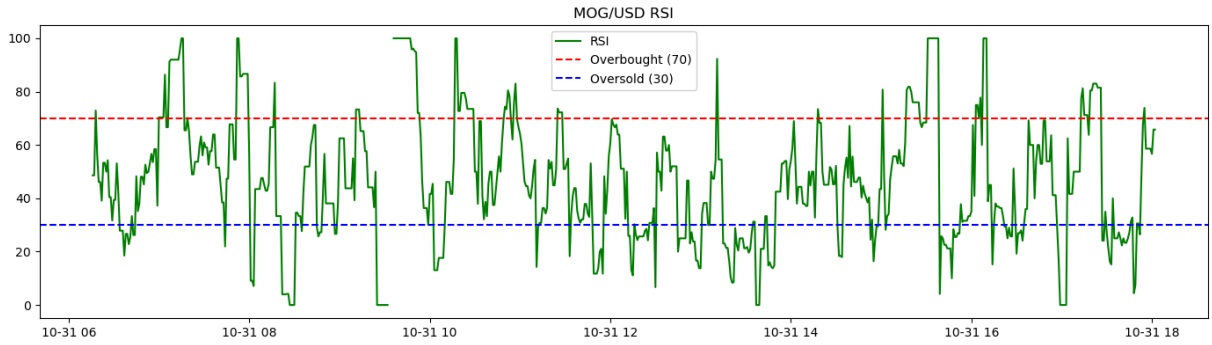

MNT/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.6075
0.6050
0.6025
0.6000
0.5975
0.5950
0.5925
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

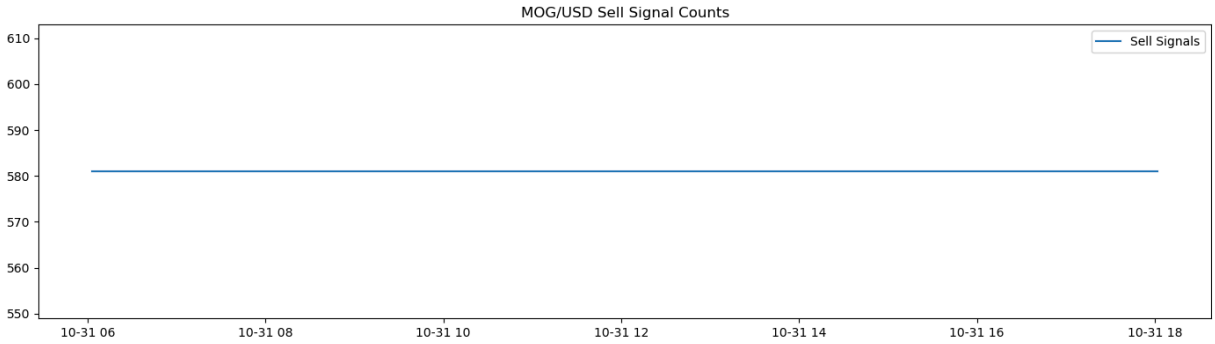

MNT/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 07
10-31 08
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16

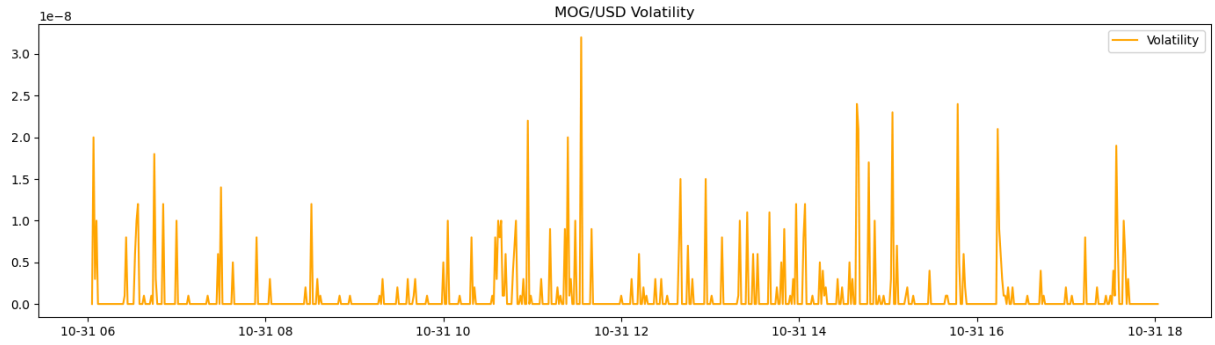

MNT/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

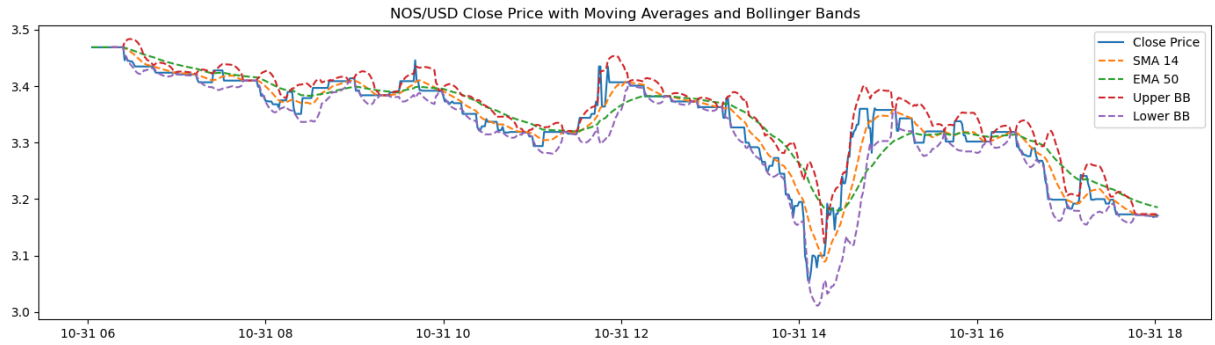

MNT/USD Volatility
Volatility
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

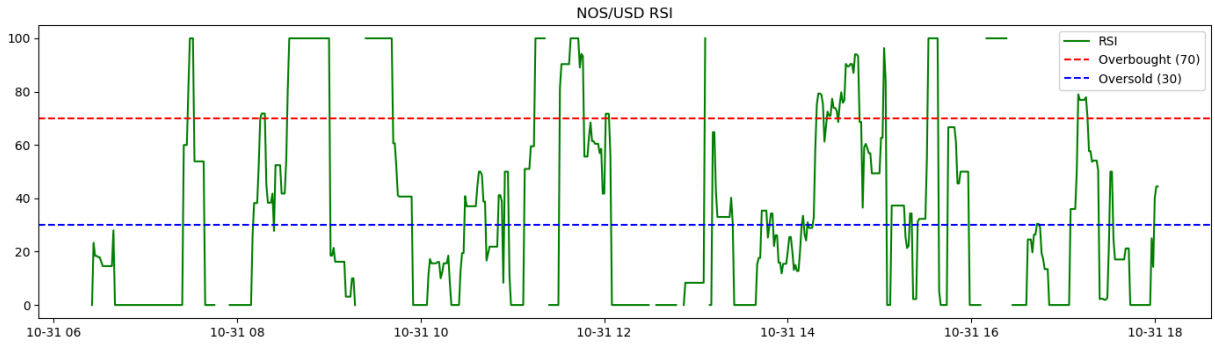

MOG/USD Close Price with Moving Averages and Bollinger Bands
1e−6
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
2.20
2.15
2.10
2.05
2.00
1.95
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

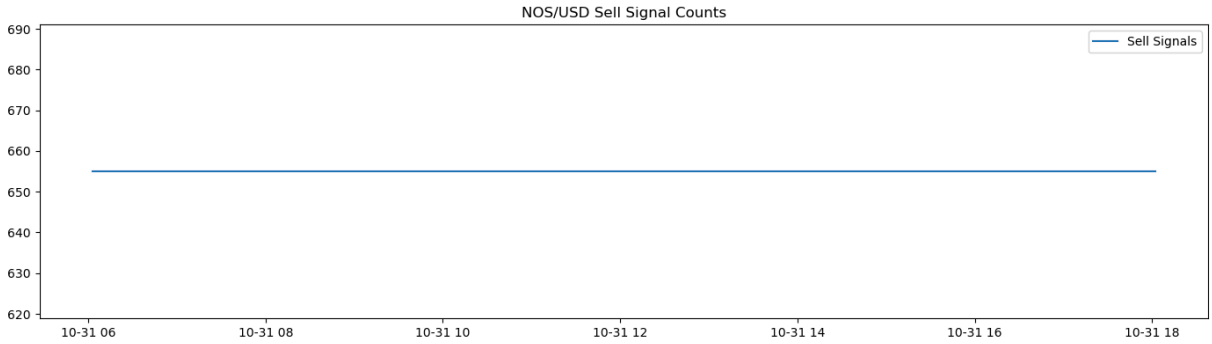

MOG/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

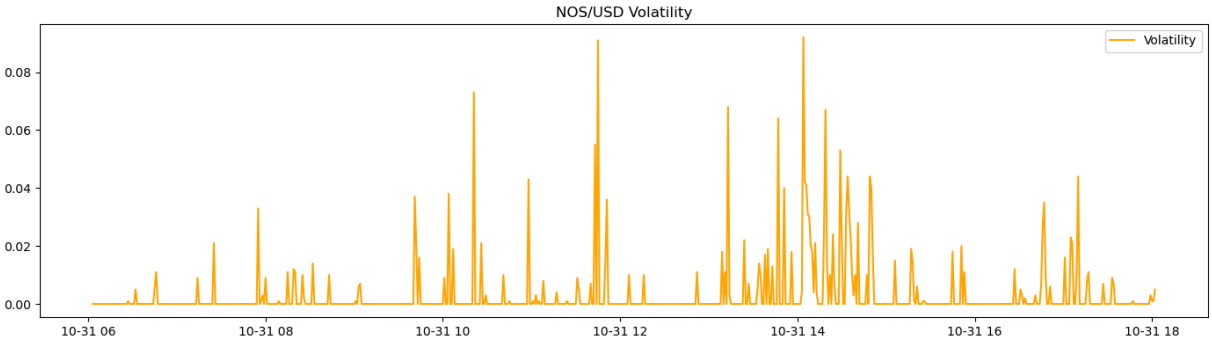

MOG/USD Sell Signal Counts
Sell Signals
610
600
590
580
570
560
550
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

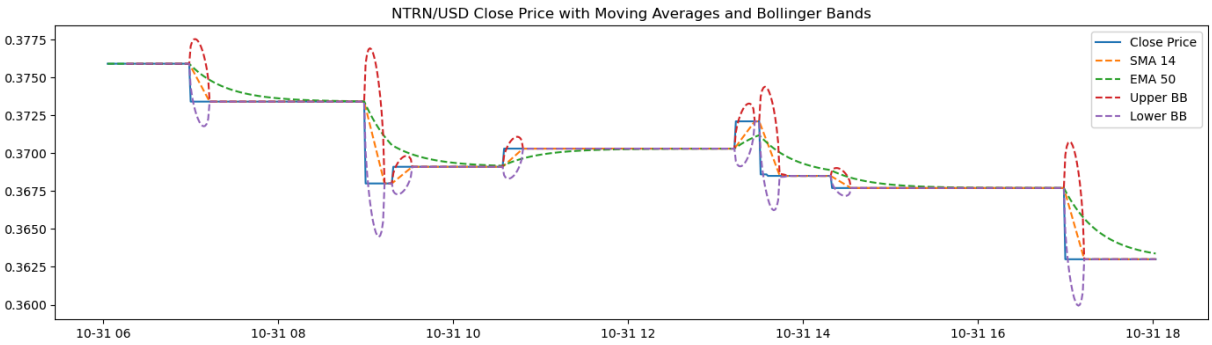

MOG/USD Volatility
1e−8
Volatility
3.0
2.5
2.0
1.5
1.0
0.5
0.0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

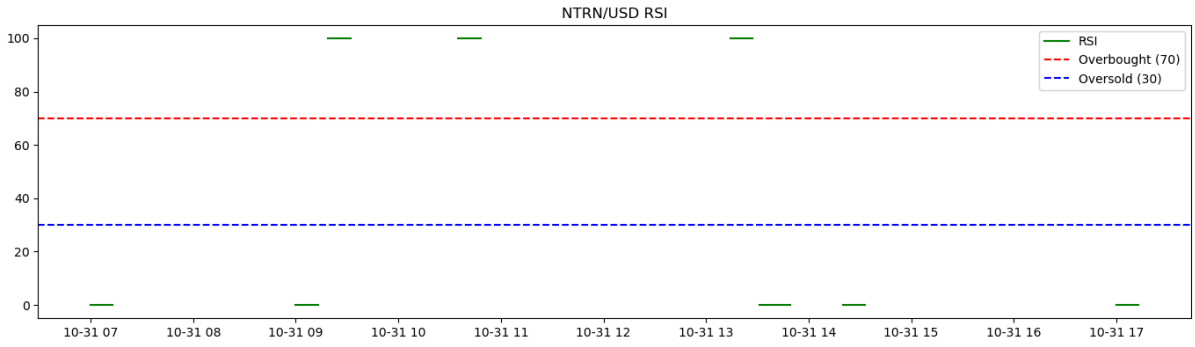

NOS/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
3.5
3.4
3.3
3.2
3.1
3.0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

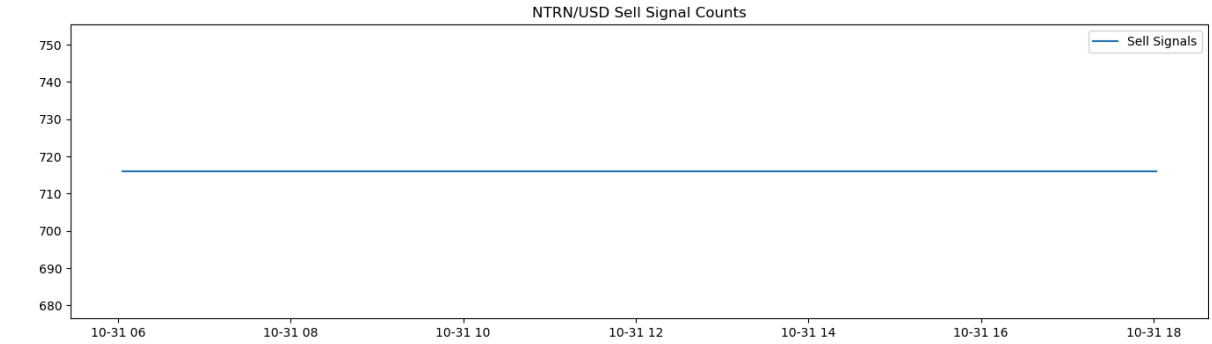

NOS/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

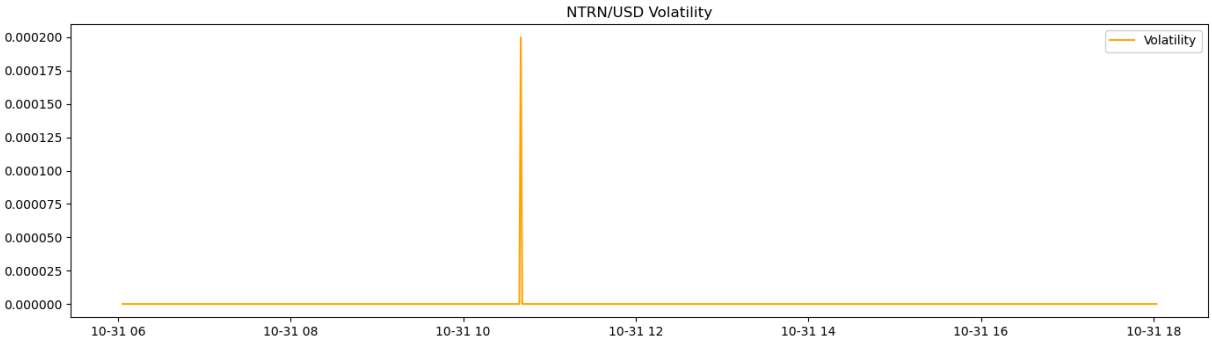

NOS/USD Sell Signal Counts
Sell Signals
690
680
670
660
650
640
630
620
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

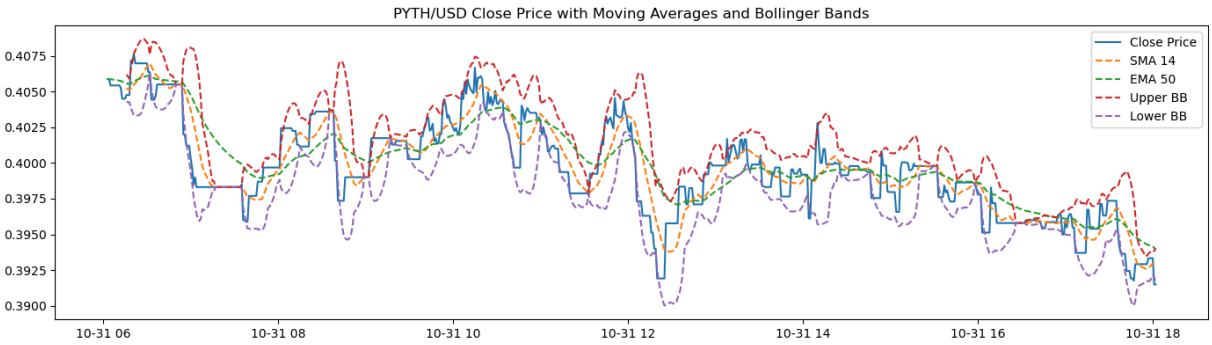

NOS/USD Volatility
Volatility
0.08
0.06
0.04
0.02
0.00
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

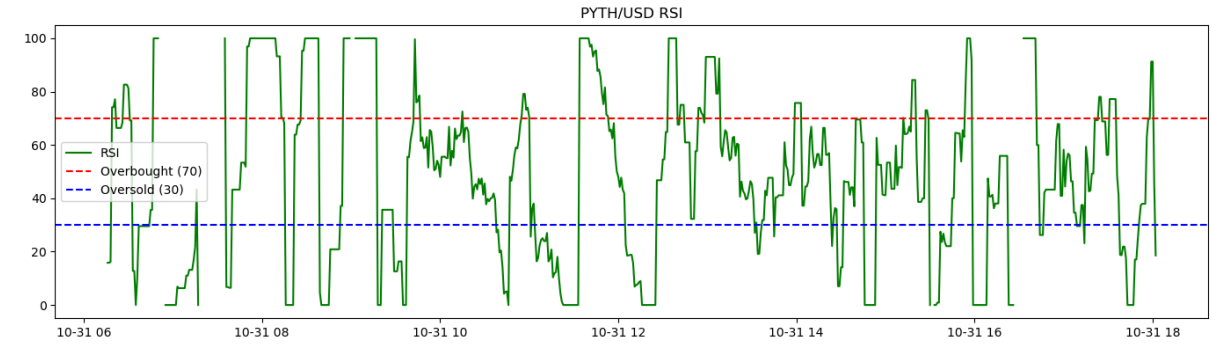

NTRN/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.3775
0.3750
0.3725
0.3700
0.3675
0.3650
0.3625
0.3600
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

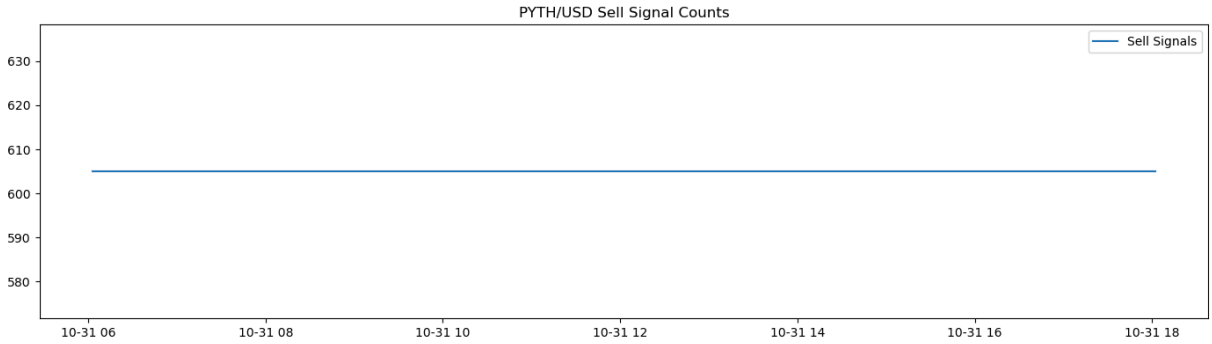

NTRN/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 07
10-31 08
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16
10-31 17

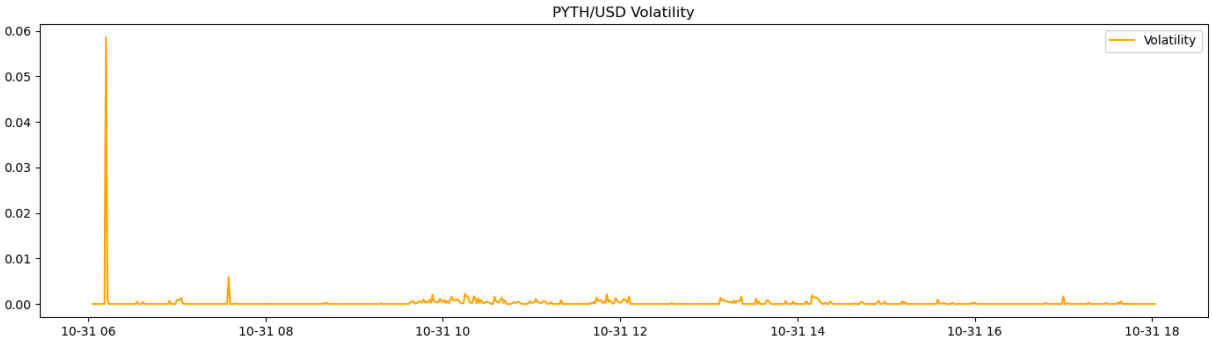

NTRN/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

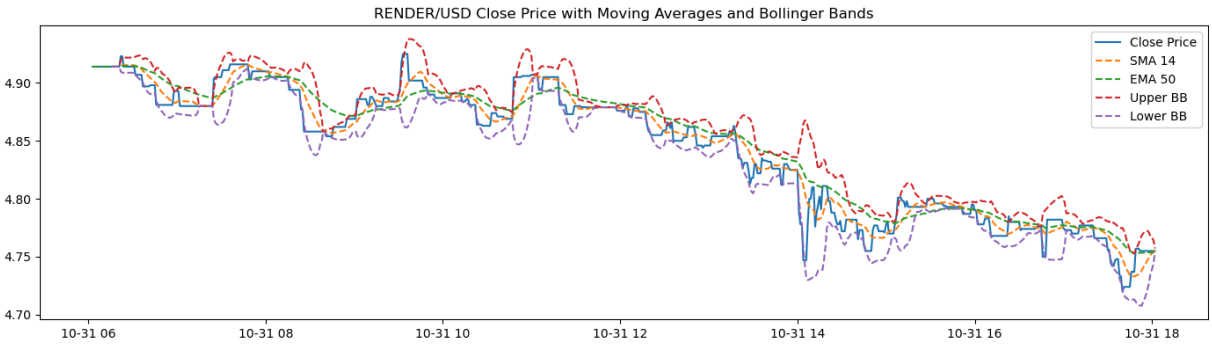

NTRN/USD Volatility
Volatility
0.000200
0.000175
0.000150
0.000125
0.000100
0.000075
0.000050
0.000025
0.000000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

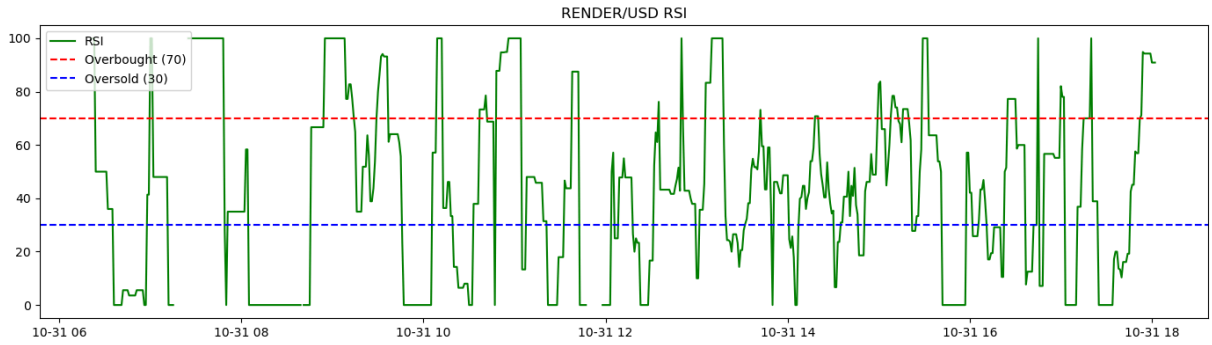

PYTH/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.4075
0.4050
0.4025
0.4000
0.3975
0.3950
0.3925
0.3900
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

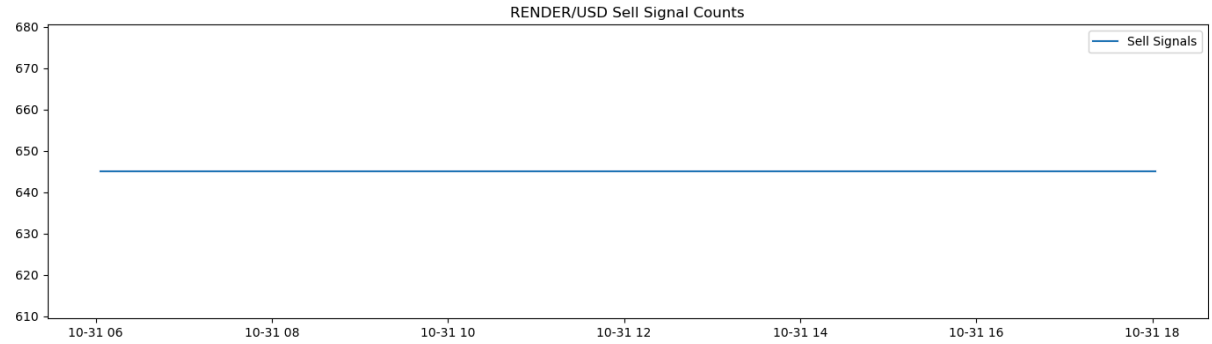

PYTH/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

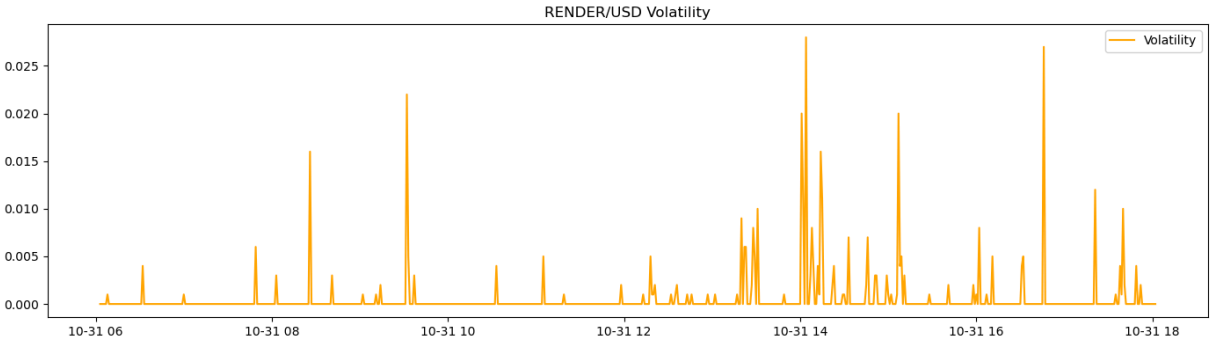

PYTH/USD Sell Signal Counts
Sell Signals
630
620
610
600
590
580
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

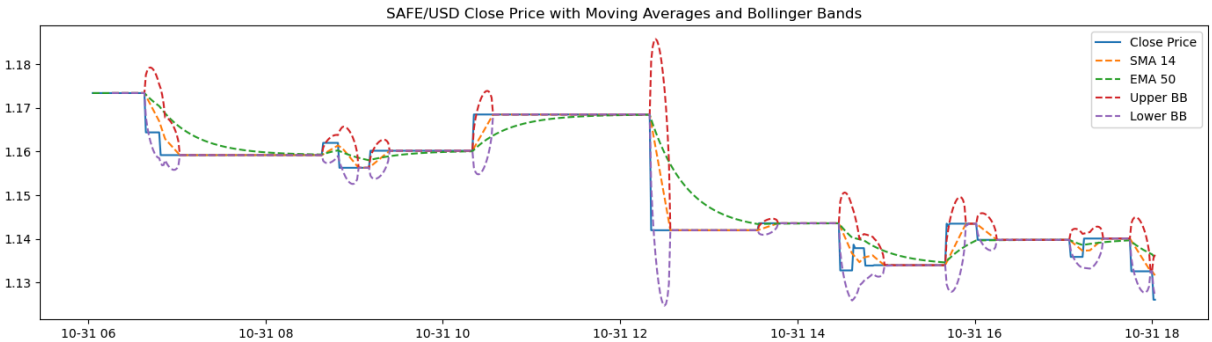

PYTH/USD Volatility
Volatility
0.06
0.05
0.04
0.03
0.02
0.01
0.00
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

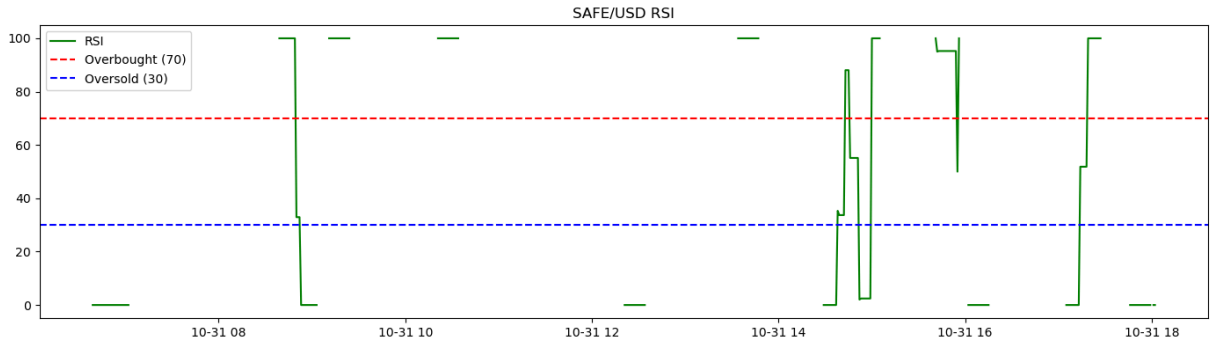

RENDER/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
4.90
4.85
4.80
4.75
4.70
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

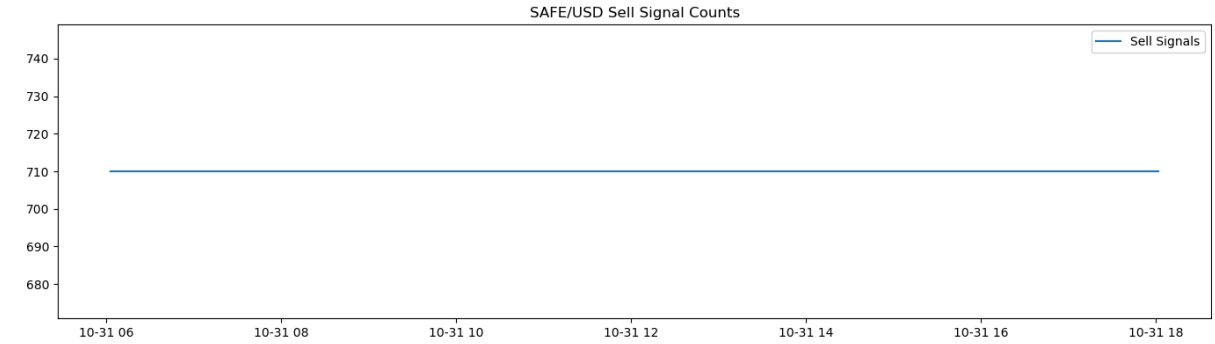

RENDER/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

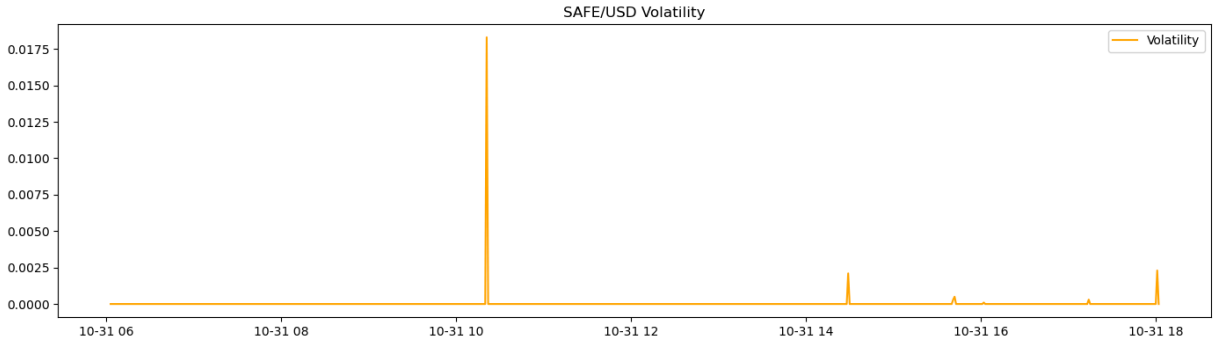

RENDER/USD Sell Signal Counts
Sell Signals
680
670
660
650
640
630
620
610
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

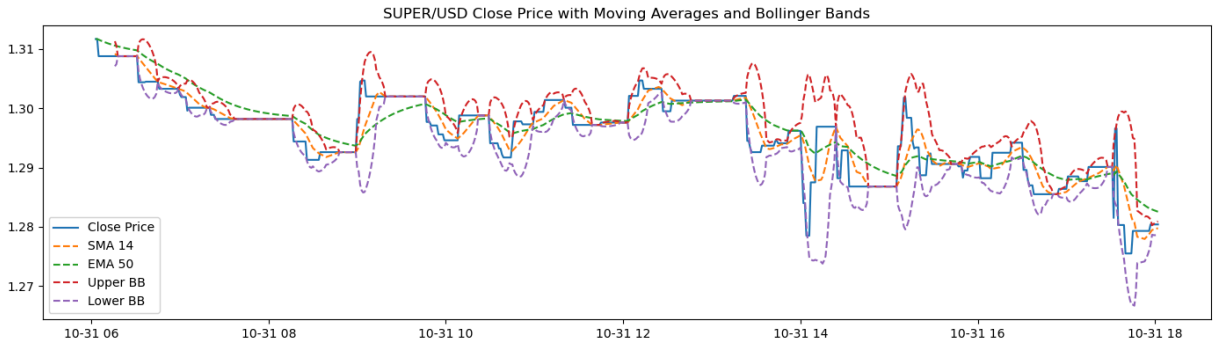

RENDER/USD Volatility
Volatility
0.025
0.020
0.015
0.010
0.005
0.000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

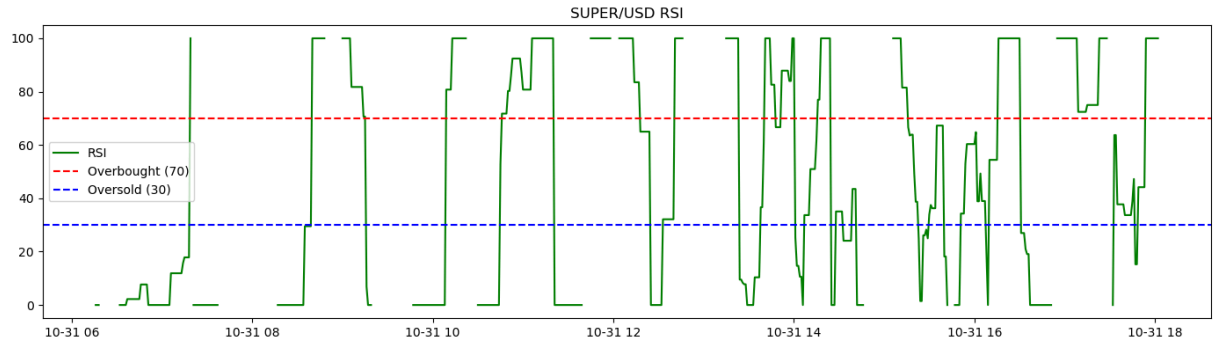

SAFE/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.18
1.17
1.16
1.15
1.14
1.13
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

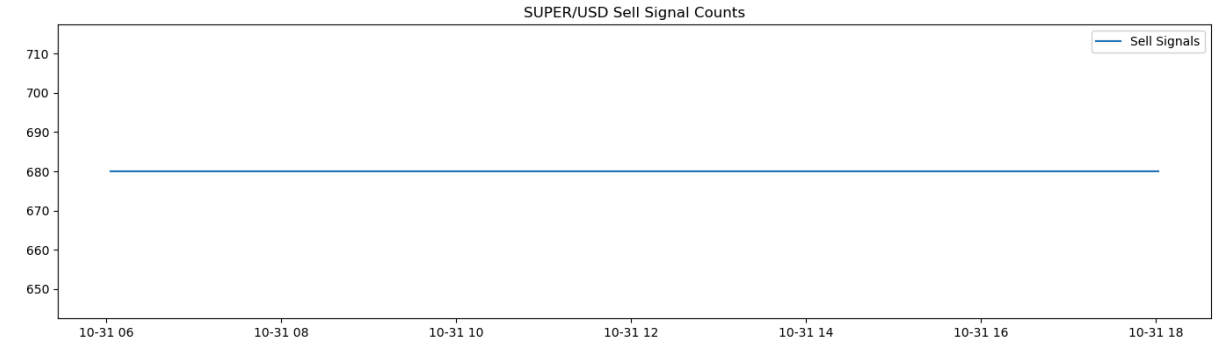

SAFE/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

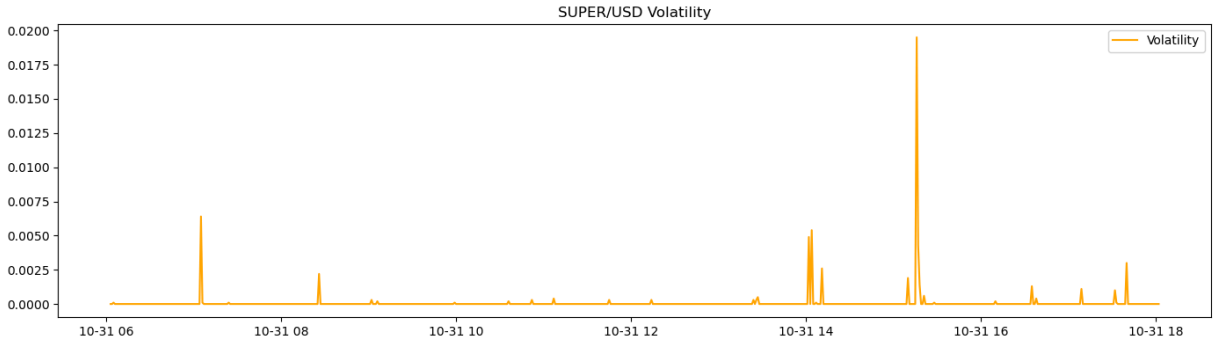

SAFE/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

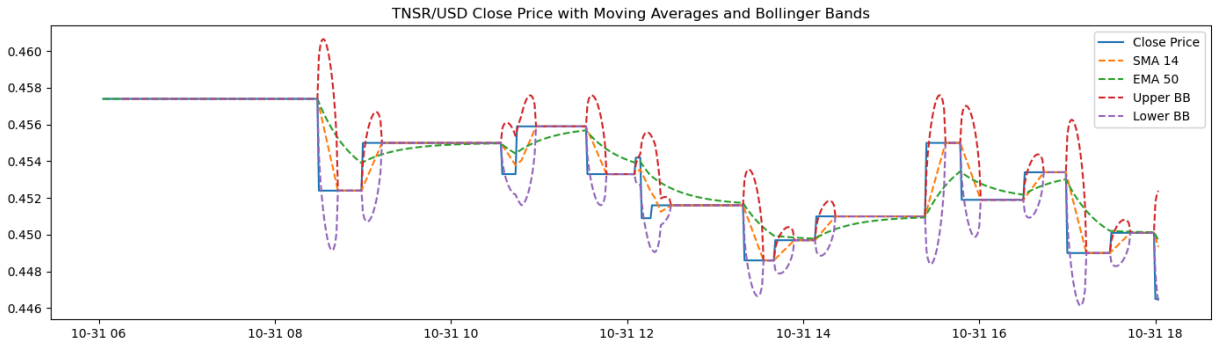

SAFE/USD Volatility
Volatility
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

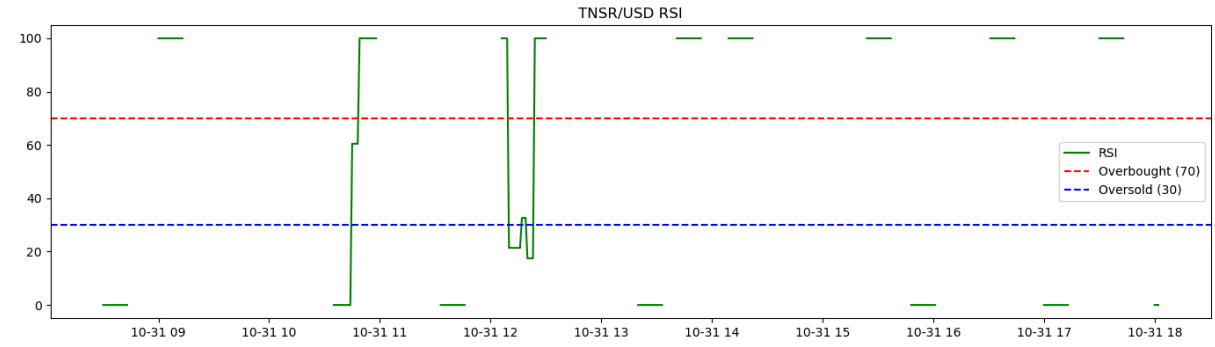

SUPER/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.31
1.30
1.29
1.28
1.27
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

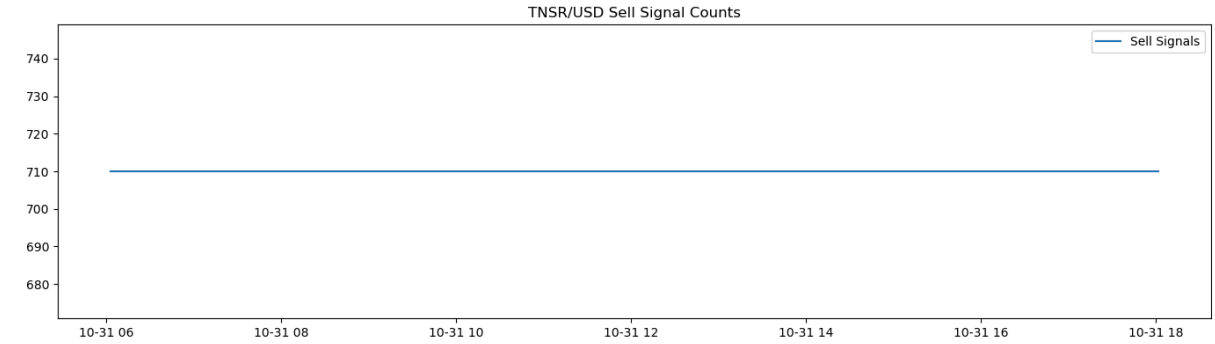

SUPER/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

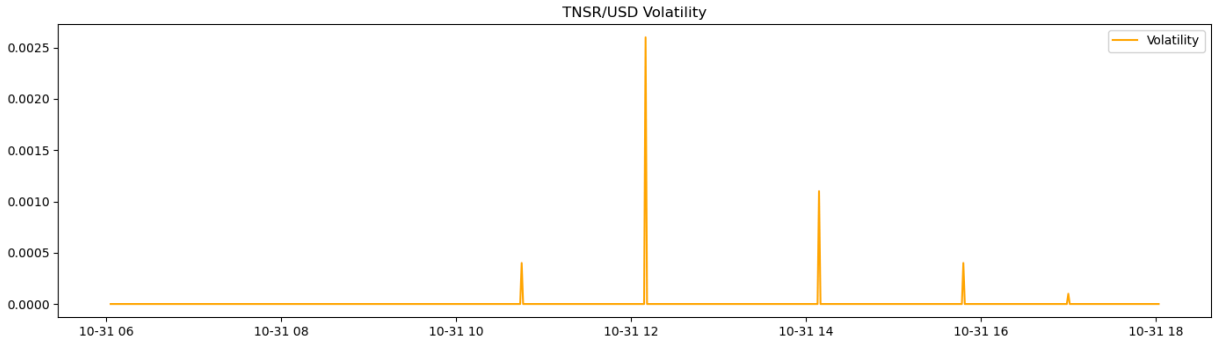

SUPER/USD Sell Signal Counts
Sell Signals
710
700
690
680
670
660
650
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

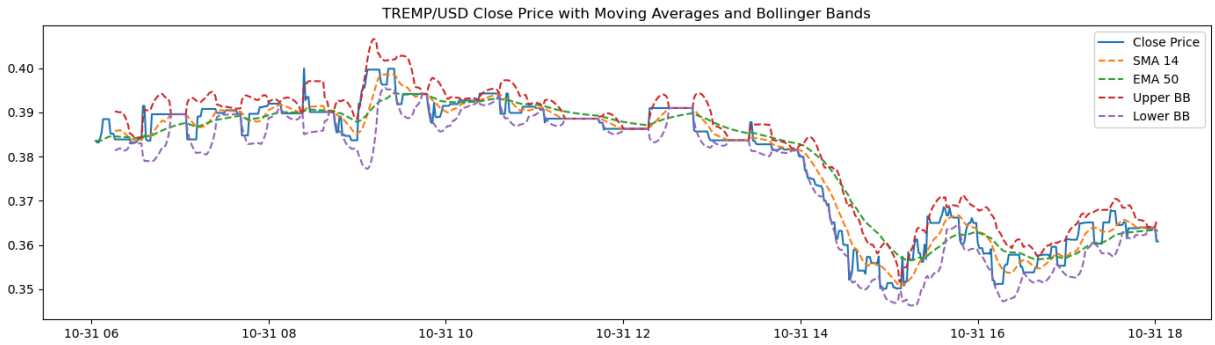

SUPER/USD Volatility
Volatility
0.0200
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

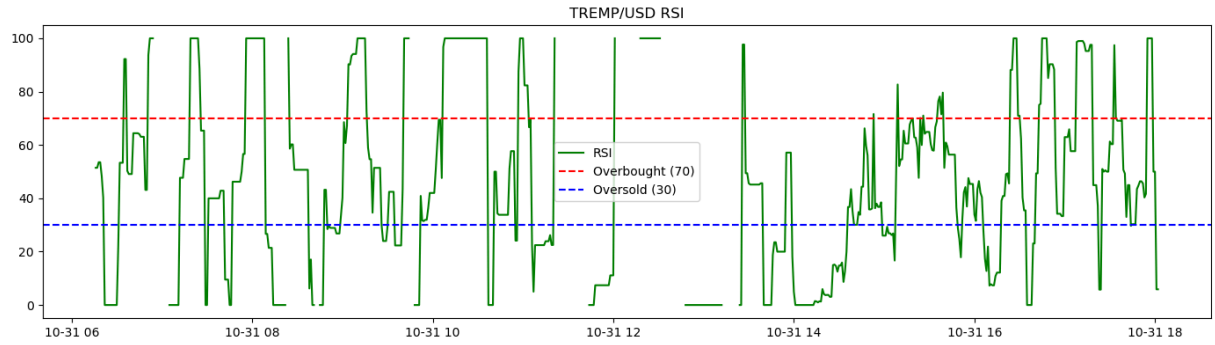

TNSR/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.460
0.458
0.456
0.454
0.452
0.450
0.448
0.446
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

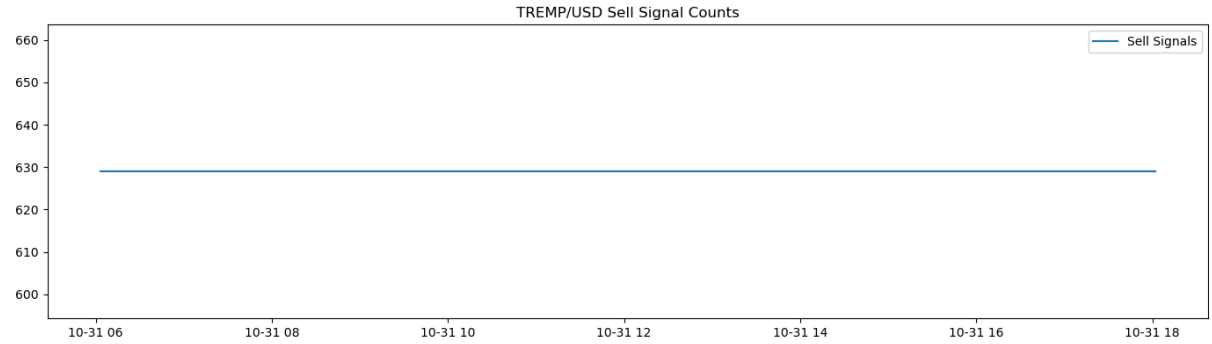

TNSR/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16
10-31 17
10-31 18

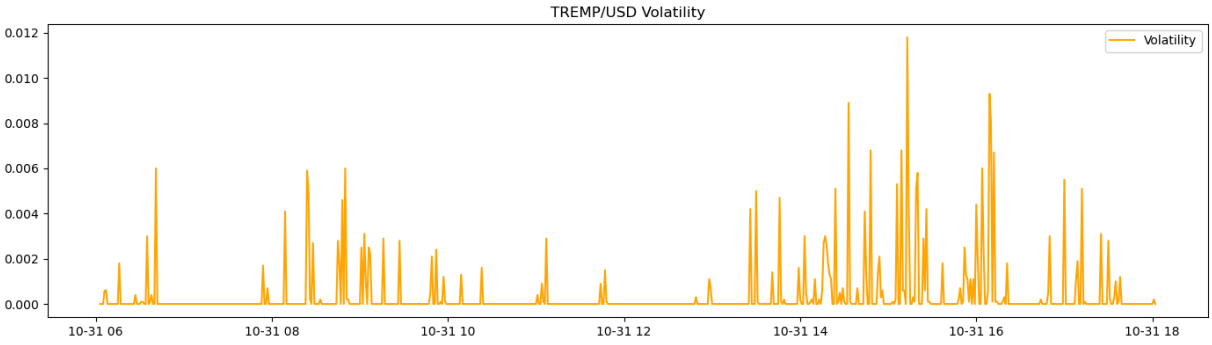

TNSR/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

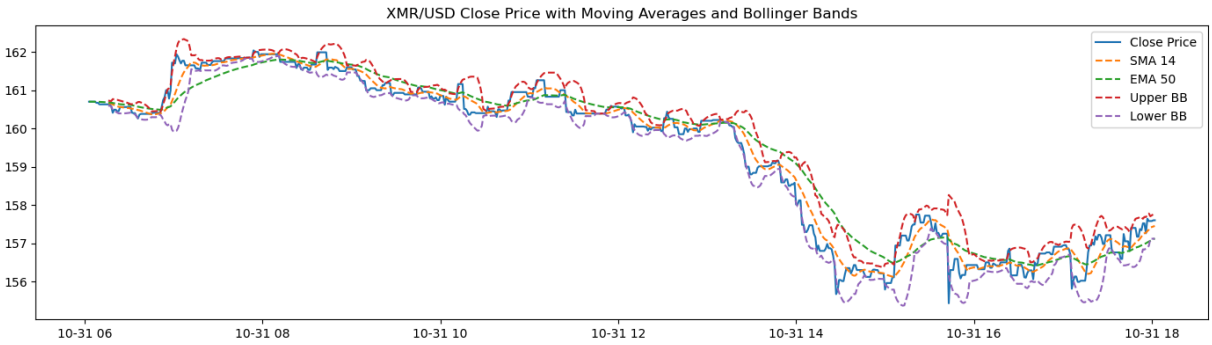

TNSR/USD Volatility
Volatility
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

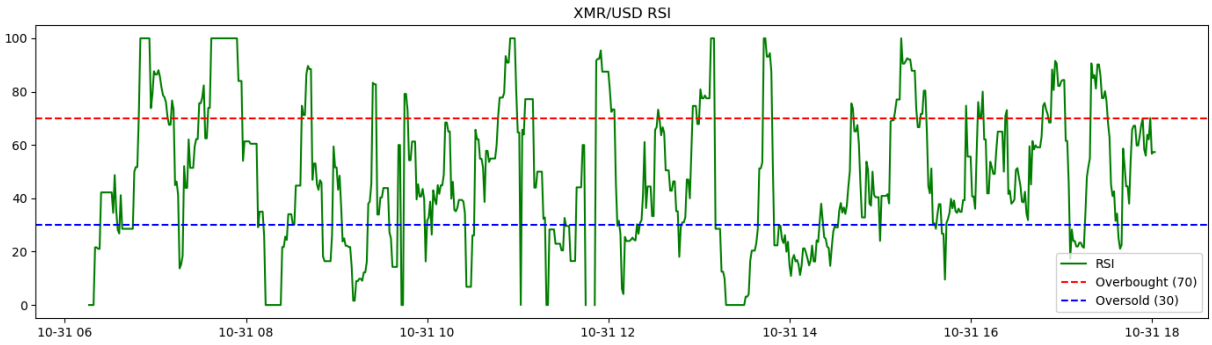

TREMP/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.40
0.39
0.38
0.37
0.36
0.35
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

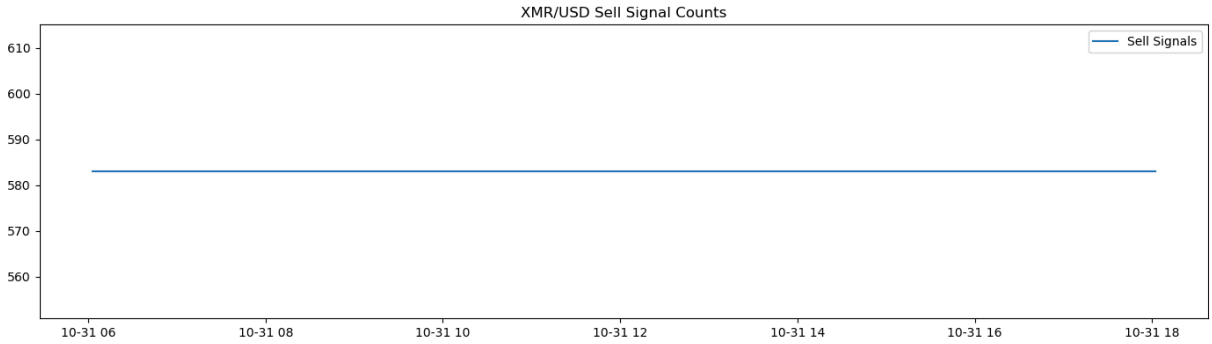

TREMP/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

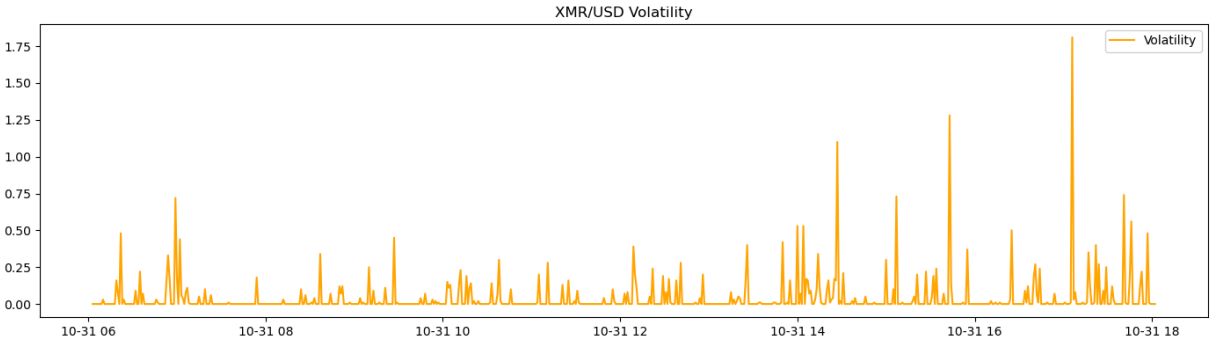

TREMP/USD Sell Signal Counts
Sell Signals
660
650
640
630
620
610
600
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

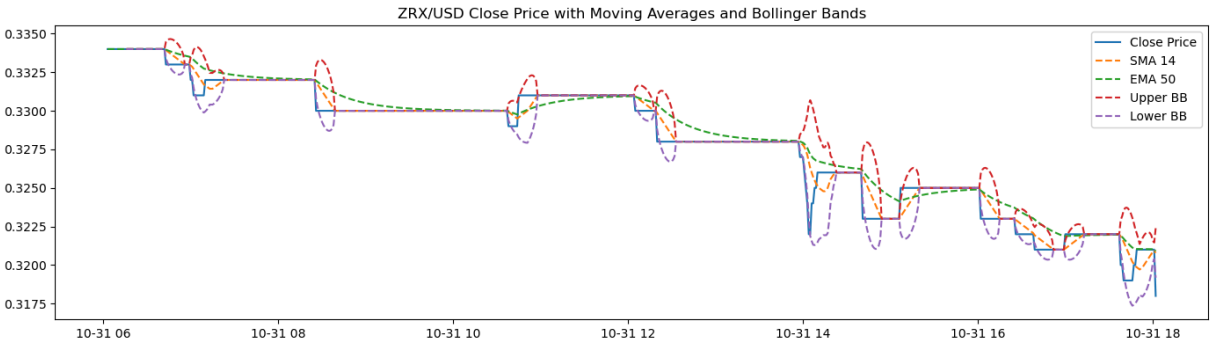

TREMP/USD Volatility
Volatility
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

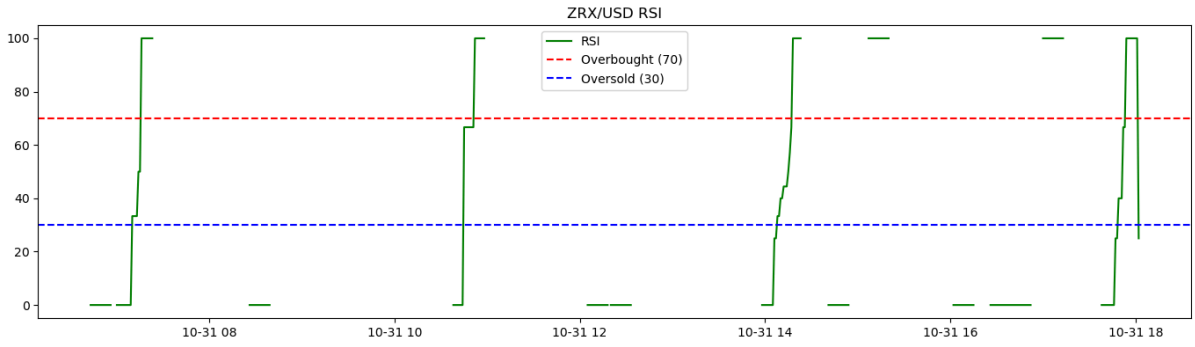

XMR/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
162
161
160
159
158
157
156
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

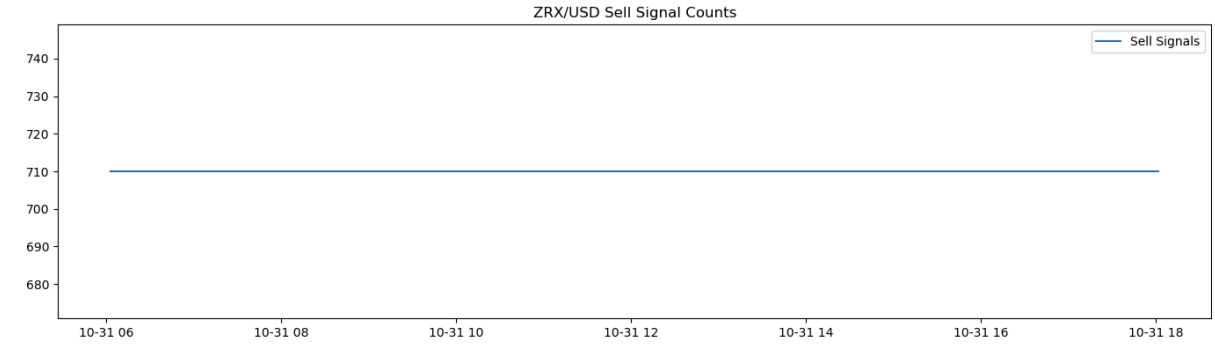

XMR/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

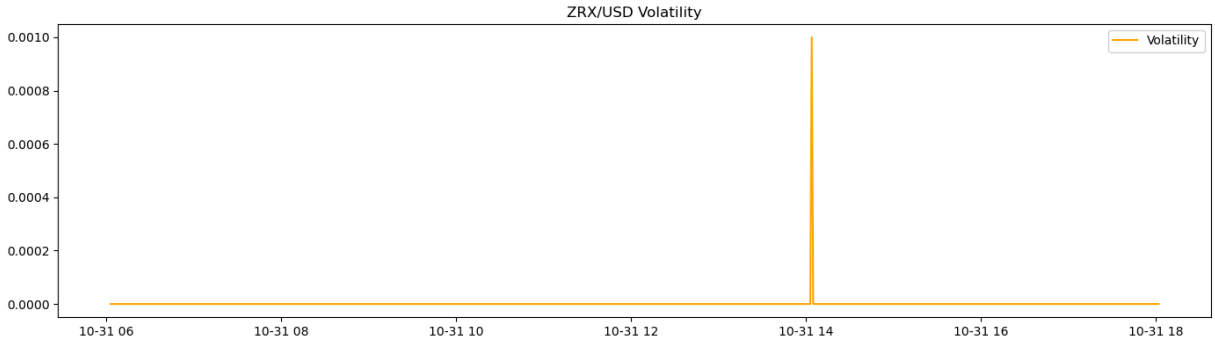

XMR/USD Sell Signal Counts
Sell Signals
610
600
590
580
570
560
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

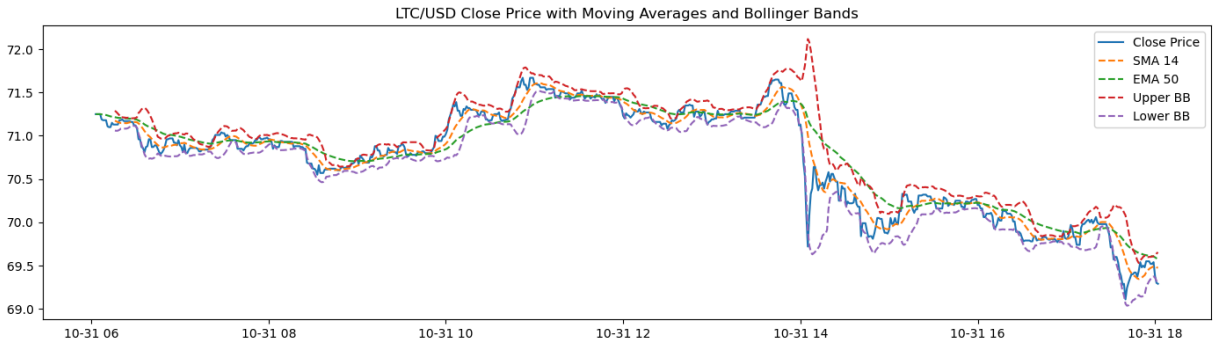

XMR/USD Volatility
Volatility
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

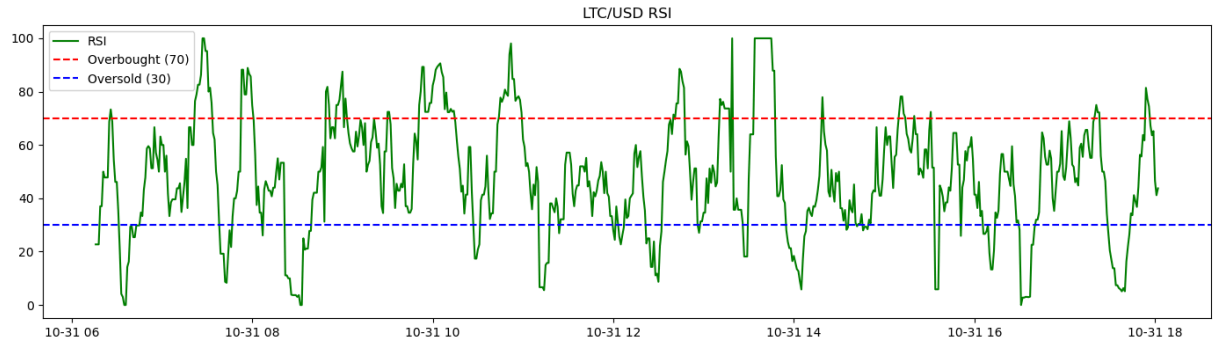

ZRX/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.3350
0.3325
0.3300
0.3275
0.3250
0.3225
0.3200
0.3175
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

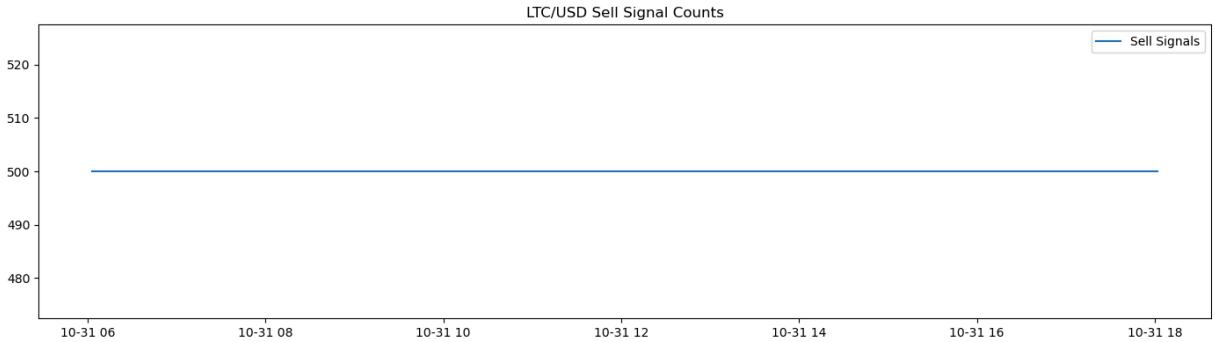

ZRX/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

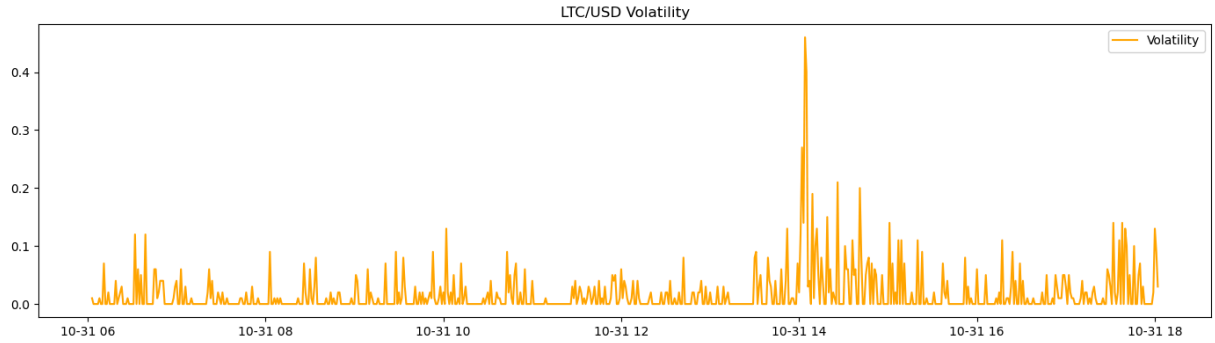

ZRX/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

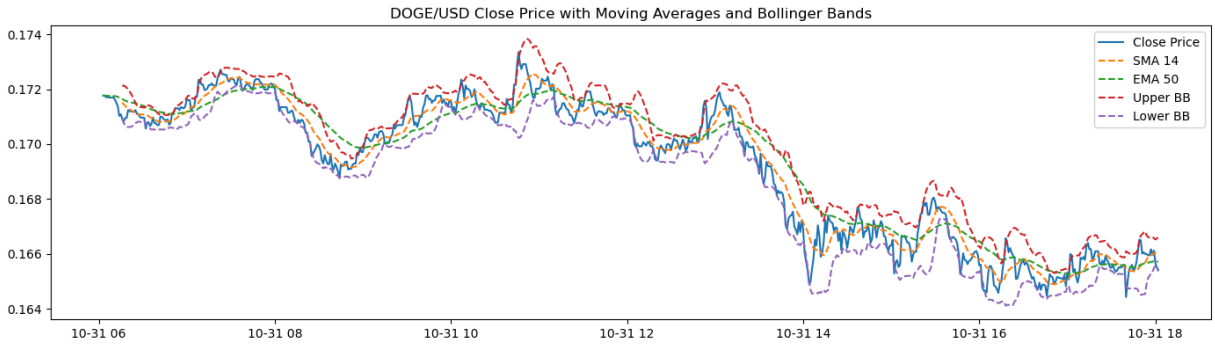

ZRX/USD Volatility
Volatility
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

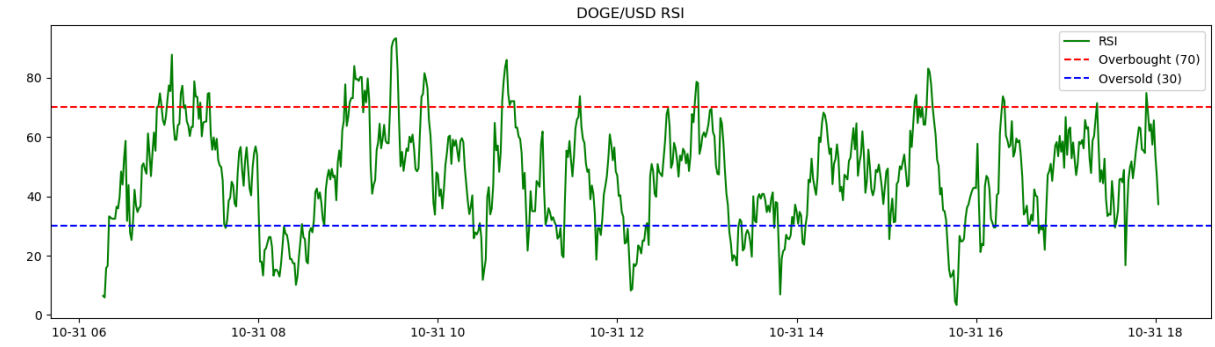

LTC/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
72.0
71.5
71.0
70.5
70.0
69.5
69.0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

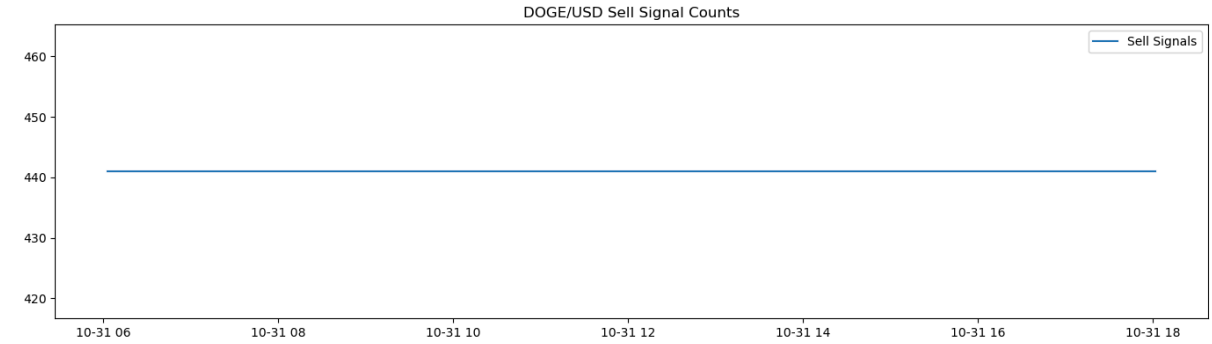

LTC/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

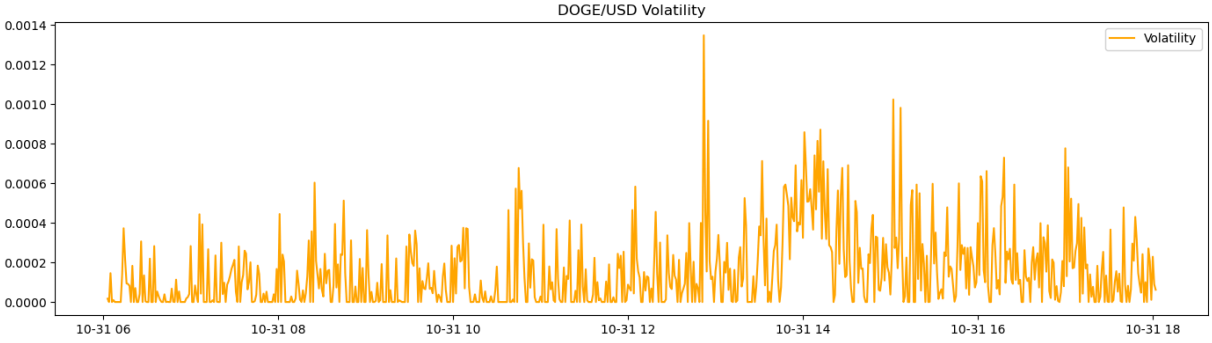

LTC/USD Sell Signal Counts
Sell Signals
520
510
500
490
480
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


LTC/USD Volatility
Volatility
0.4
0.3
0.2
0.1
0.0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


DOGE/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.174
0.172
0.170
0.168
0.166
0.164
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


DOGE/USD RSI
RSI
Overbought (70)
Oversold (30)
80
60
40
20
0
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18



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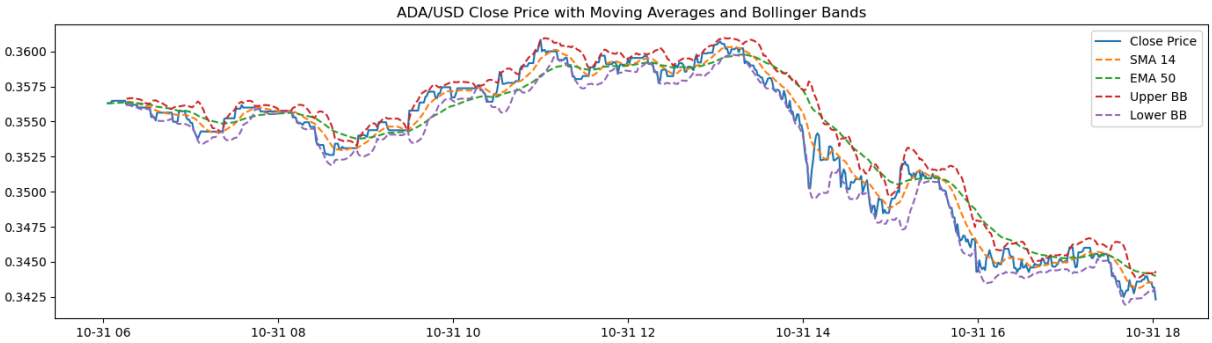

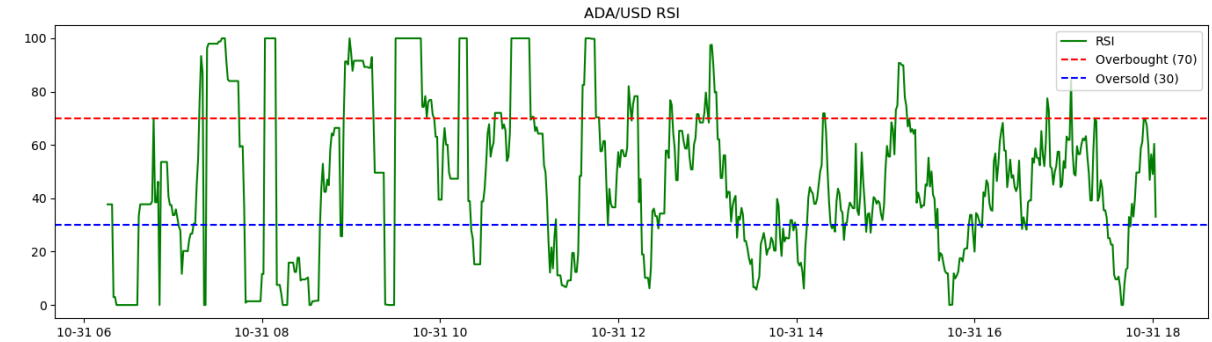

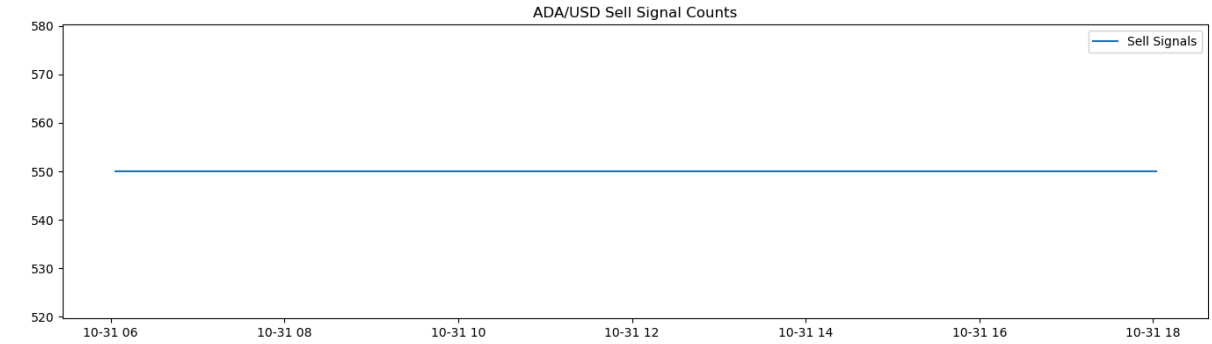

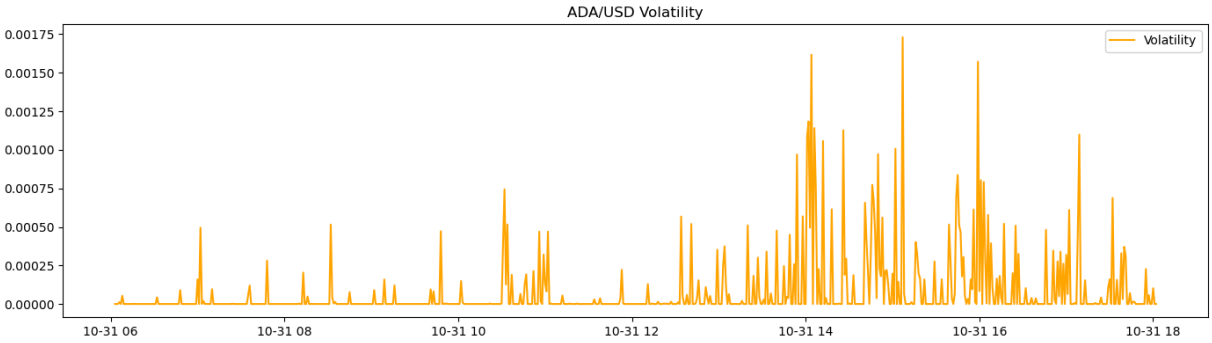


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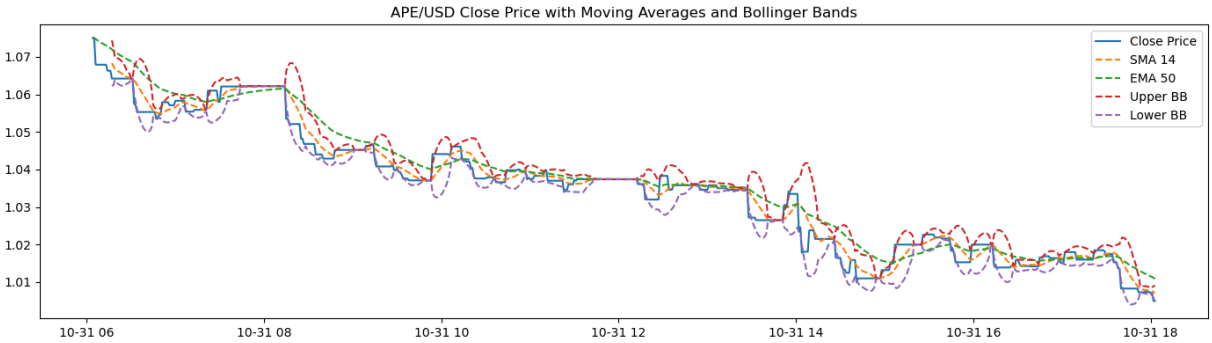

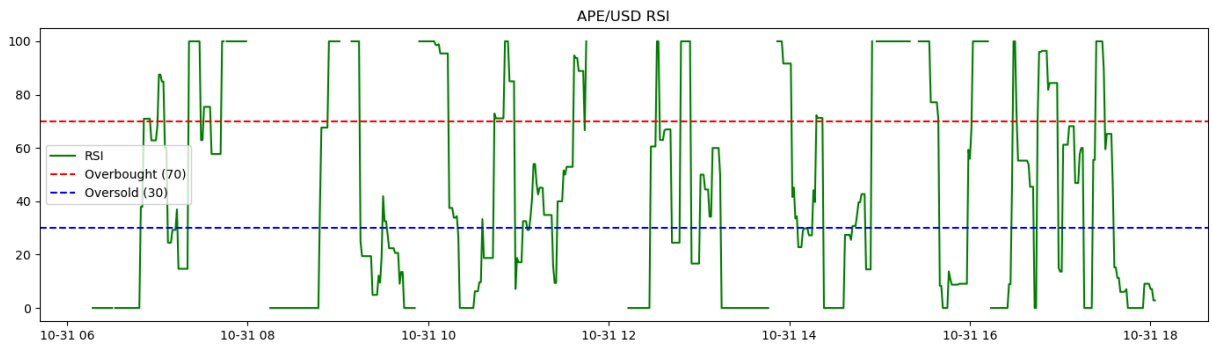

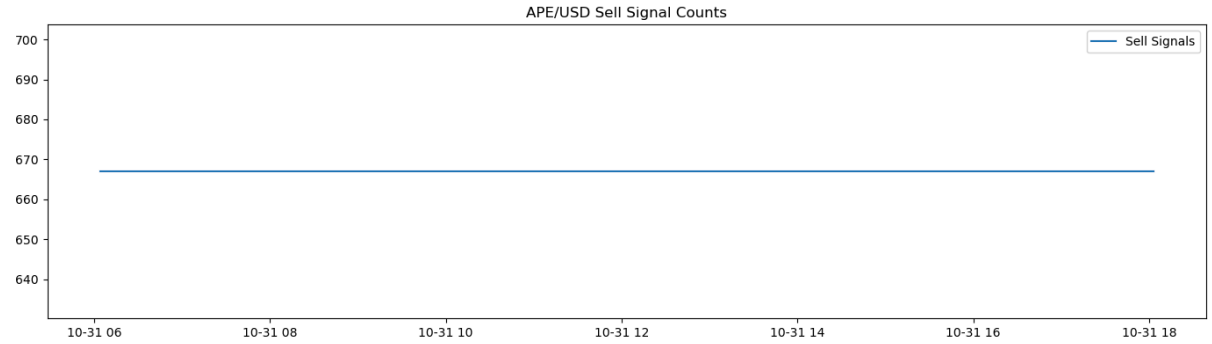

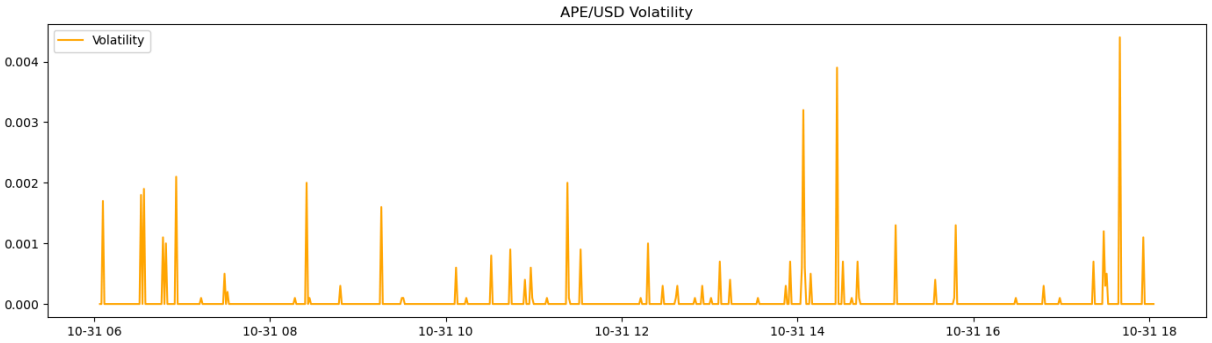


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SQL connection closed.
Data saved to CSV file: AUCTION_USD_data.csv
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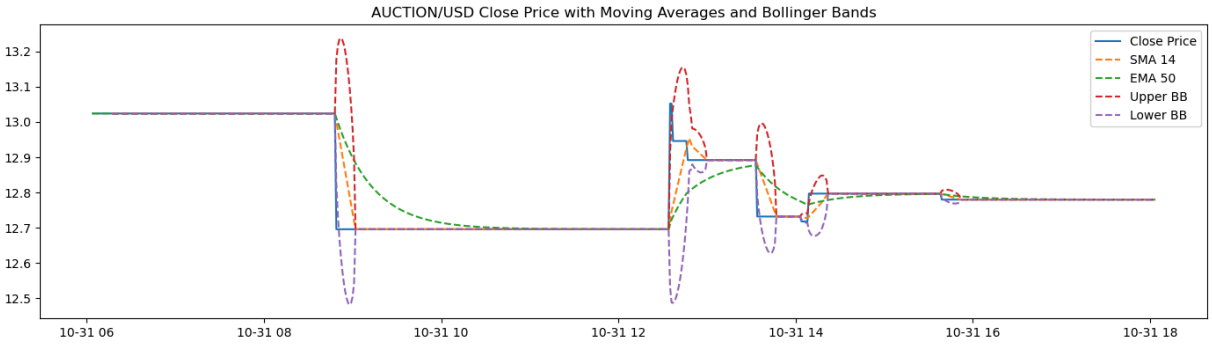

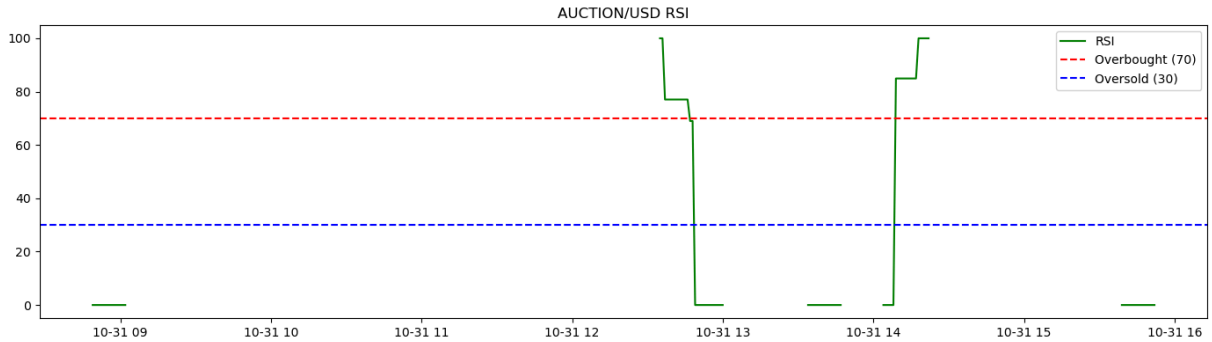

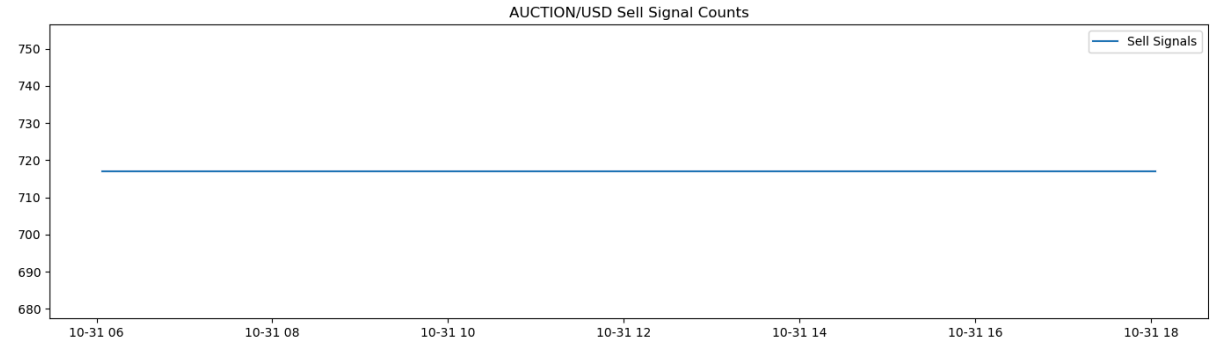

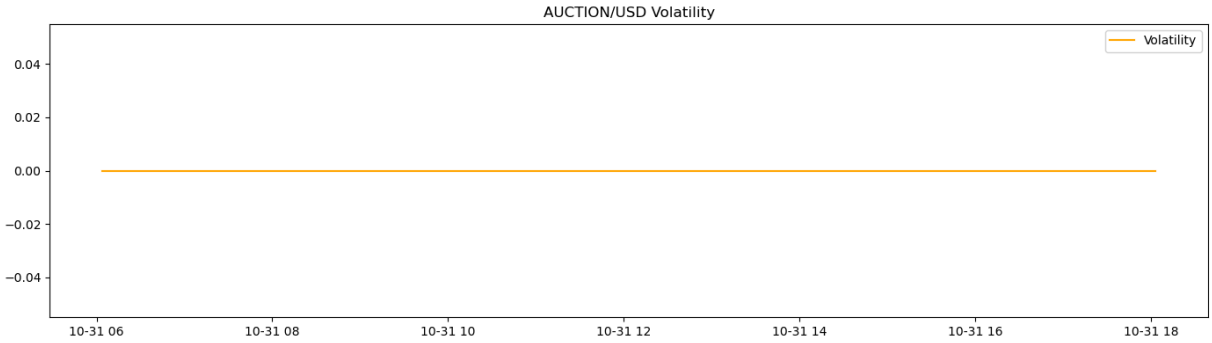

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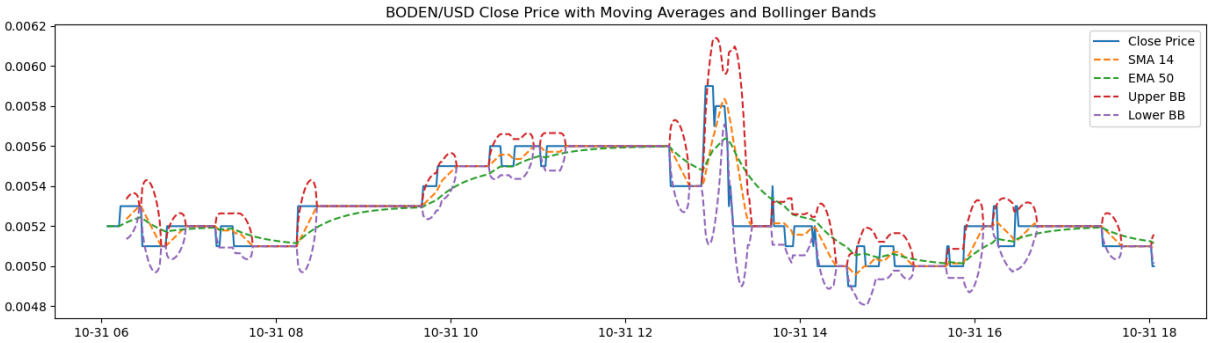
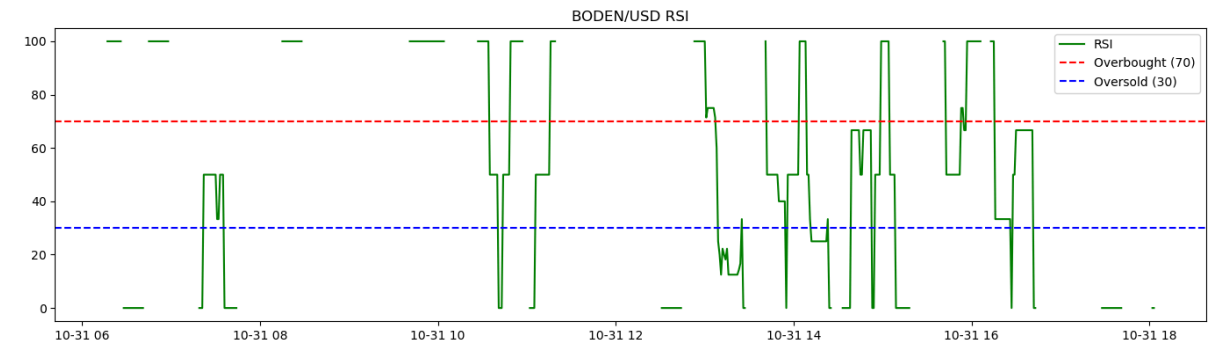
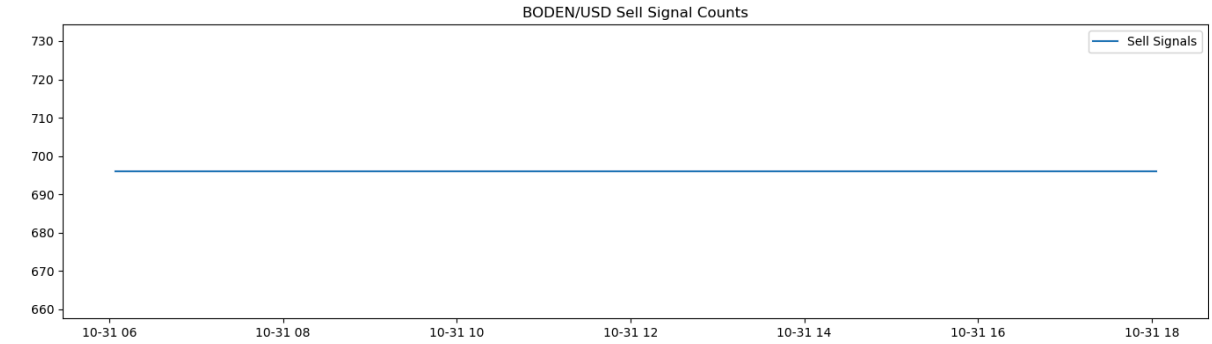
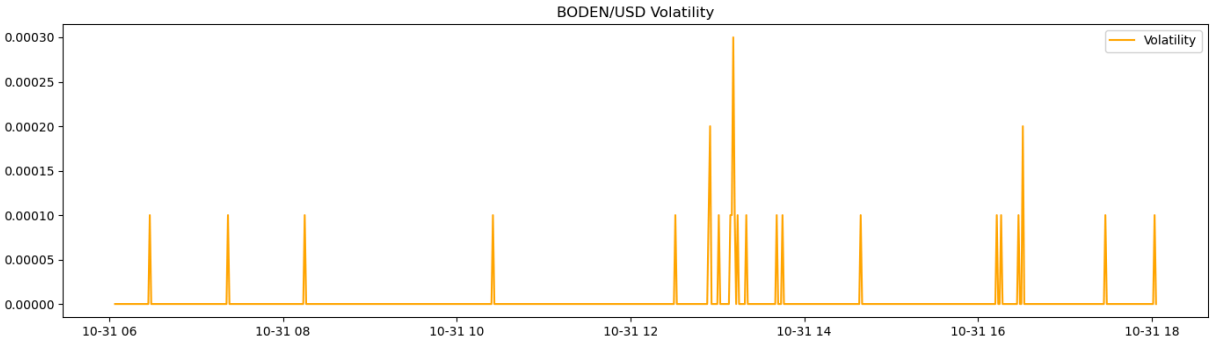
Data saved to CSV file: BODEN_USD_data.csv







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Data saved to CSV file: BTC_USD_data.csv
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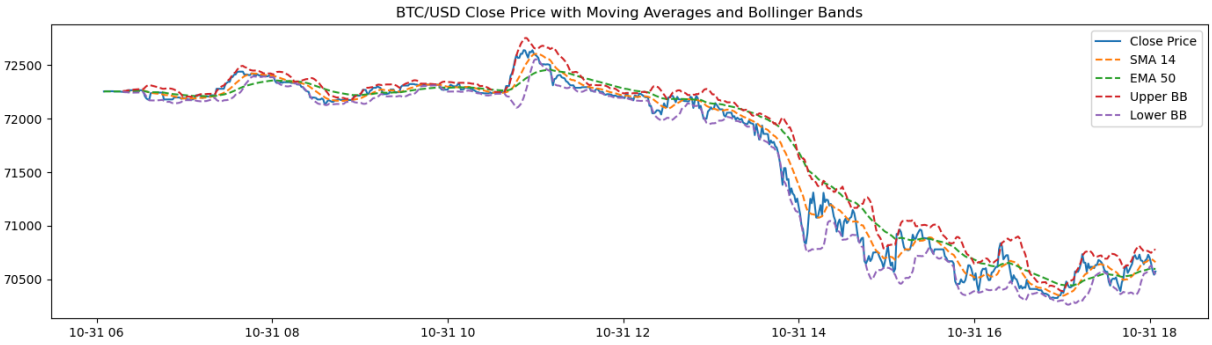

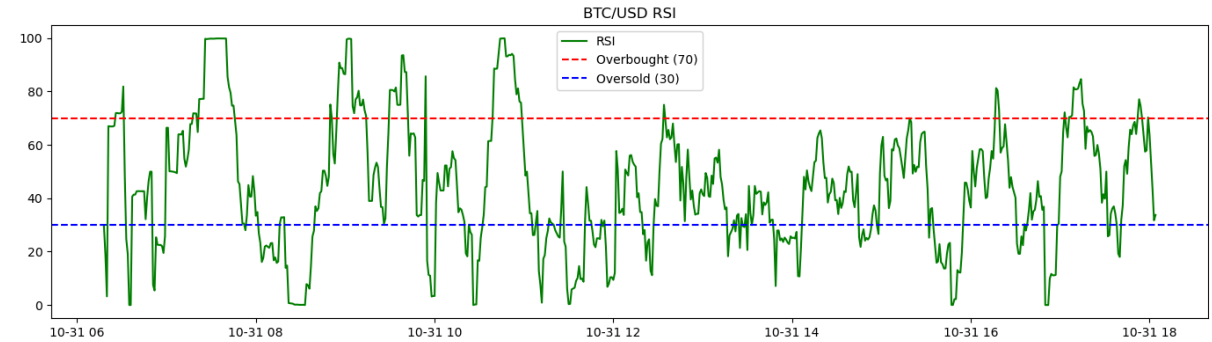

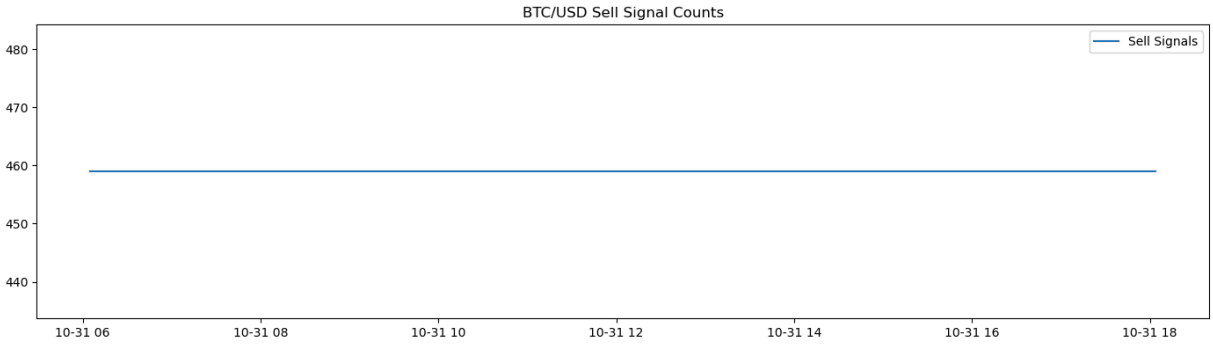

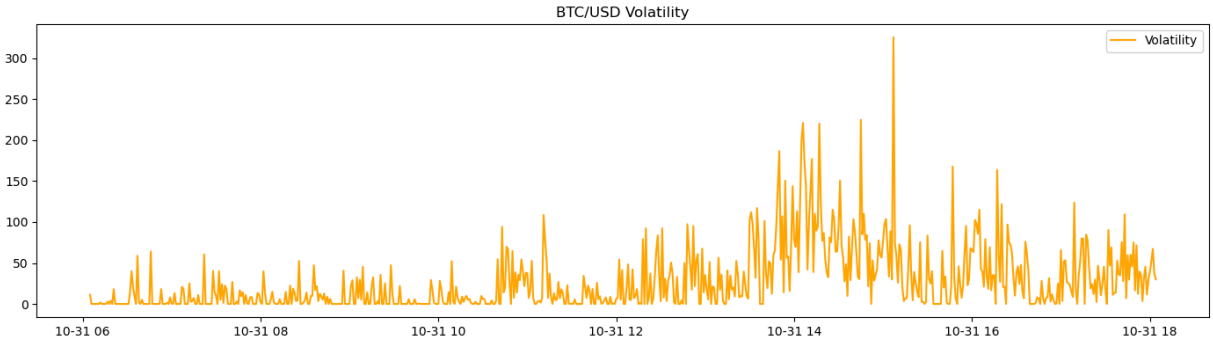


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Data successfully saved to SQL table: CPOOL_USD_data
SQL connection closed.
Data saved to CSV file: CPOOL_USD_data.csv
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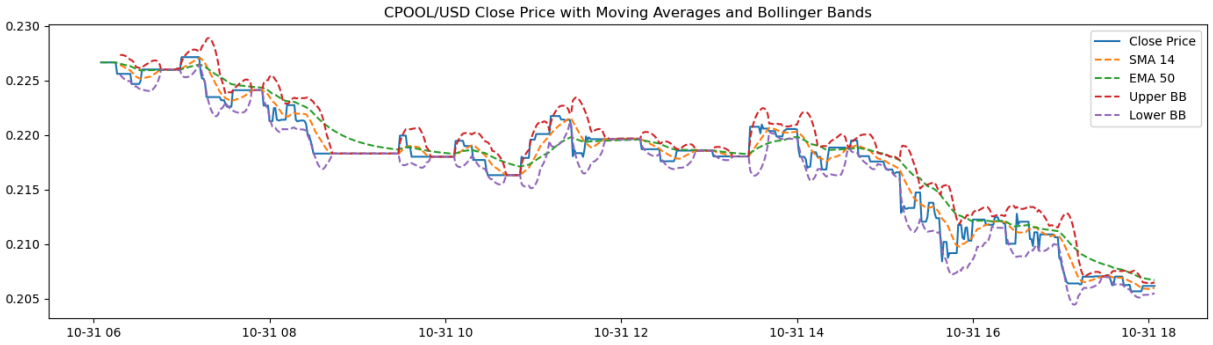

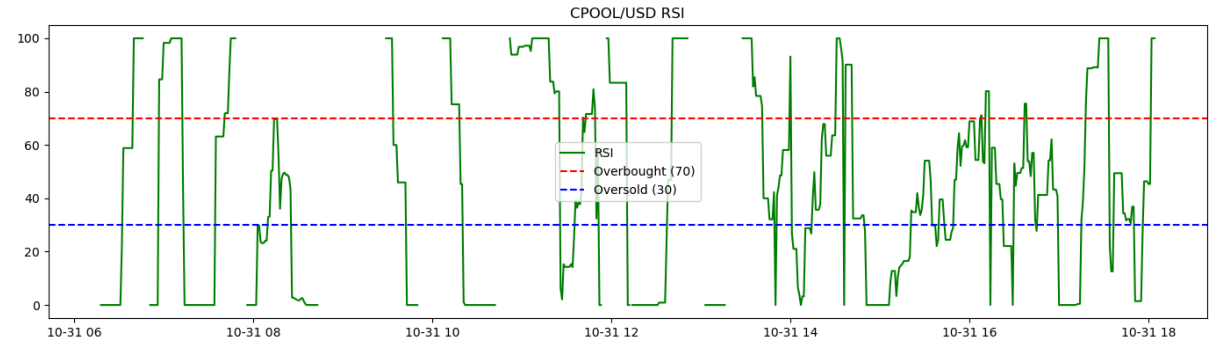

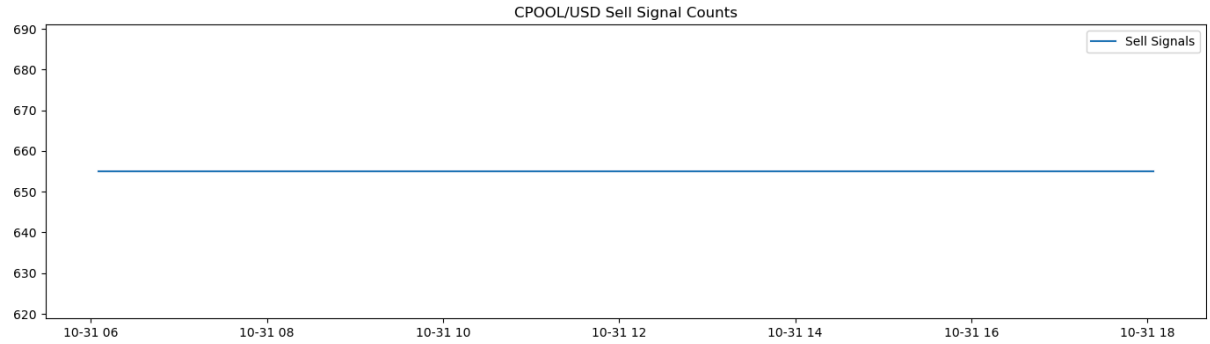

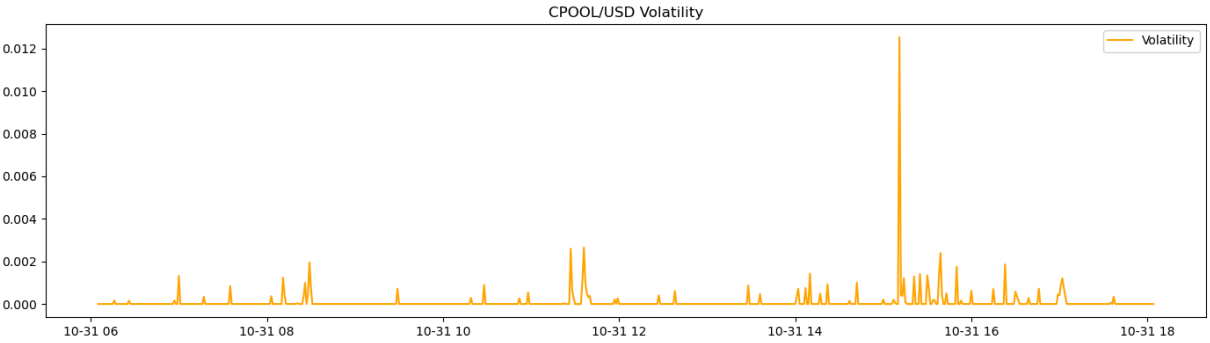


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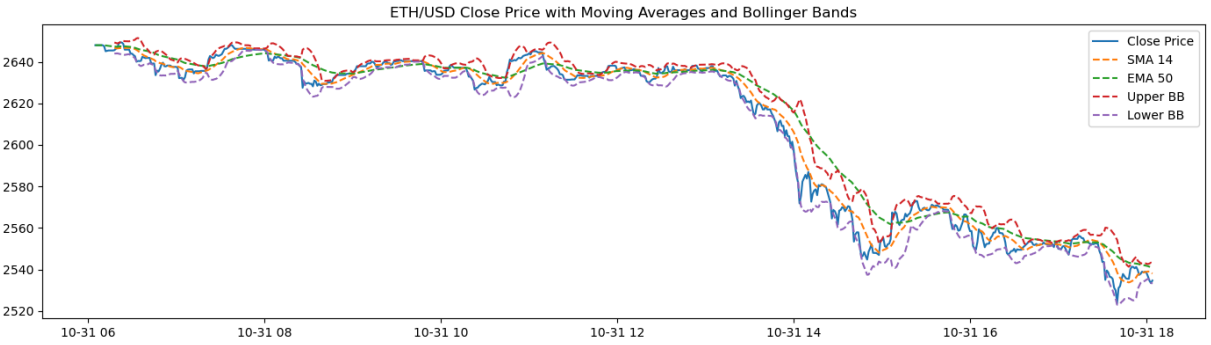

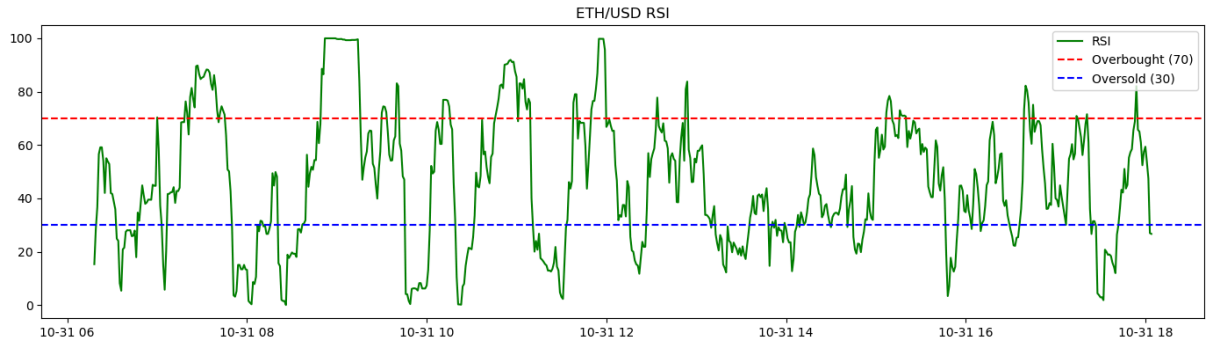

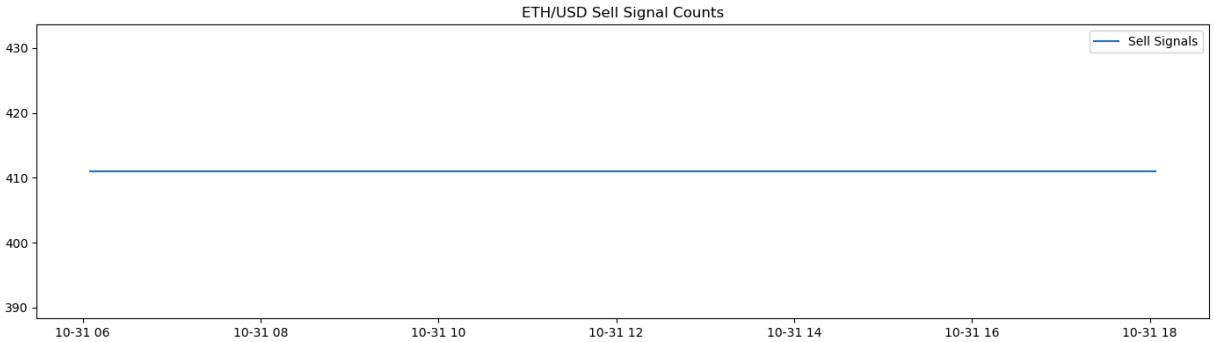

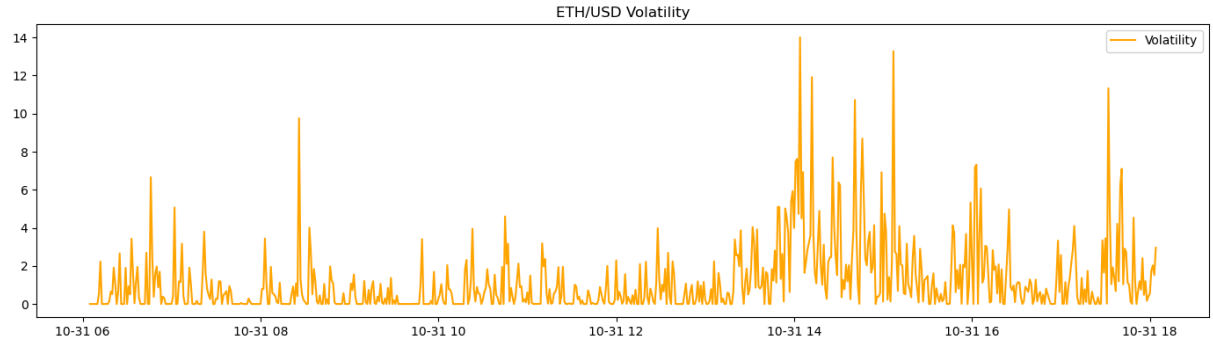


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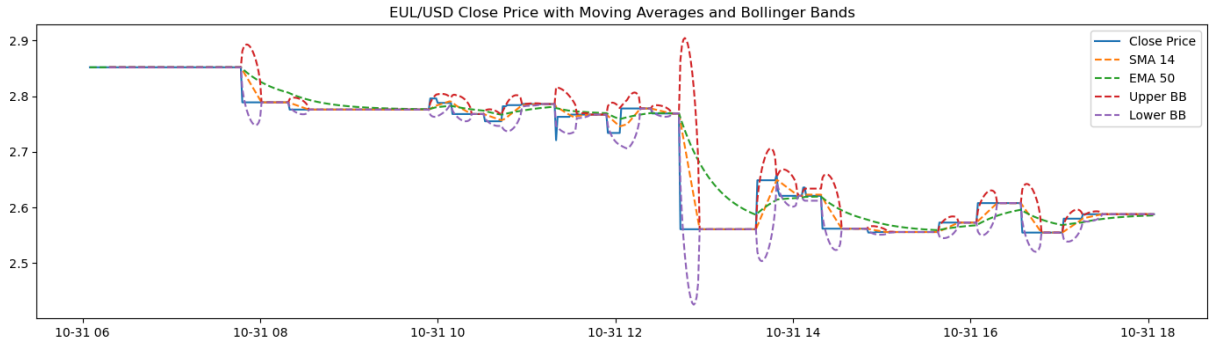

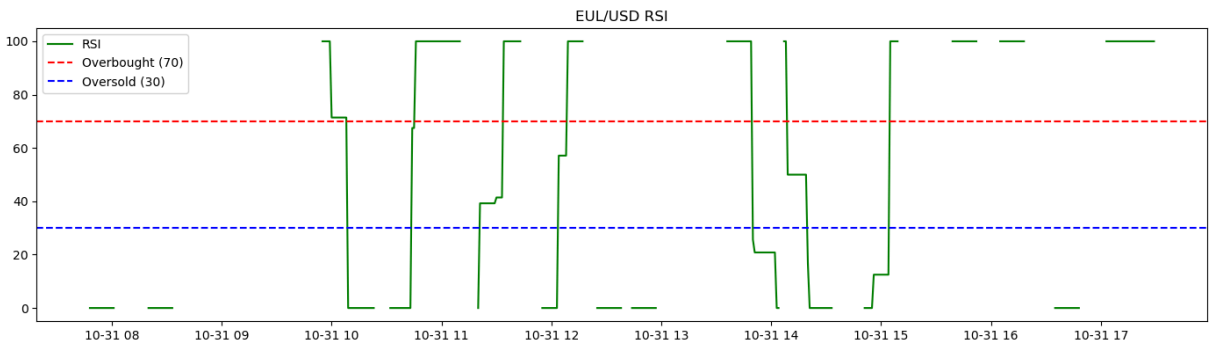

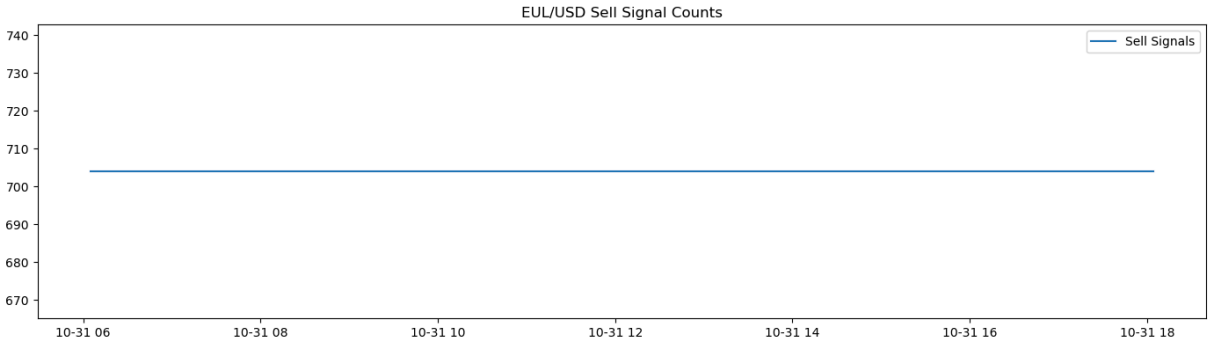

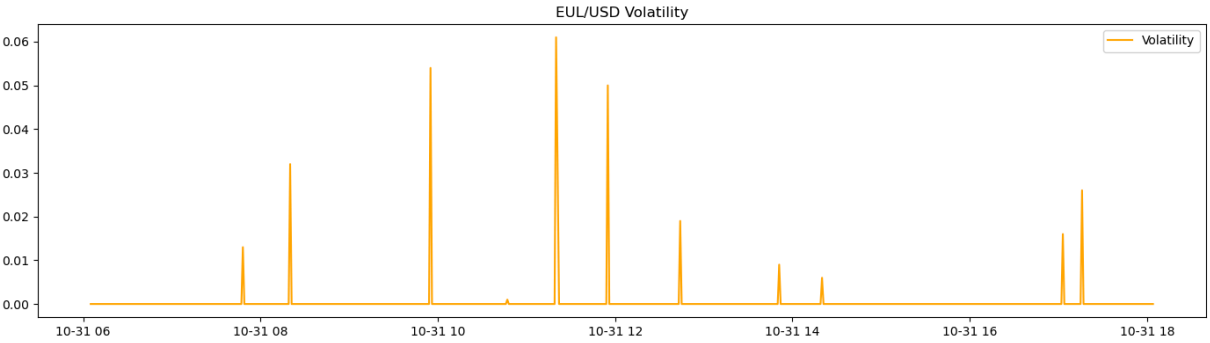

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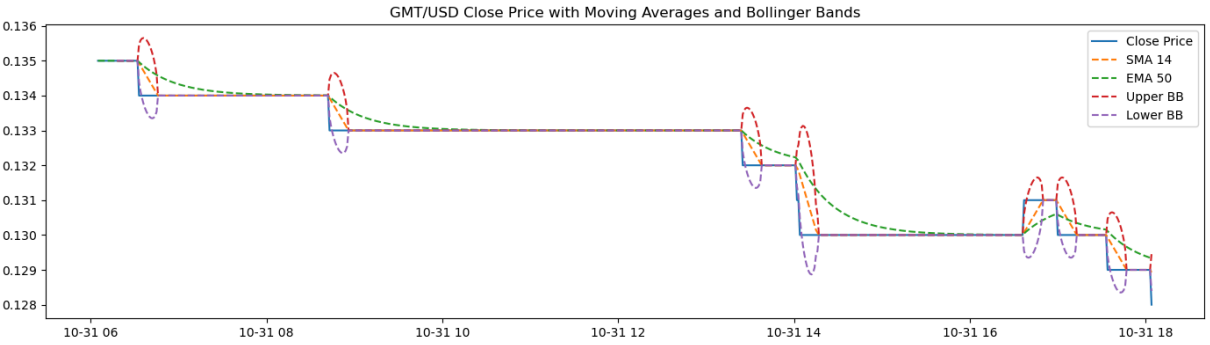

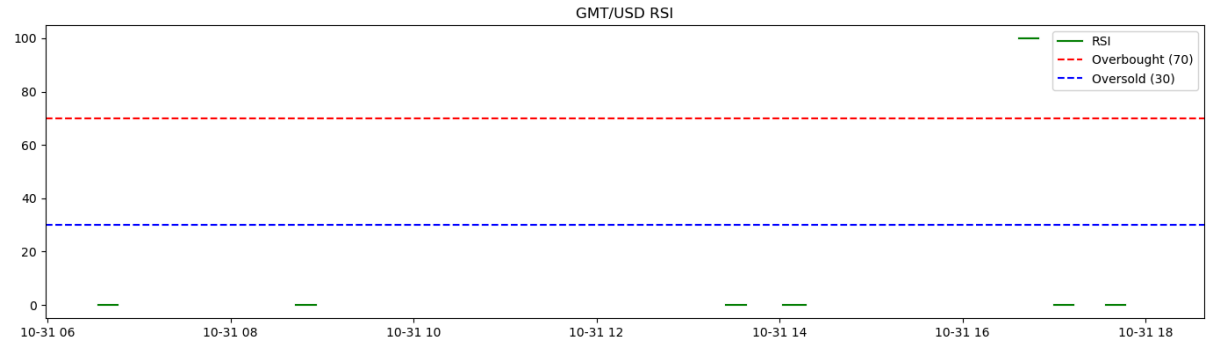

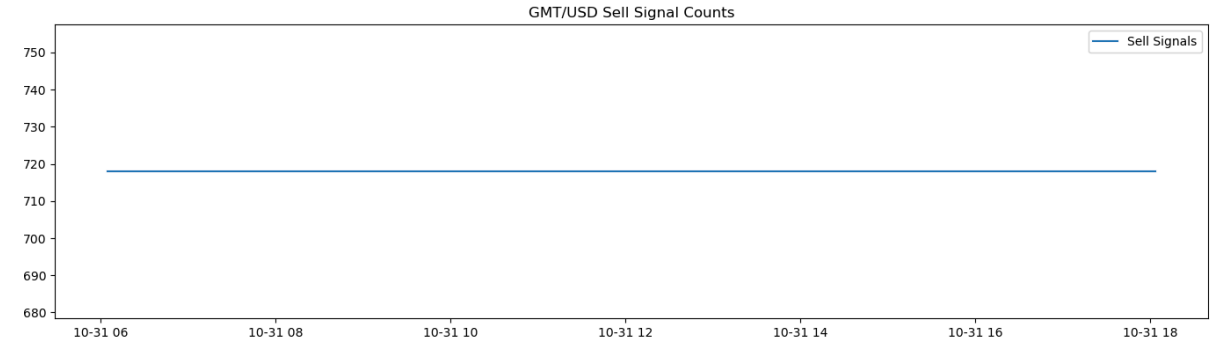

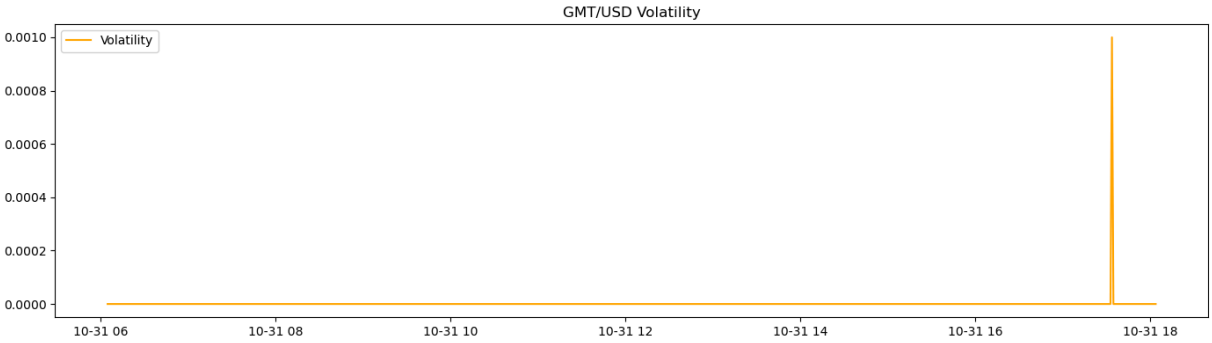


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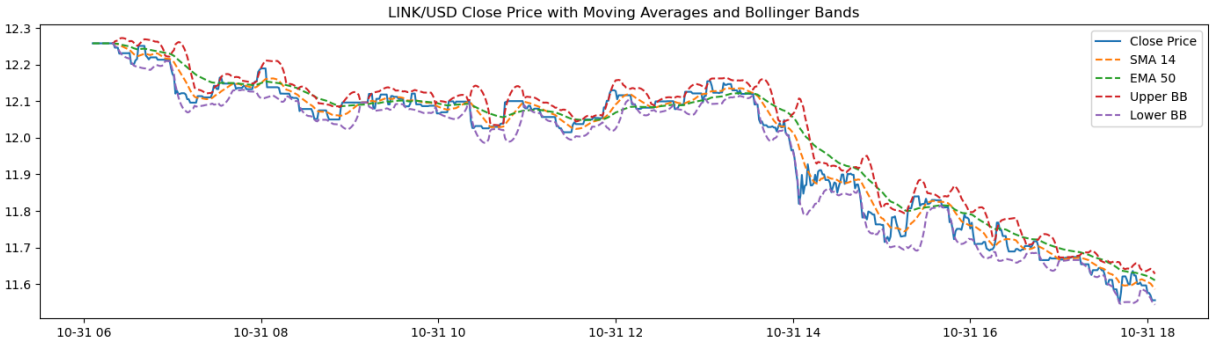

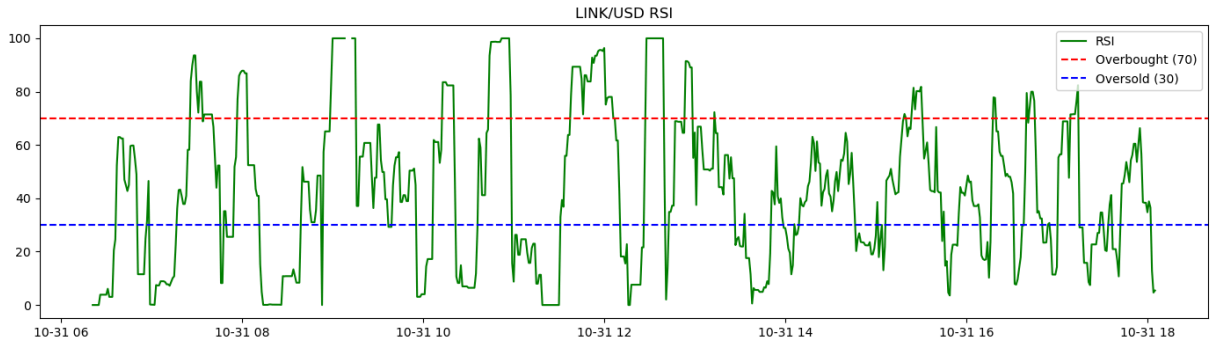

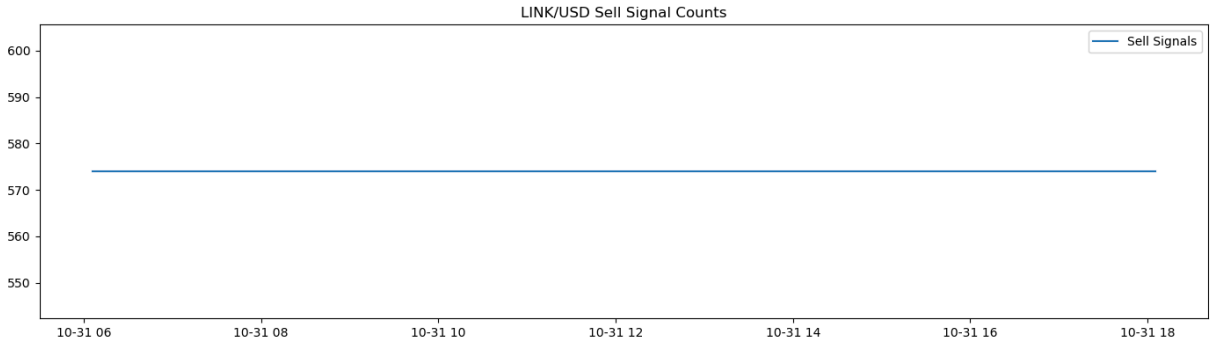

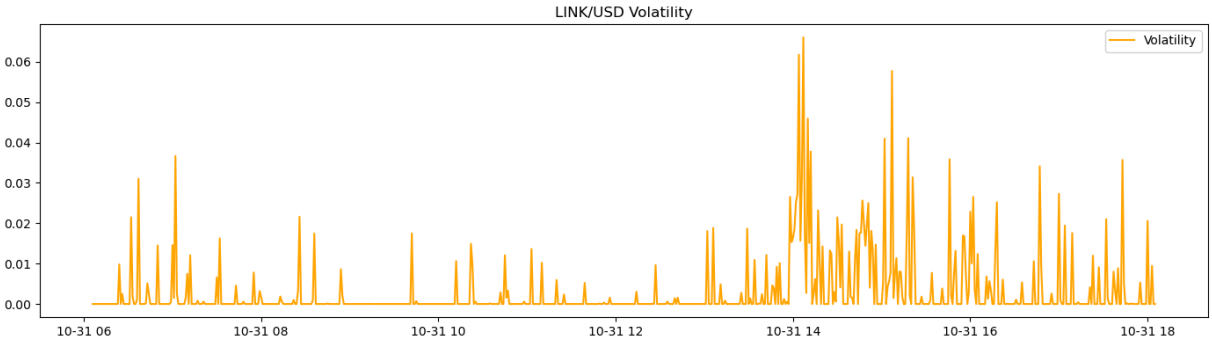


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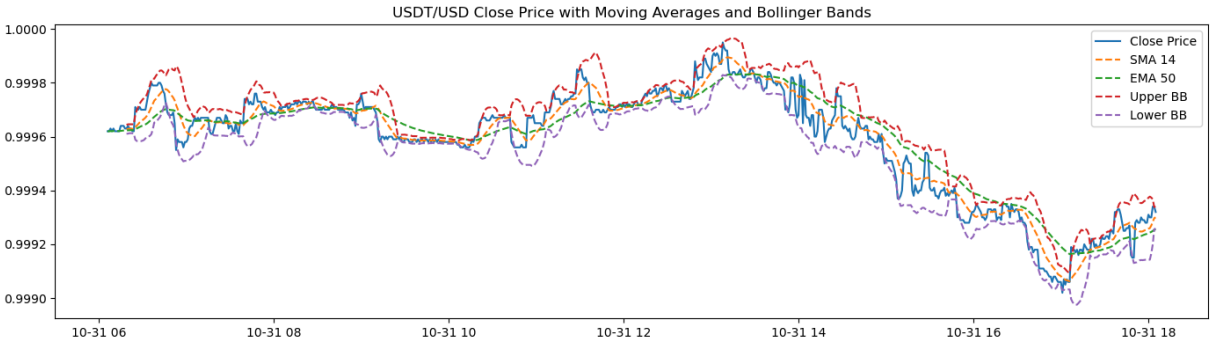

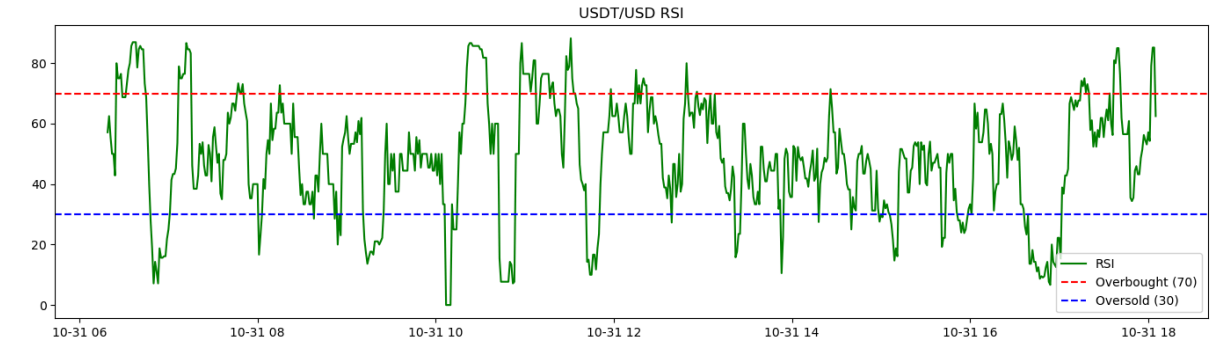

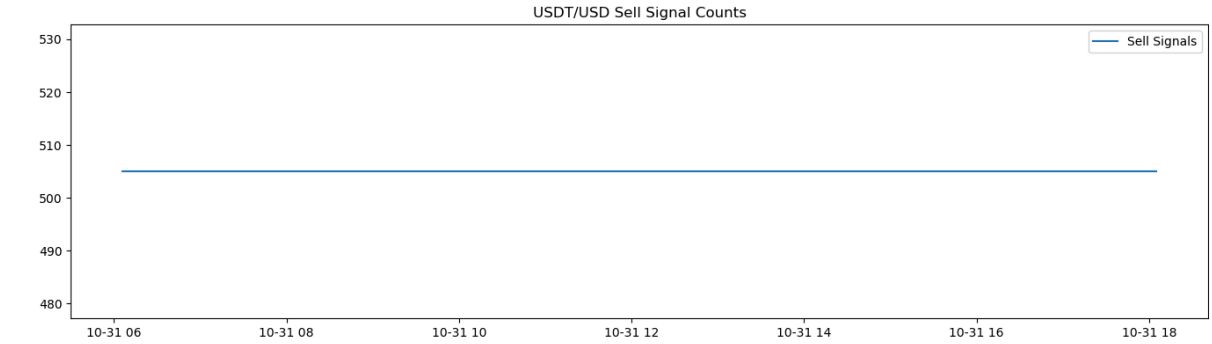

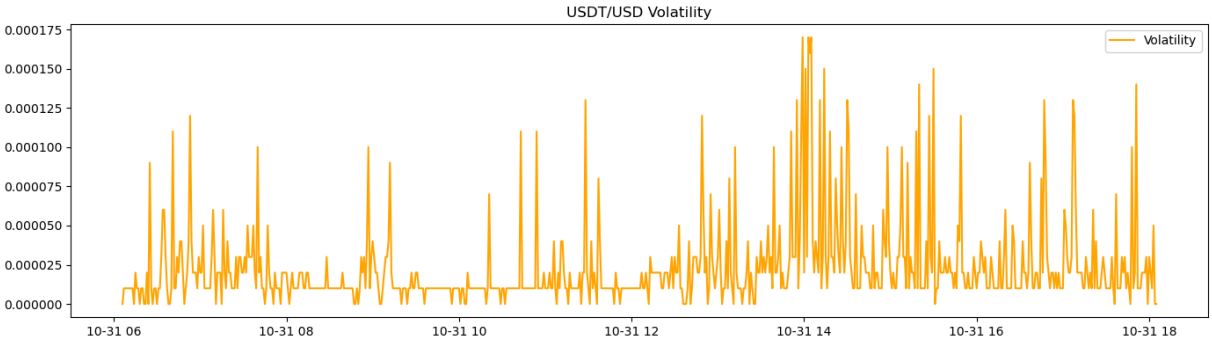


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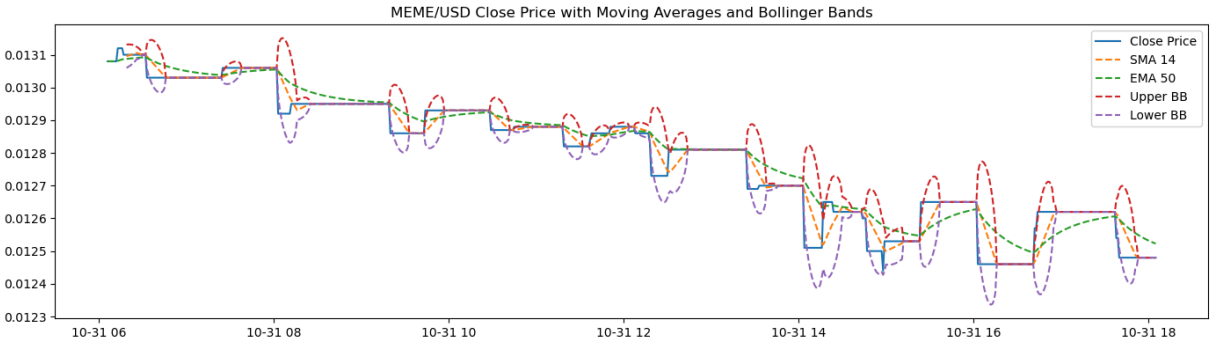

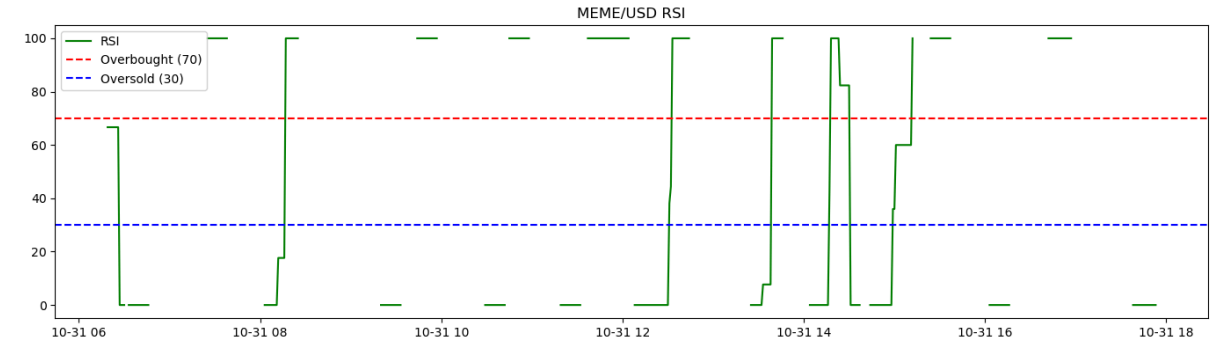

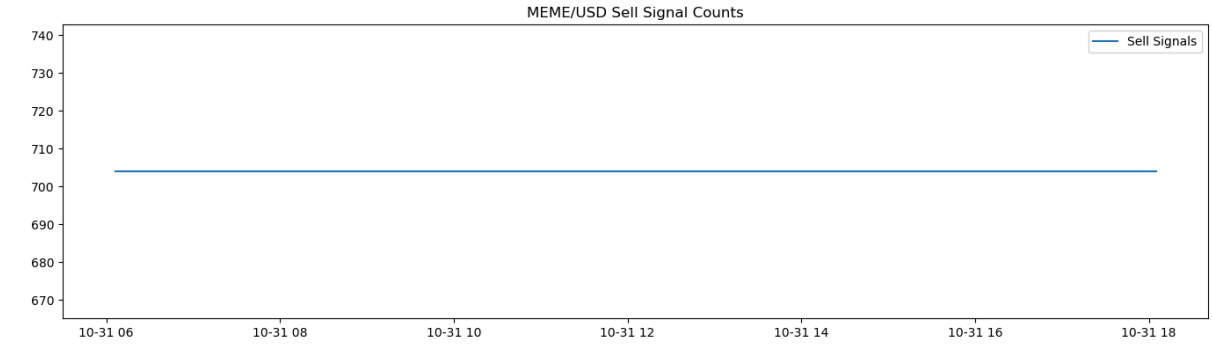

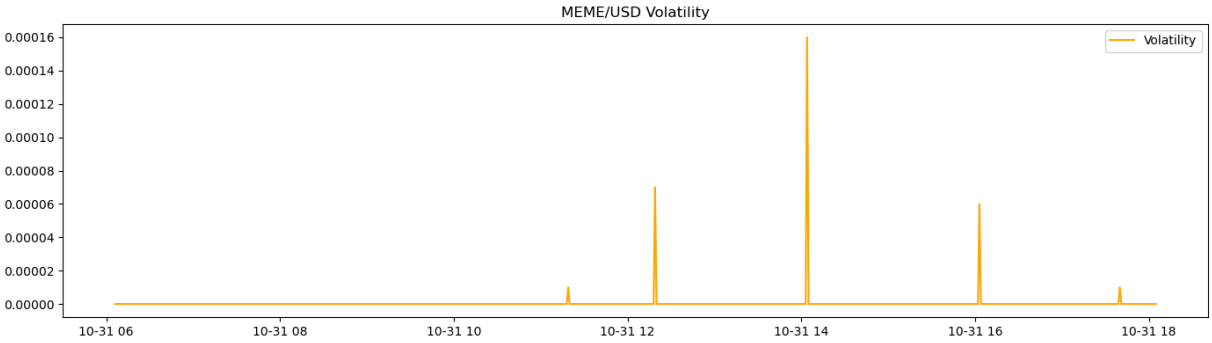


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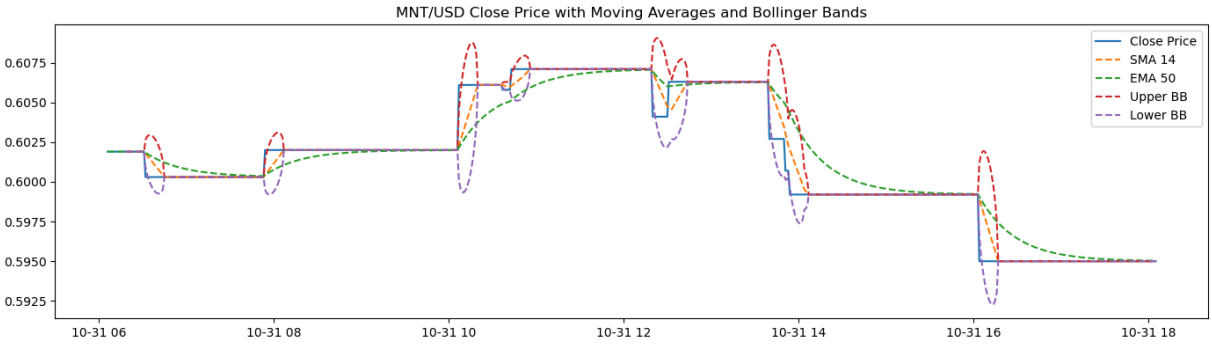

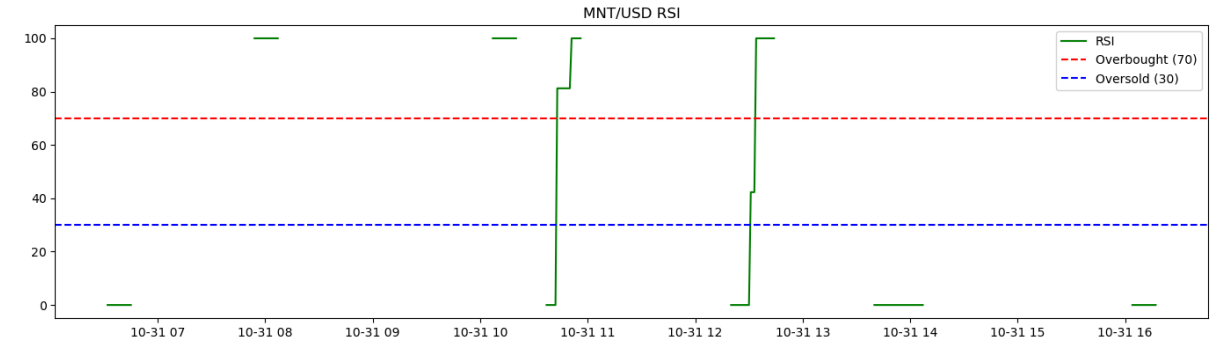

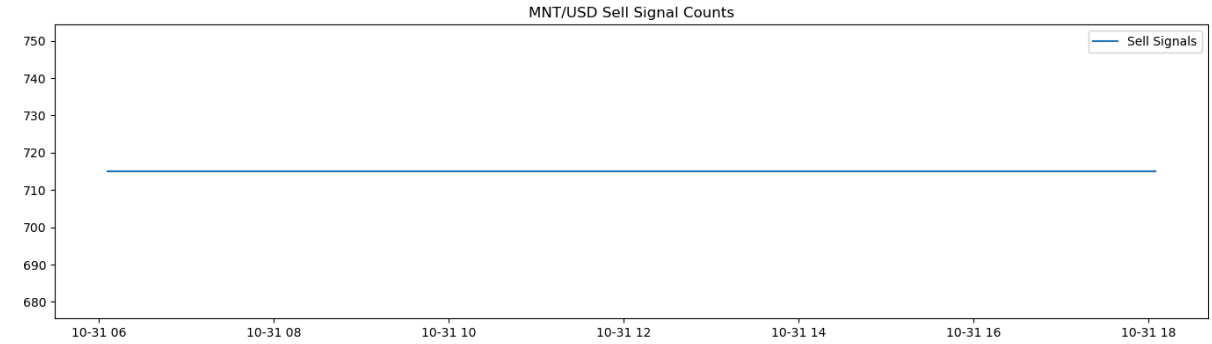

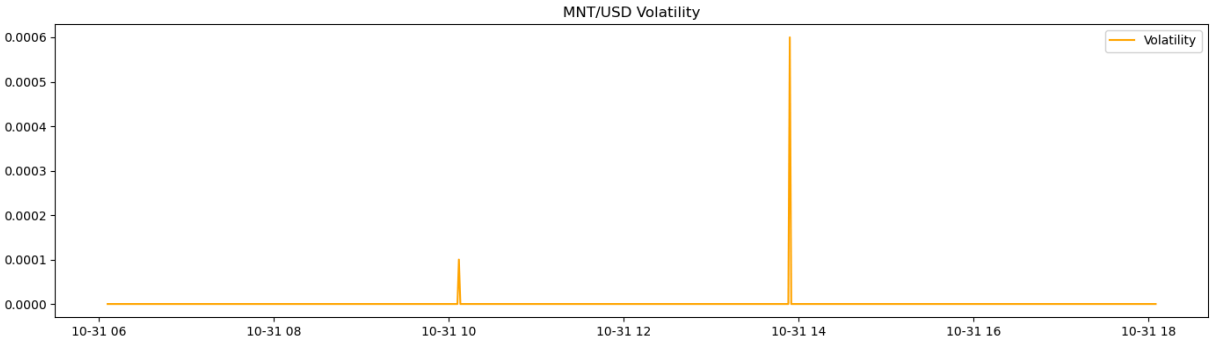


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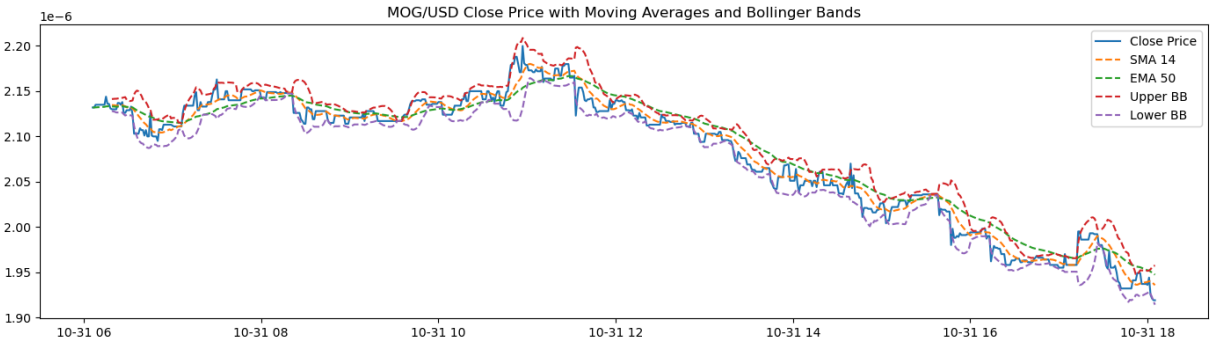

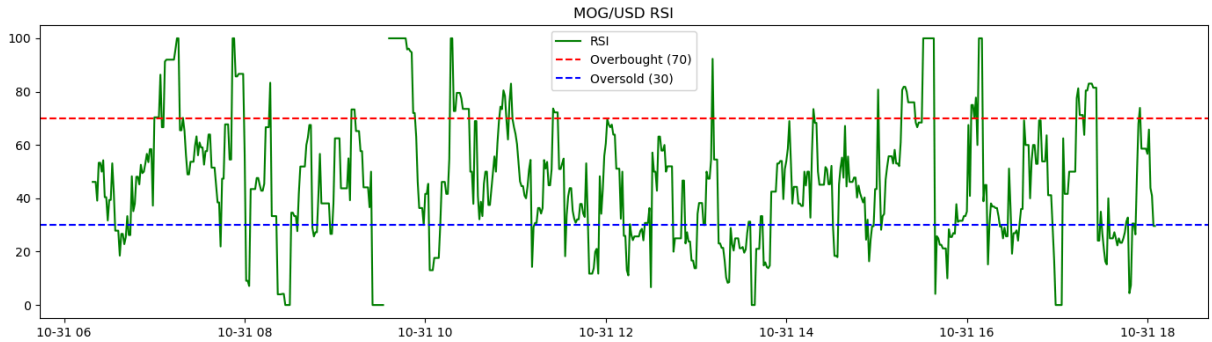

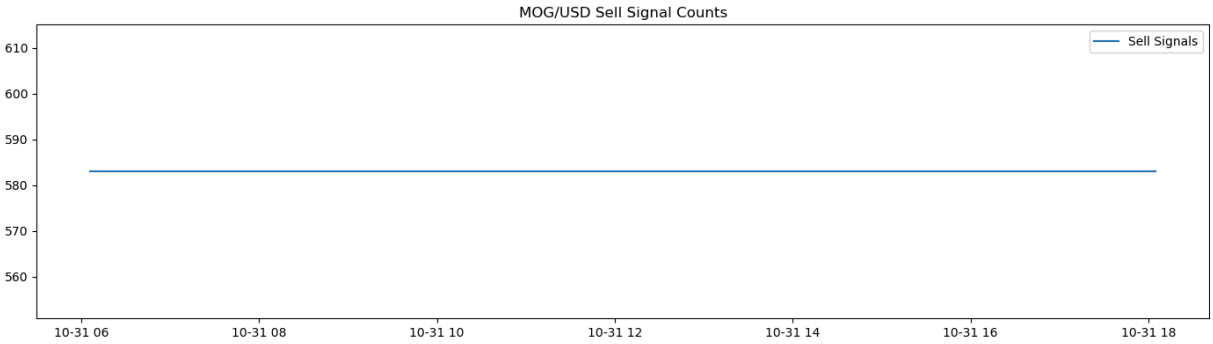

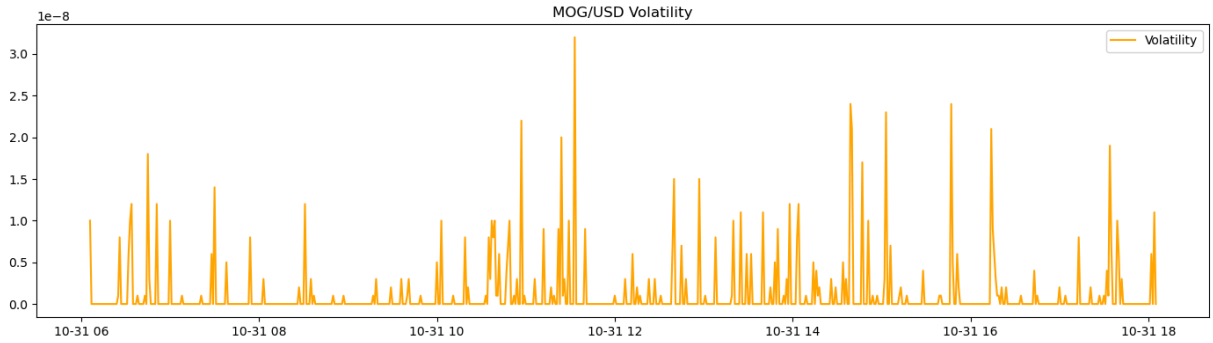


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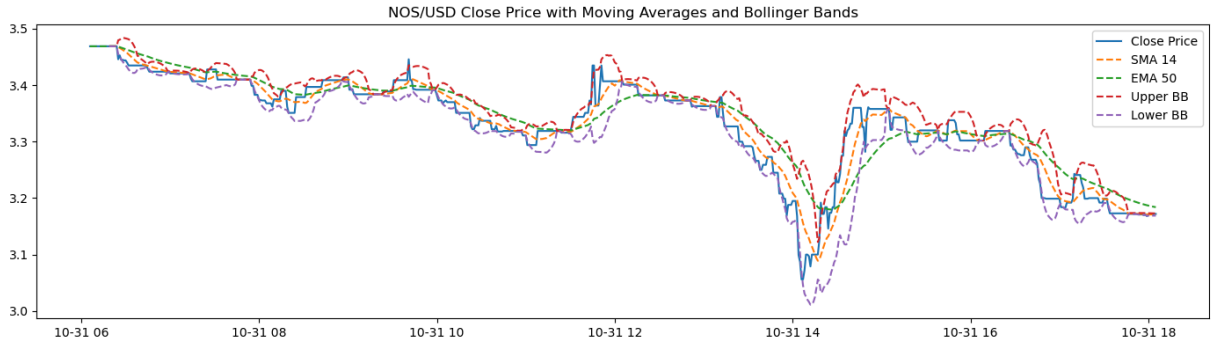

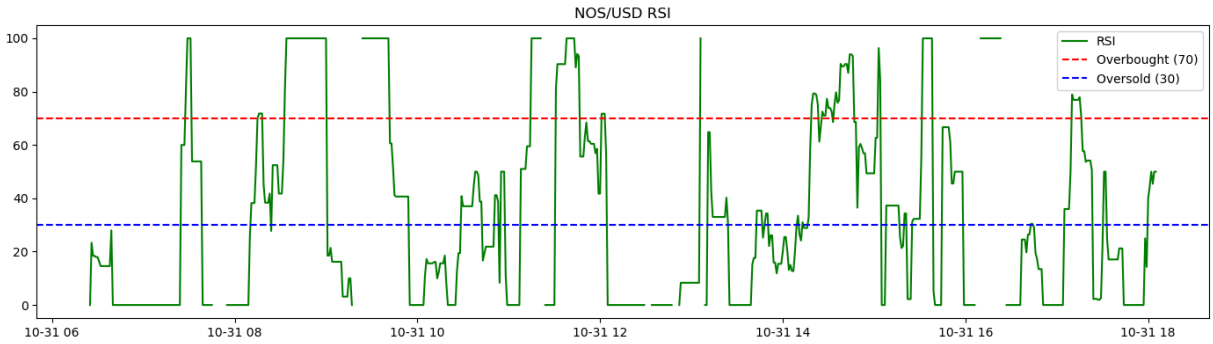

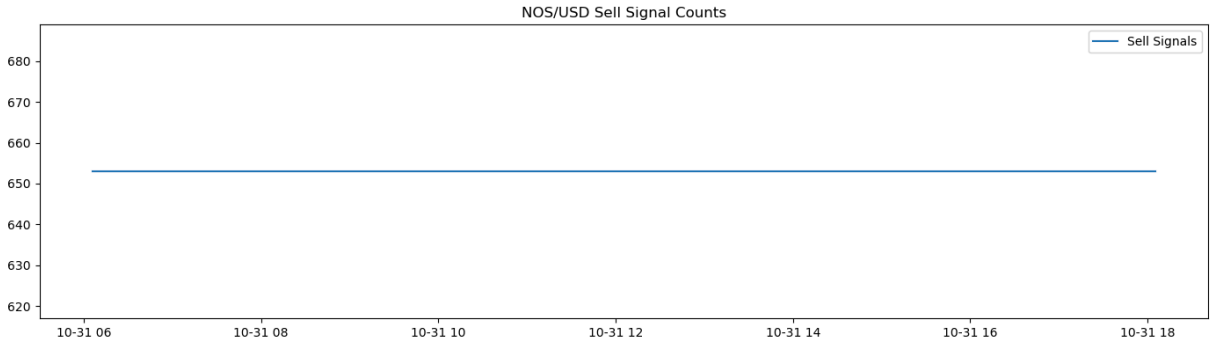

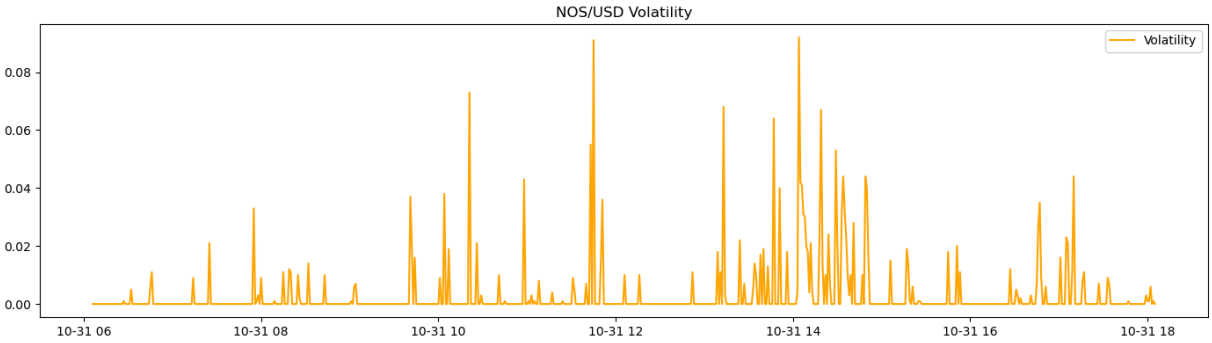


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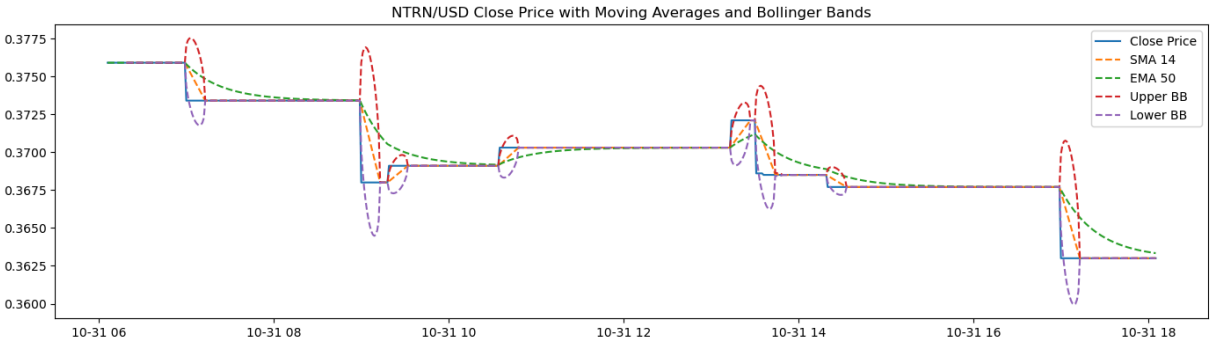

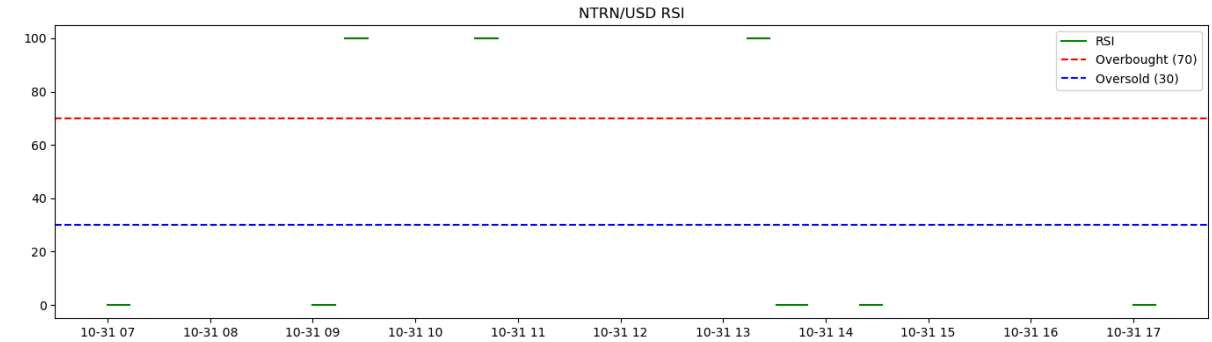

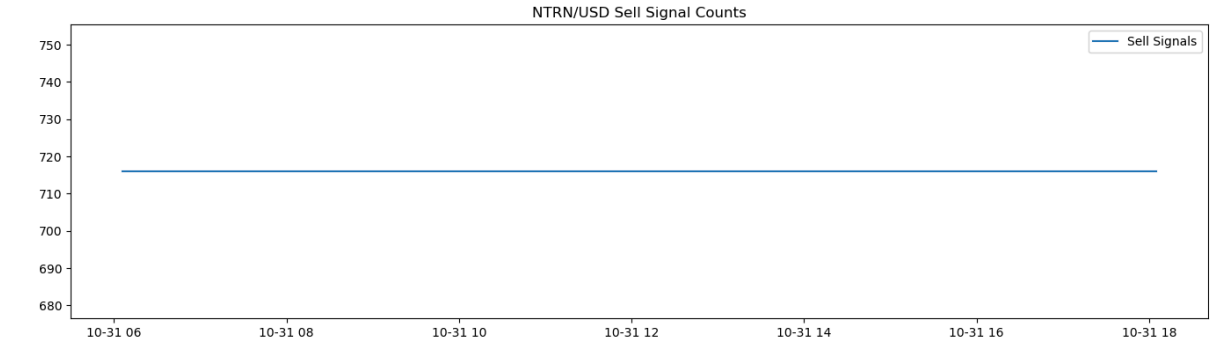

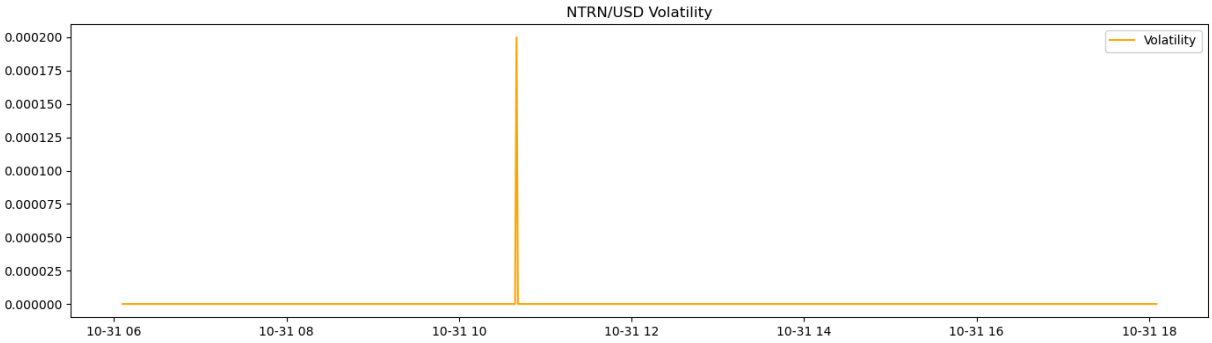


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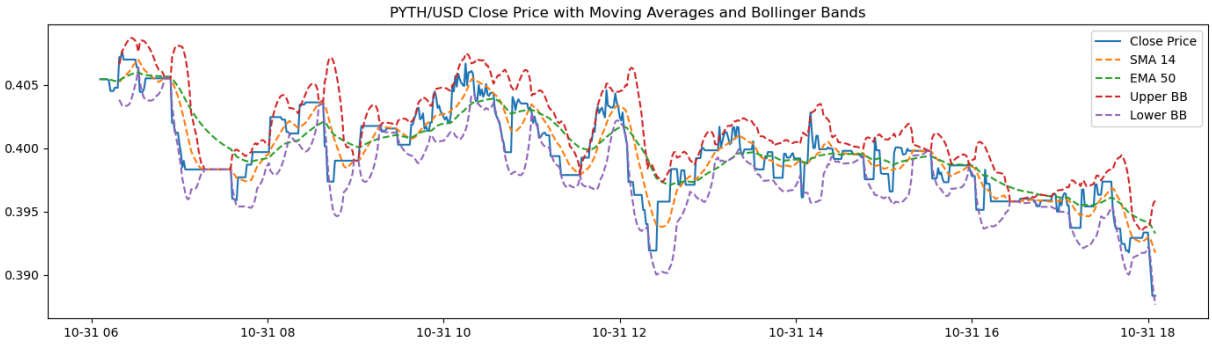

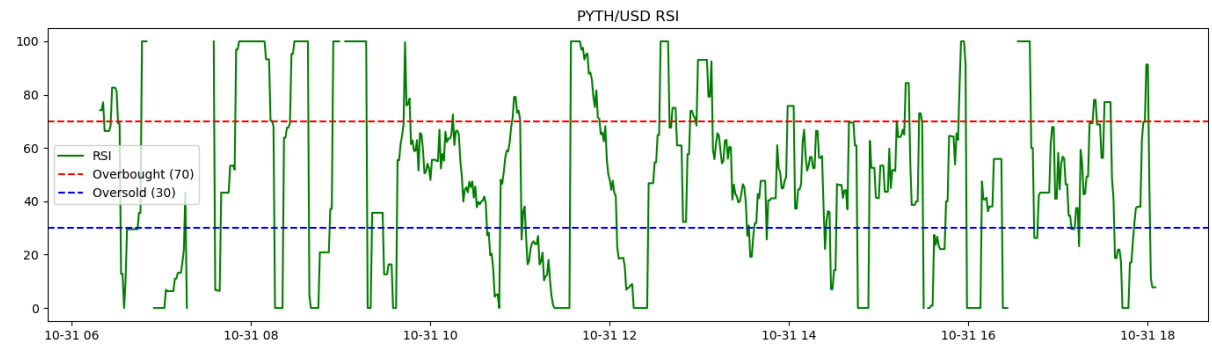

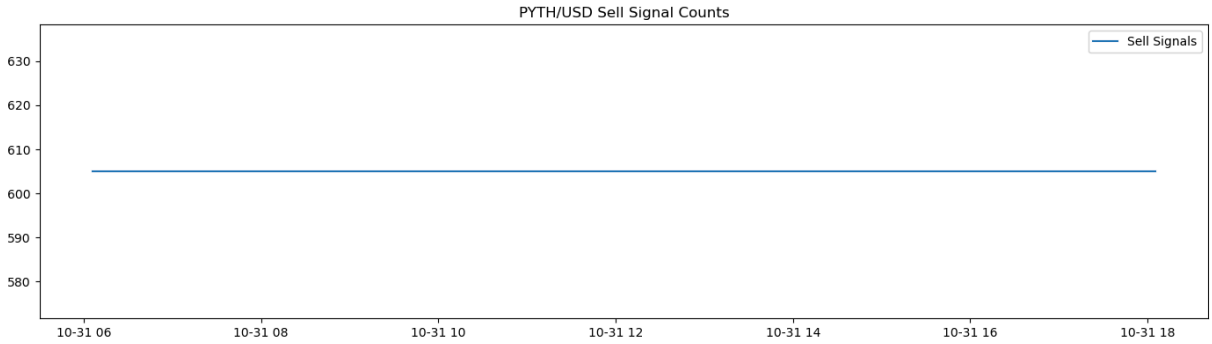

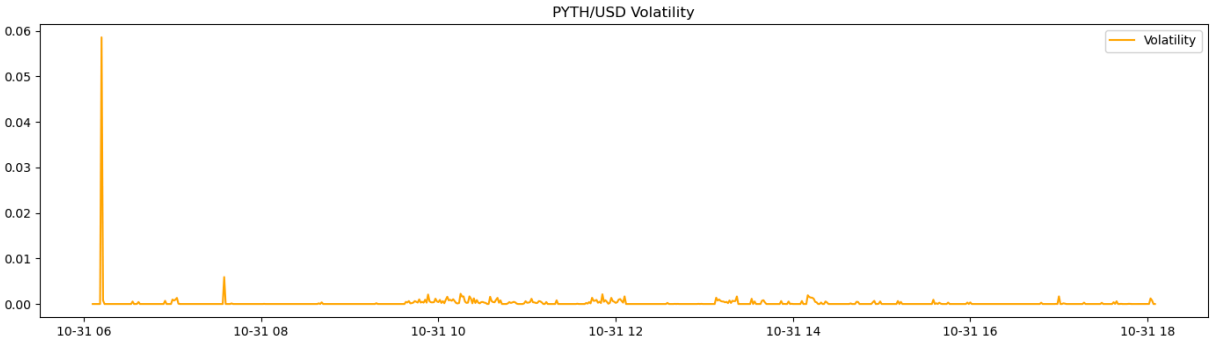


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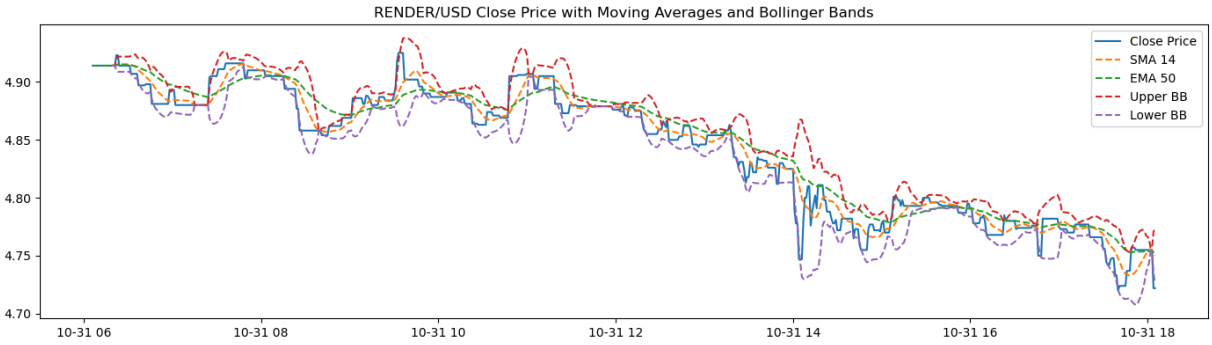

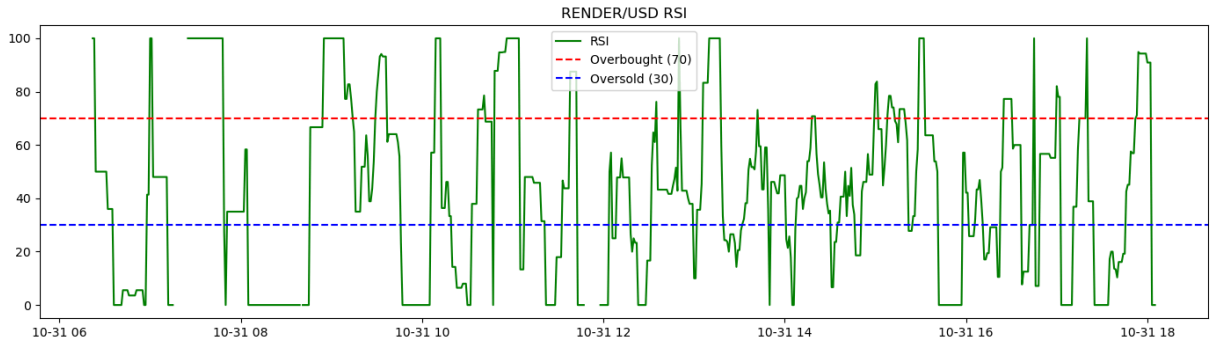

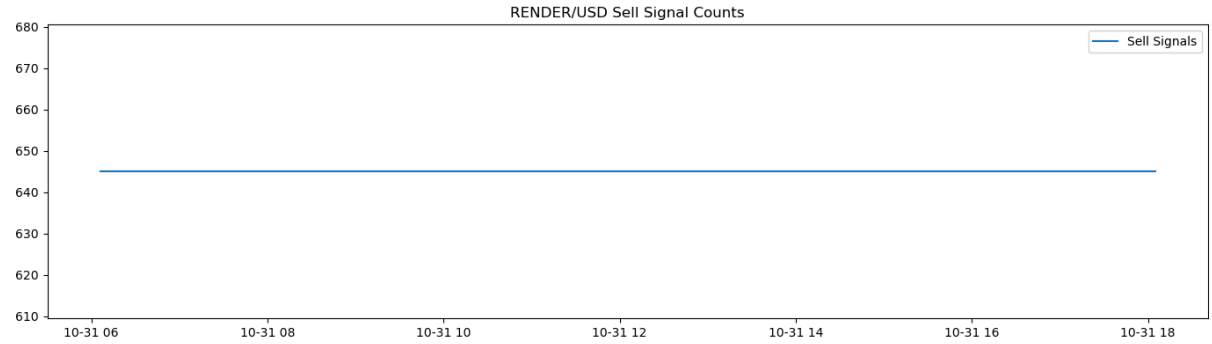

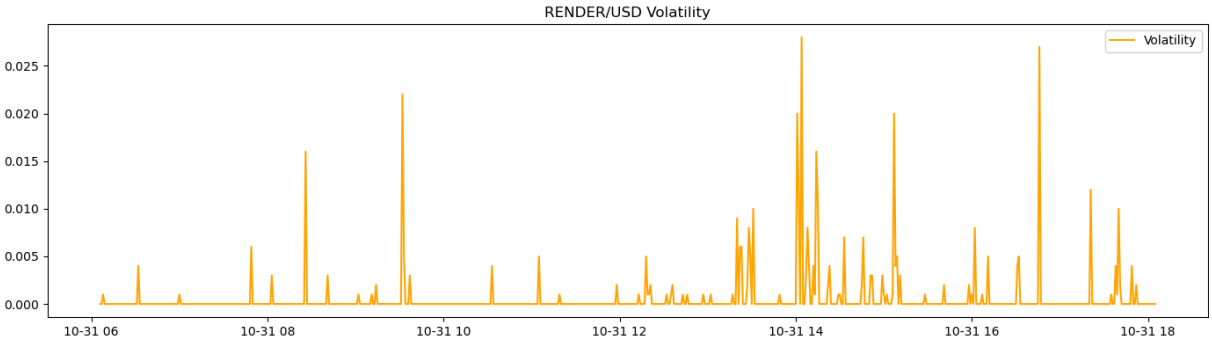


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Data saved to CSV file: SAFE_USD_data.csv
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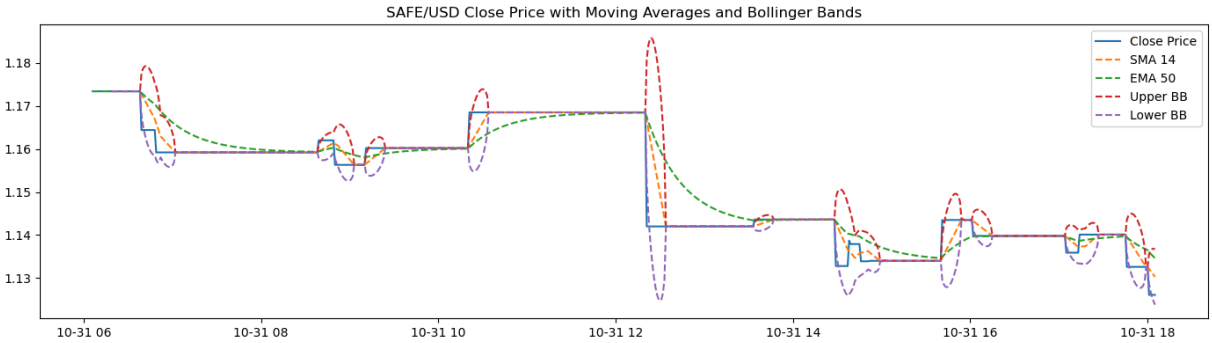

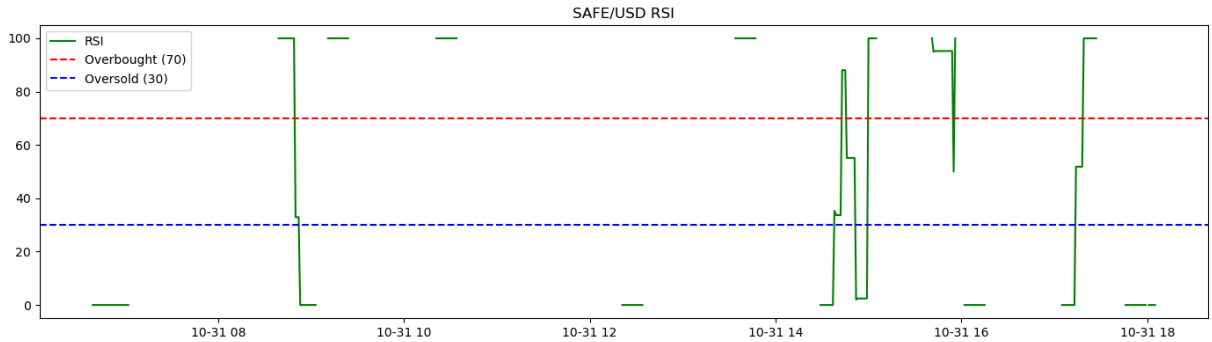

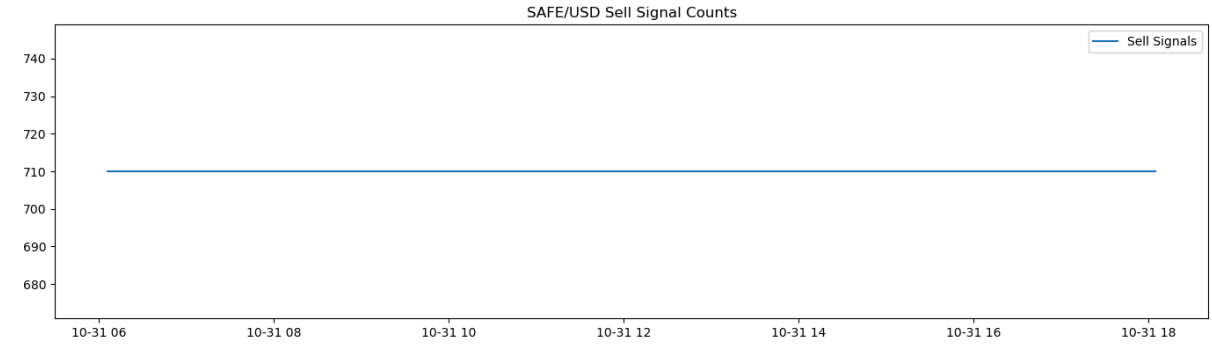

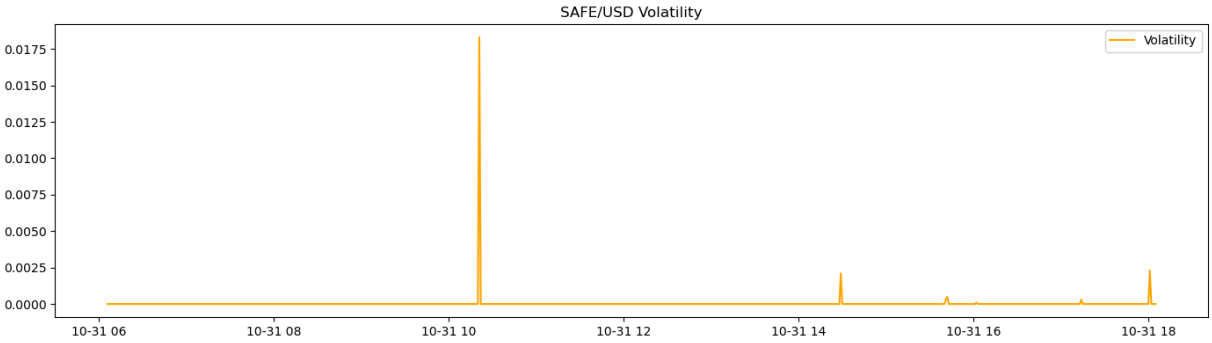


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Data saved to CSV file: SUPER_USD_data.csv
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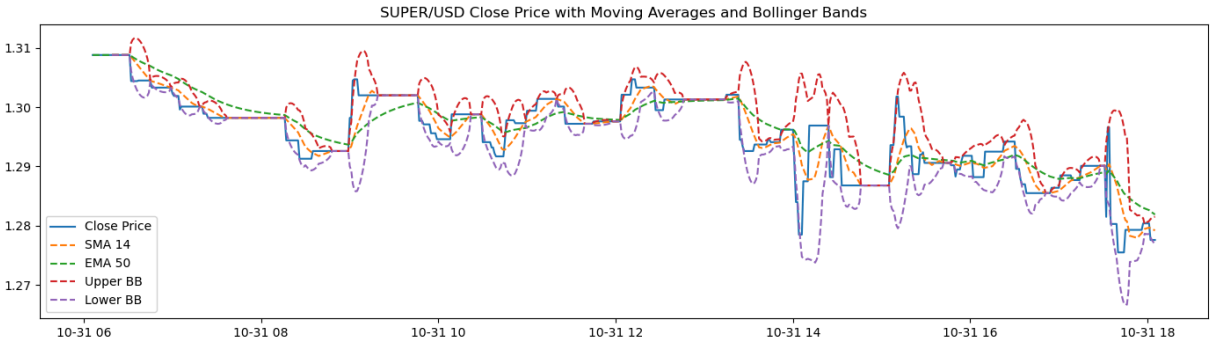

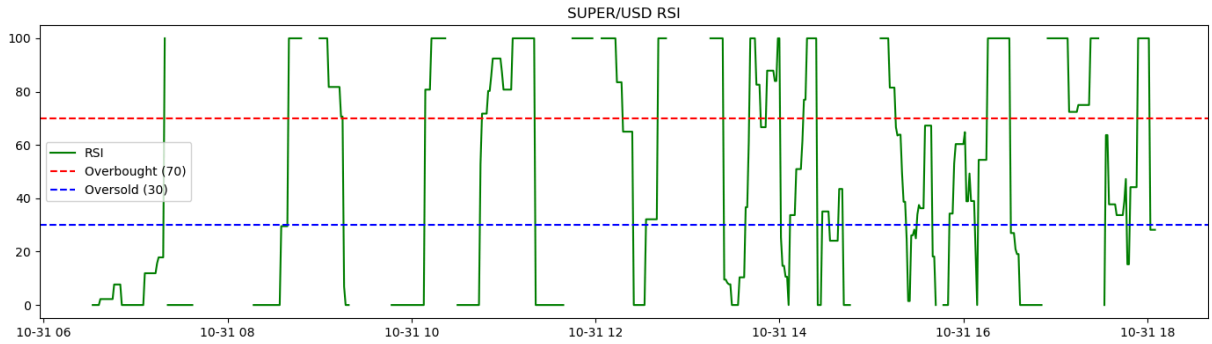

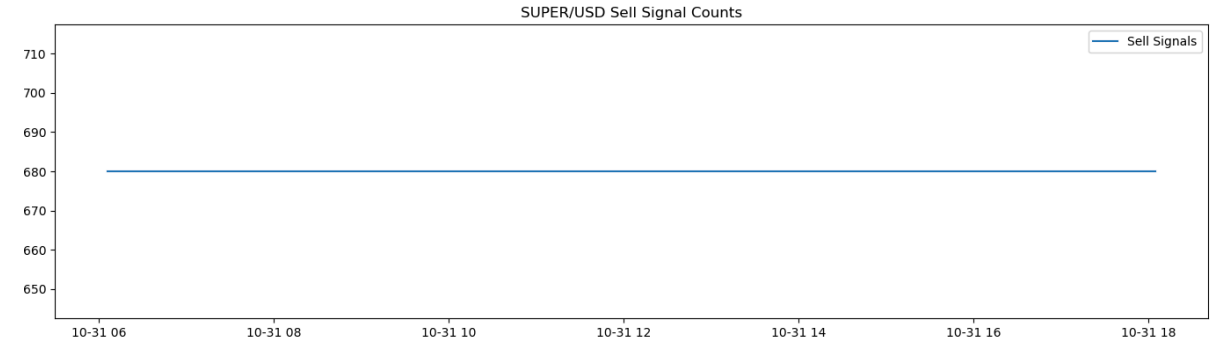

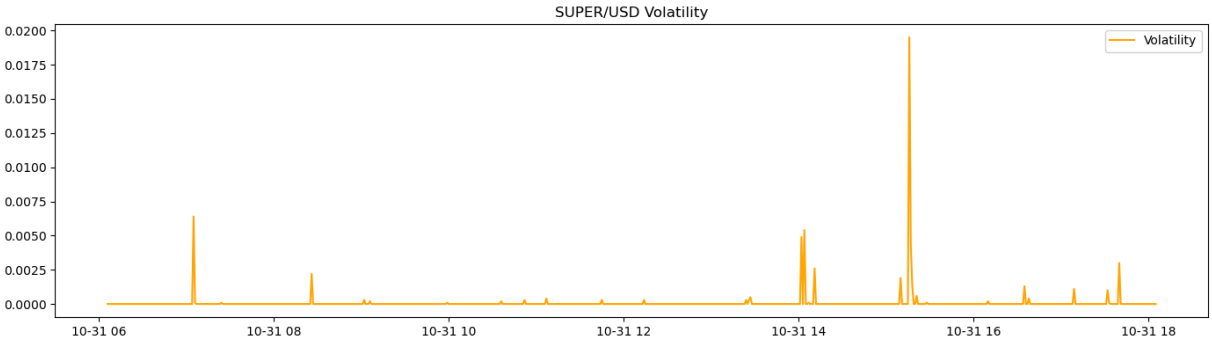


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SQL connection closed.
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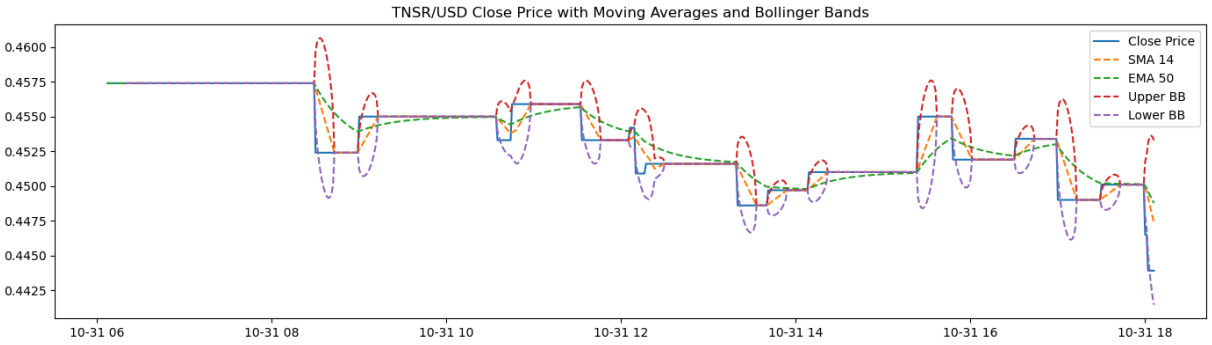

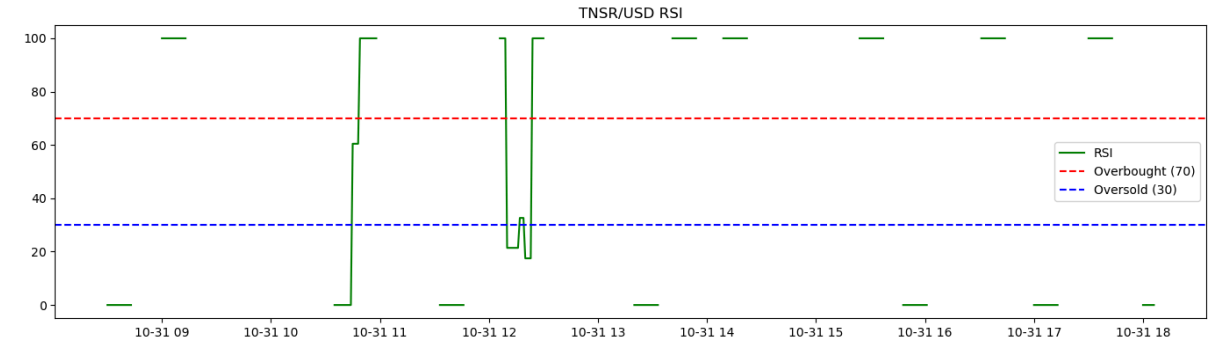

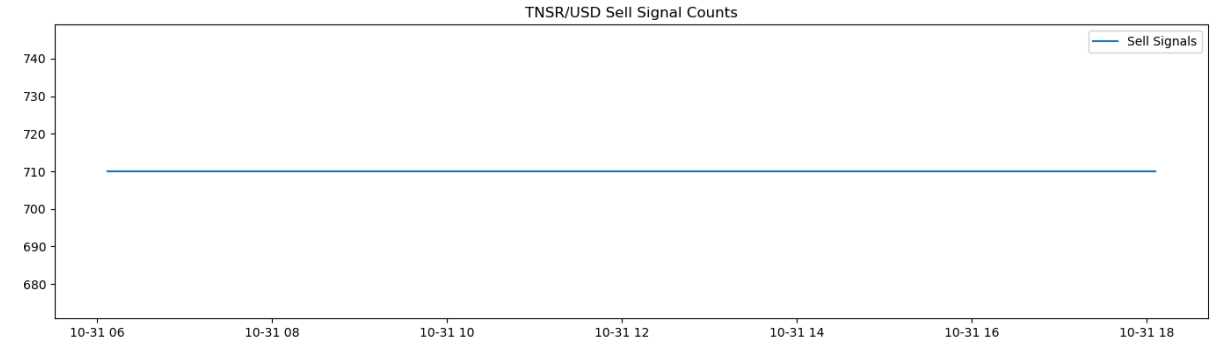

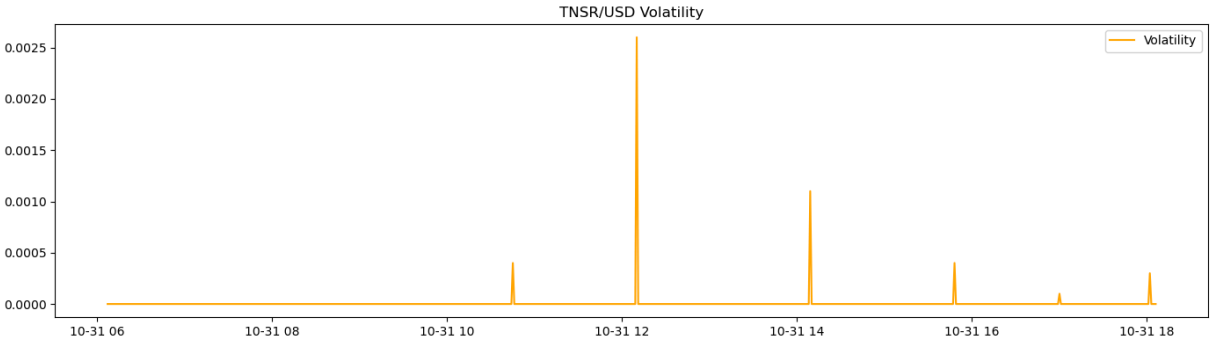


```
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SQL connection closed.
Data saved to CSV file: TREMP_USD_data.csv
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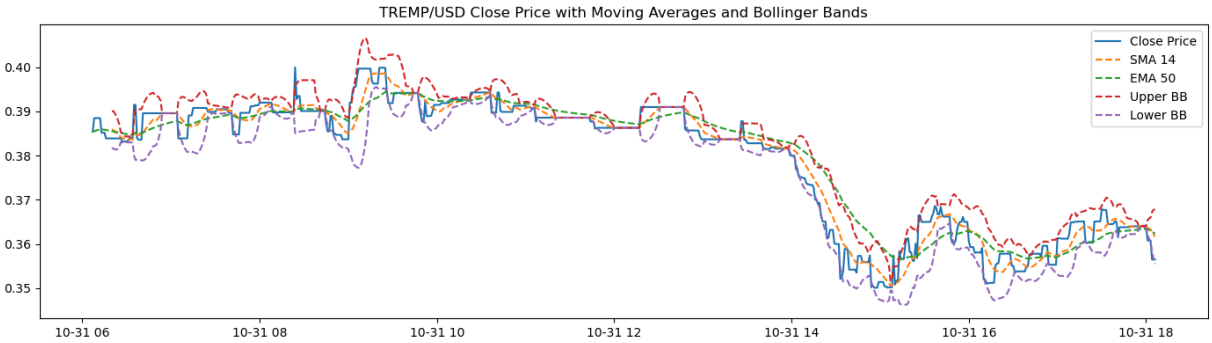

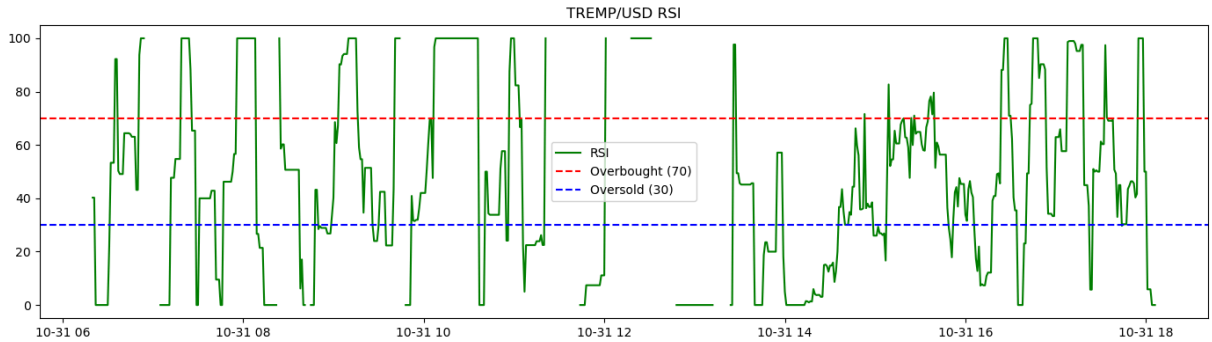

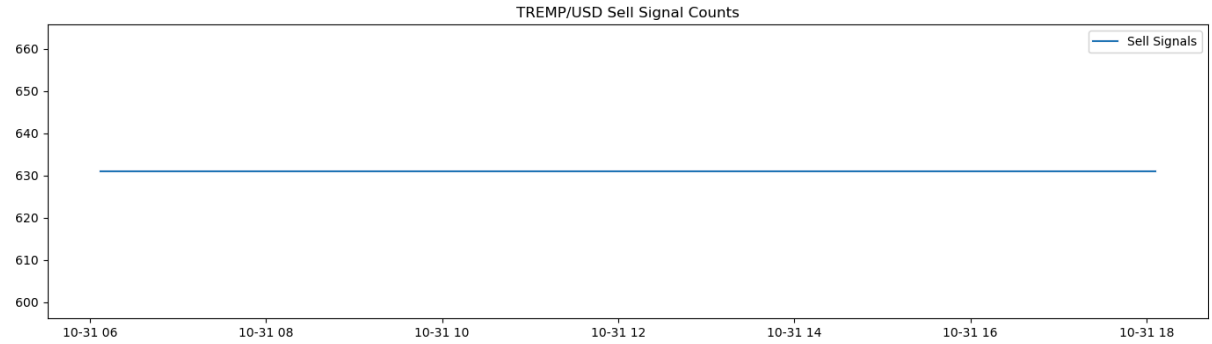

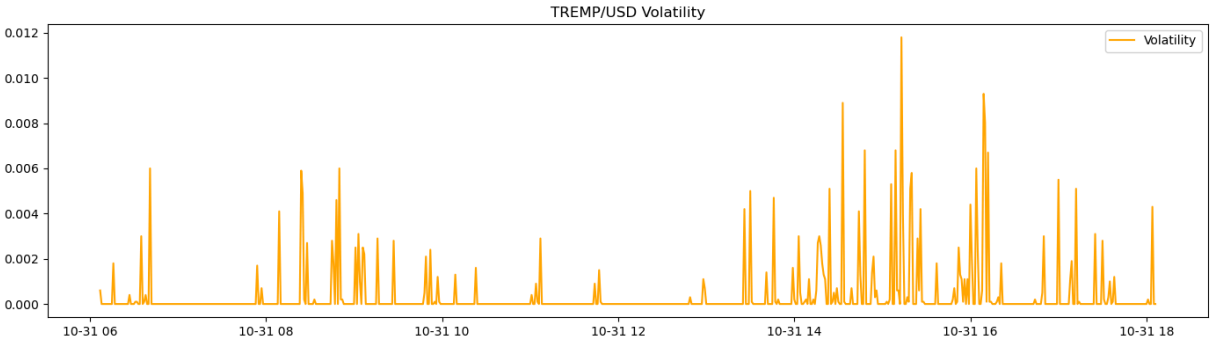


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SQL connection closed.
Data saved to CSV file: XMR_USD_data.csv
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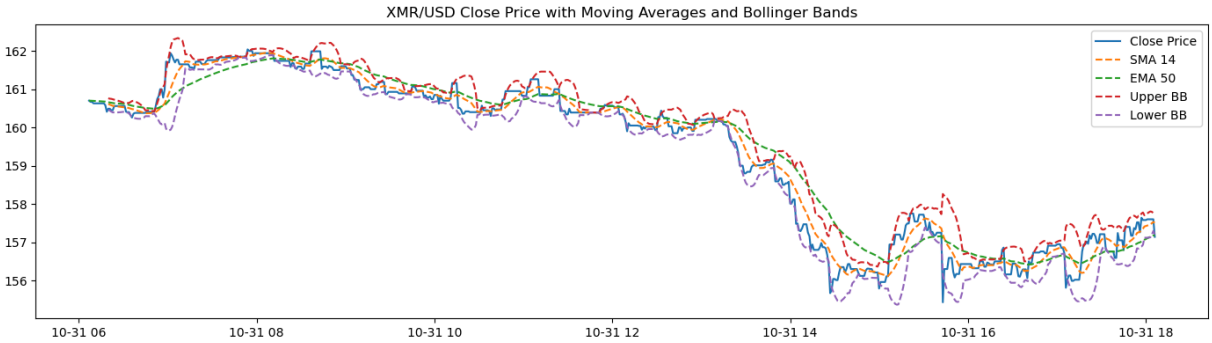
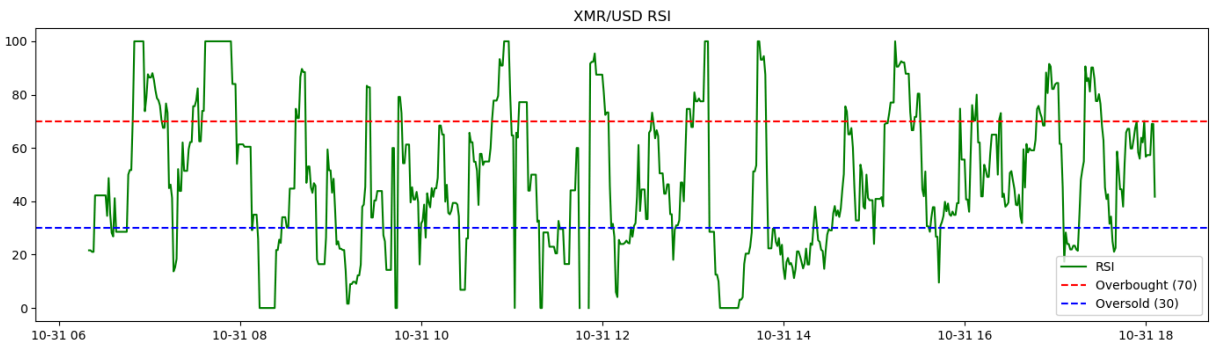
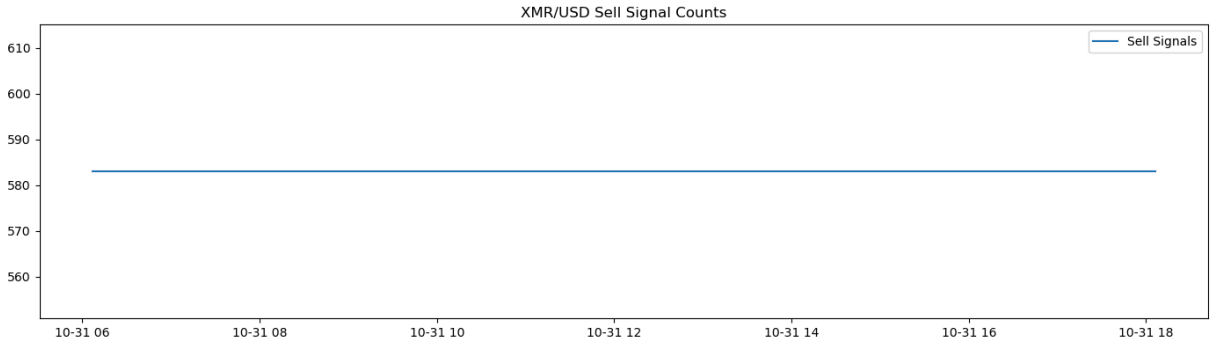
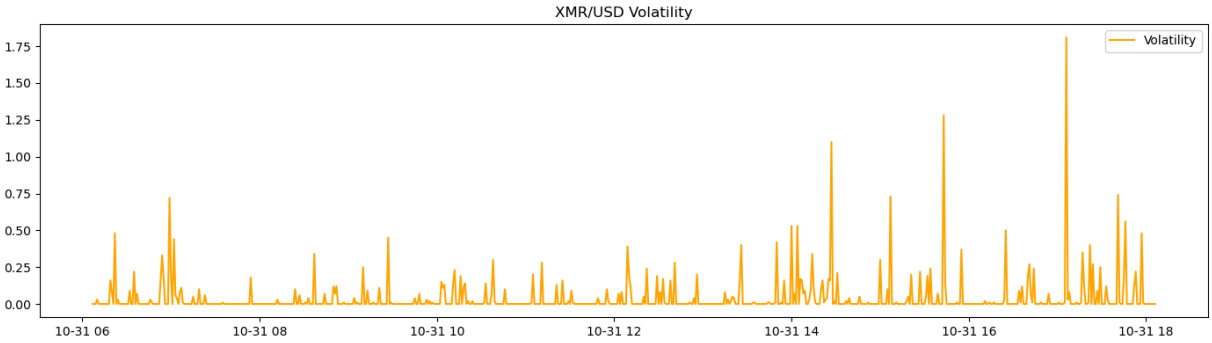
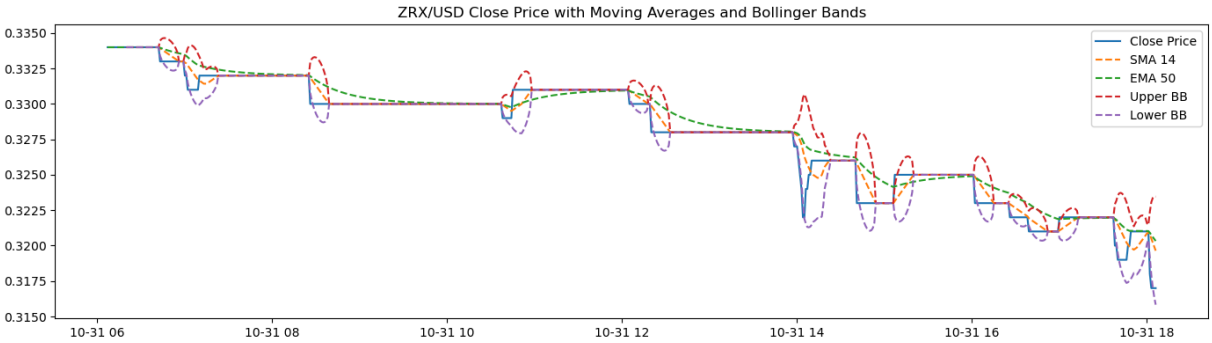


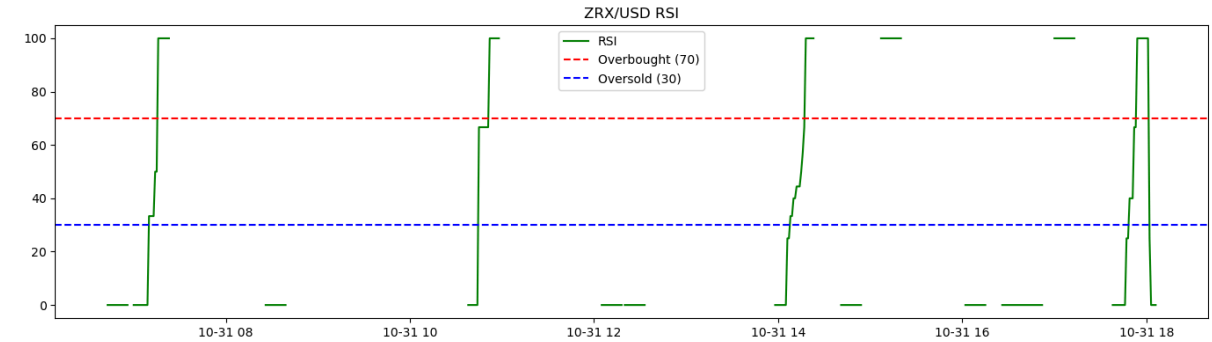


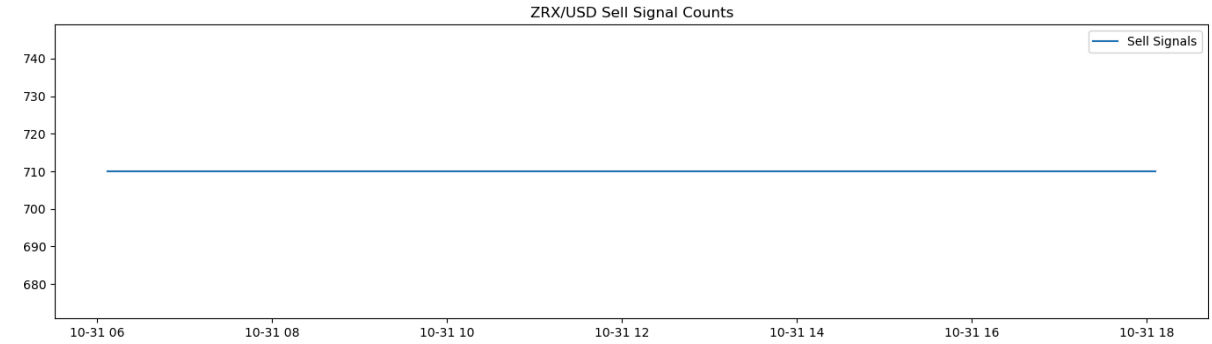


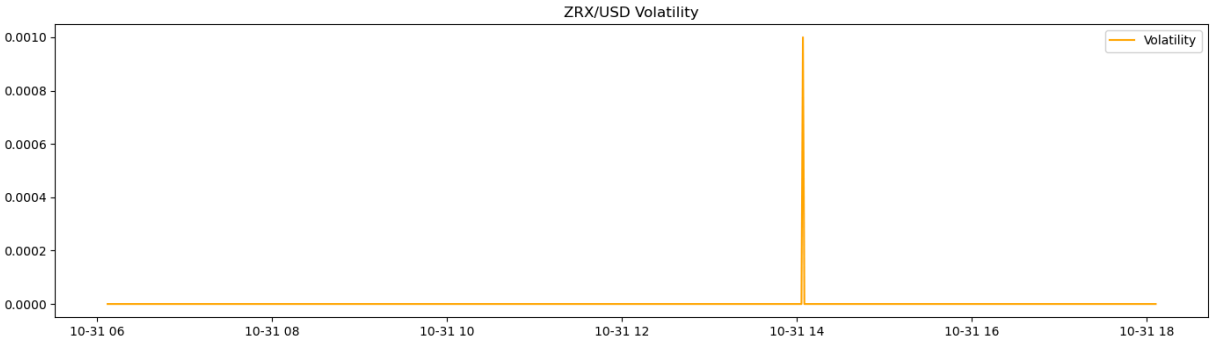



```
Data successfully saved to SQL table: ZRX_USD_data
SQL connection closed.
Data saved to CSV file: ZRX_USD_data.csv
```







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SQL connection closed.
Data saved to CSV file: LTC_USD_data.csv
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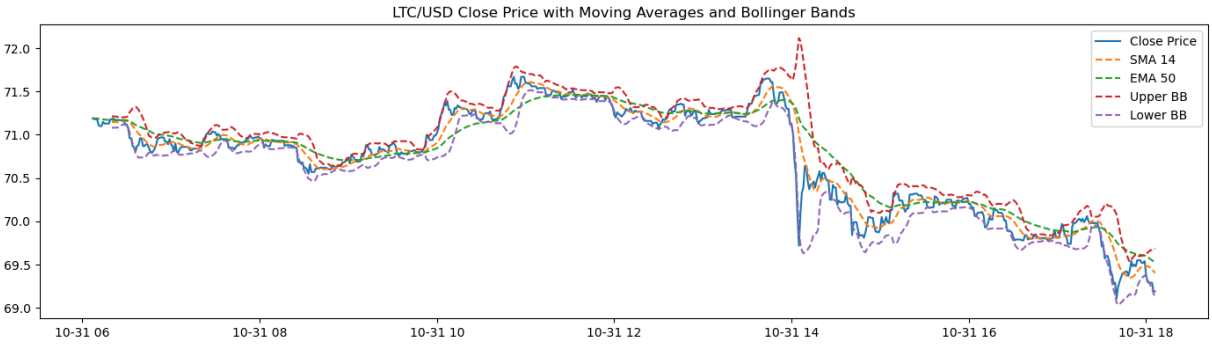

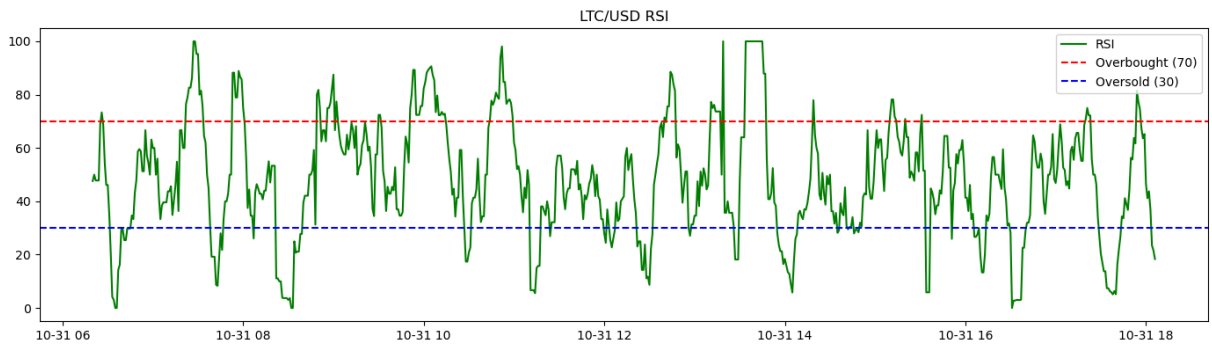

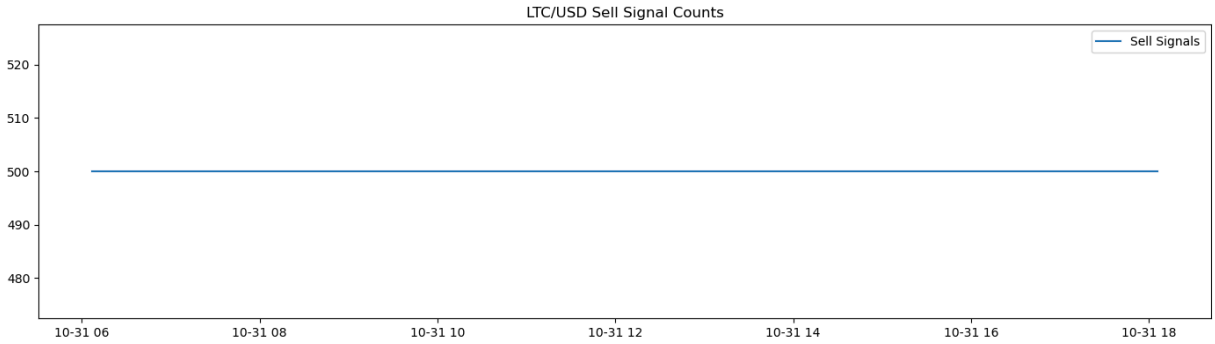

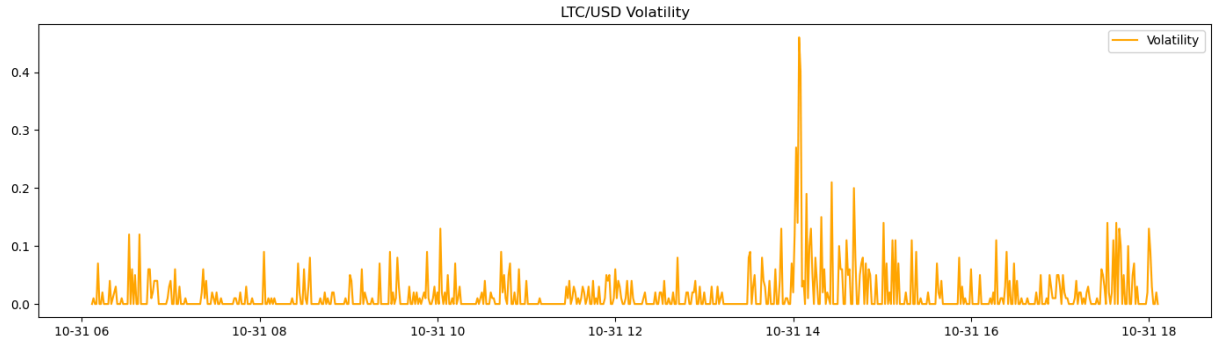


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SQL connection closed.
Data saved to CSV file: DOGE_USD_data.csv
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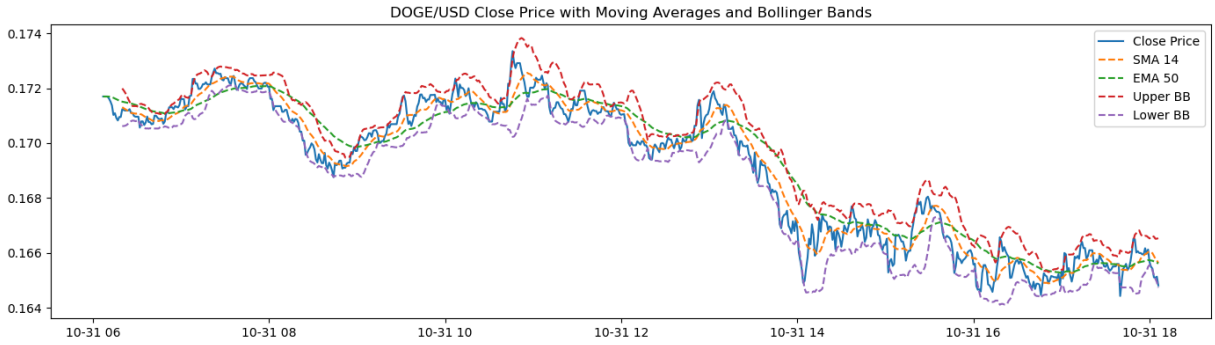
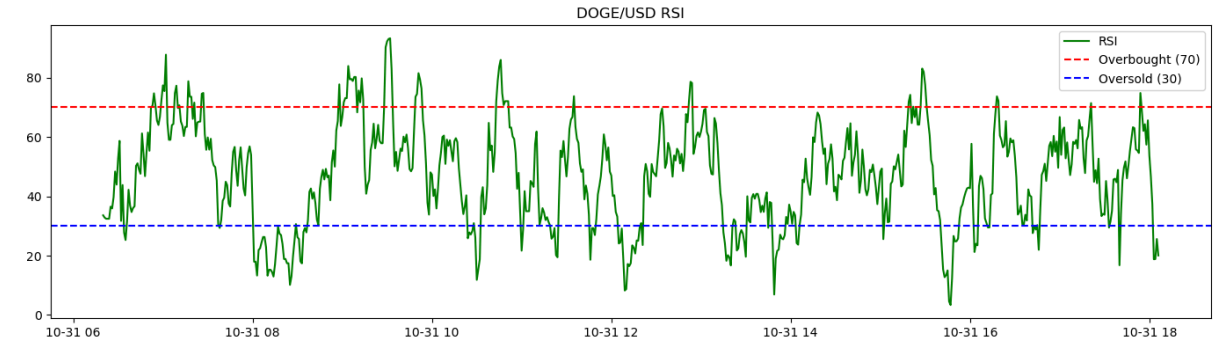
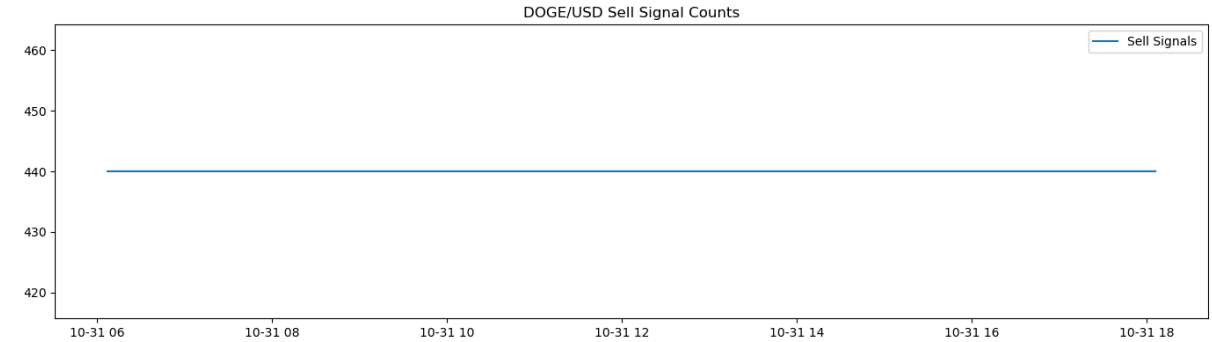
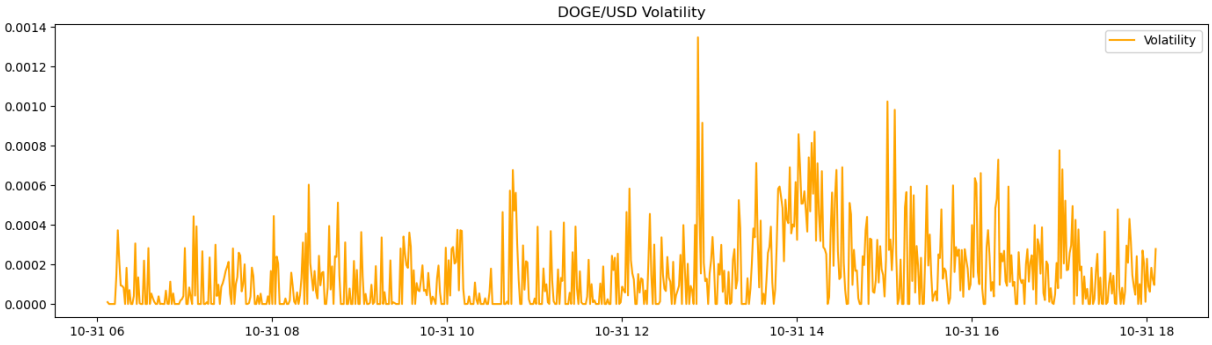





DOGE/USD Sell Signal Counts
Sell Signals
460
450
440
430
420
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


DOGE/USD Volatility
Volatility
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
10-31 06
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

```
Top 10 Symbols with Most 'SELL' Signals:
GMT/USD: 718 'SELL' signals
AUCTION/USD: 717 'SELL' signals
NTRN/USD: 716 'SELL' signals
MNT/USD: 715 'SELL' signals
SAFE/USD: 710 'SELL' signals
TNSR/USD: 710 'SELL' signals
ZRX/USD: 710 'SELL' signals
EUL/USD: 704 'SELL' signals
MEME/USD: 704 'SELL' signals
BODEN/USD: 696 'SELL' signals

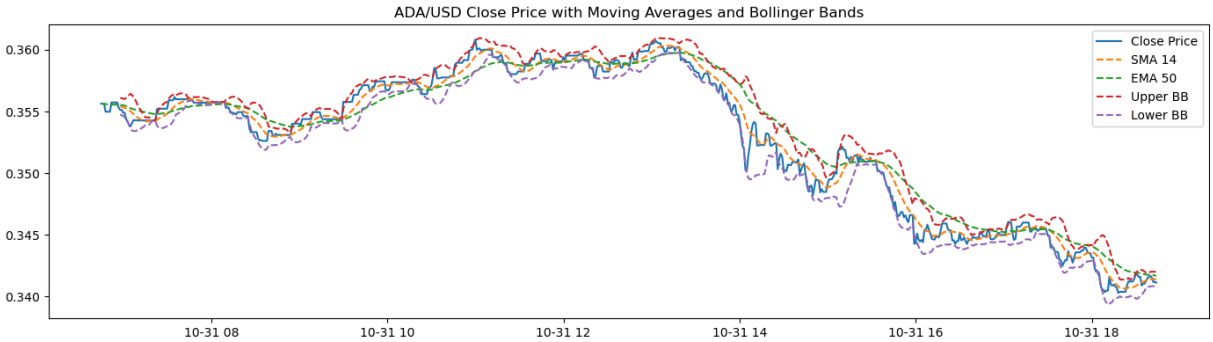
Risk Classification:
ADA/USD: Low Risk
APE/USD: Low Risk
AUCTION/USD: Unknown Risk
BODEN/USD: Low Risk
BTC/USD: High Risk
CPOOL/USD: Low Risk
ETH/USD: High Risk
EUL/USD: Low Risk
GMT/USD: Low Risk
LINK/USD: Low Risk
USDT/USD: Low Risk
MEME/USD: Low Risk
MNT/USD: Low Risk
MOG/USD: Low Risk
NOS/USD: Low Risk
NTRN/USD: Low Risk
PYTH/USD: Low Risk
RENDER/USD: Low Risk
SAFE/USD: Low Risk
SUPER/USD: Low Risk
TNSR/USD: Low Risk
TREMP/USD: Low Risk
XMR/USD: Low Risk
ZRX/USD: Low Risk
LTC/USD: Low Risk
DOGE/USD: Low Risk
```

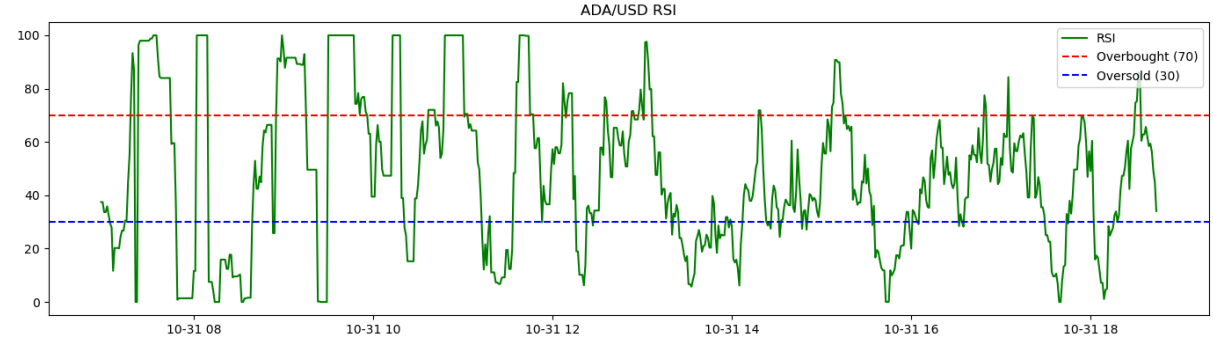
In [182…

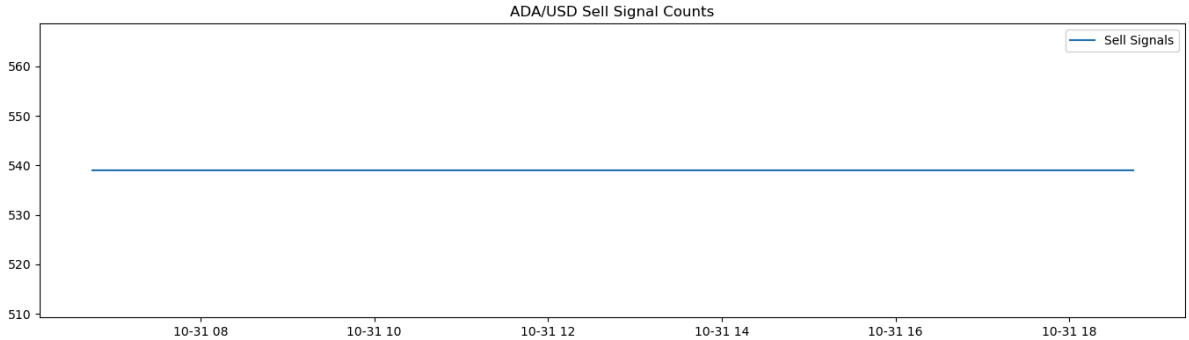
```python
import dash
from dash import dcc, html
import plotly.express as px
import plotly.graph_objects as go
```

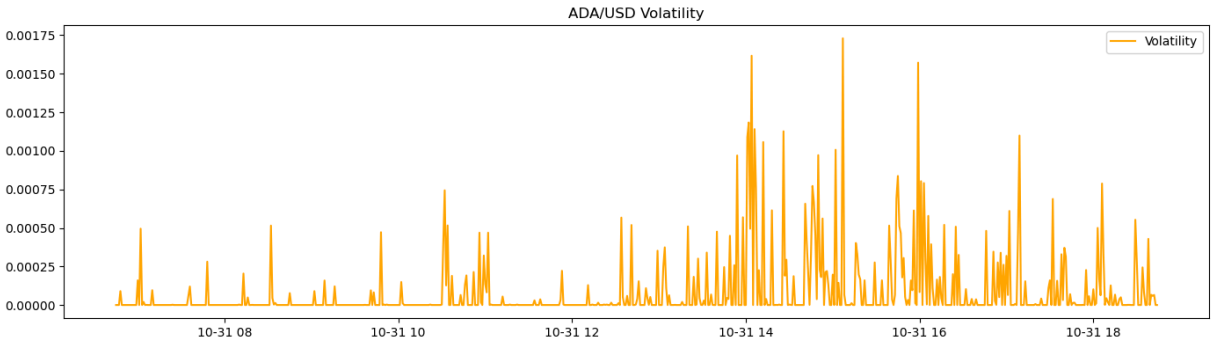
In [183…

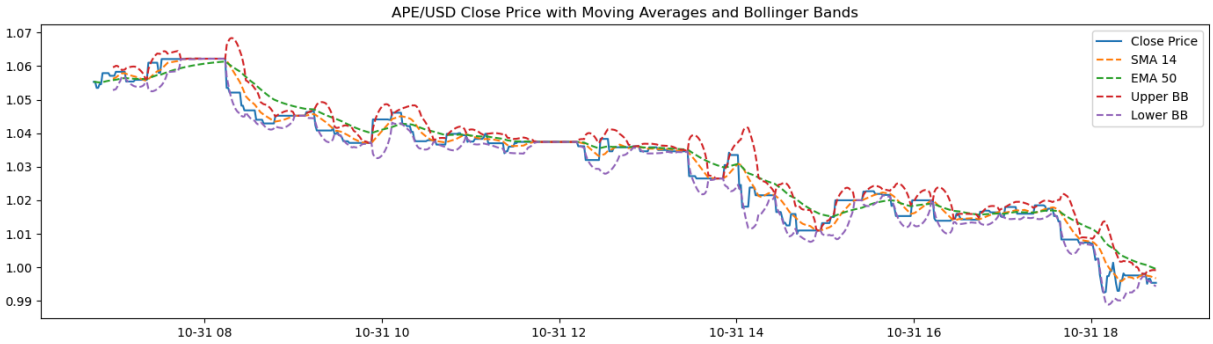
```python
# Load the crypto data and handle the possibility of None
all_crypto_data = main()  # Load data from the main script
if not isinstance(all_crypto_data, dict):
    all_crypto_data = {}  # Ensure all_crypto_data is a dictionary if main() fails
```

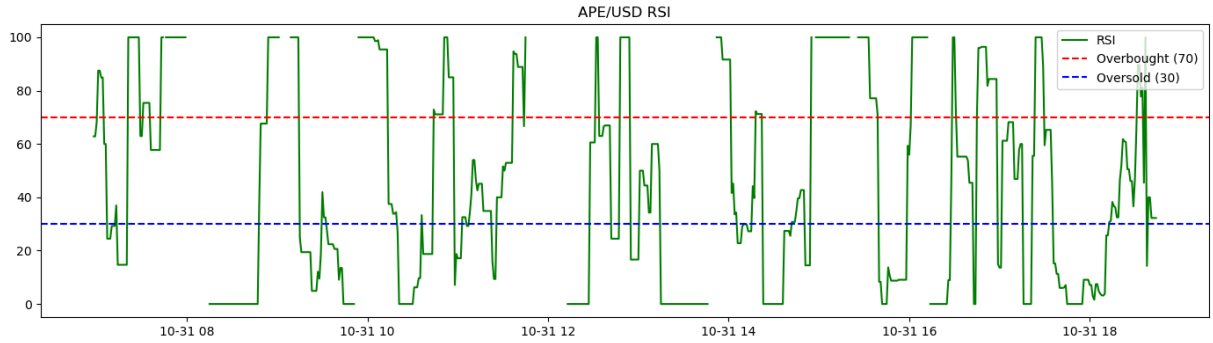

ADA/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.360
0.355
0.350
0.345
0.340
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

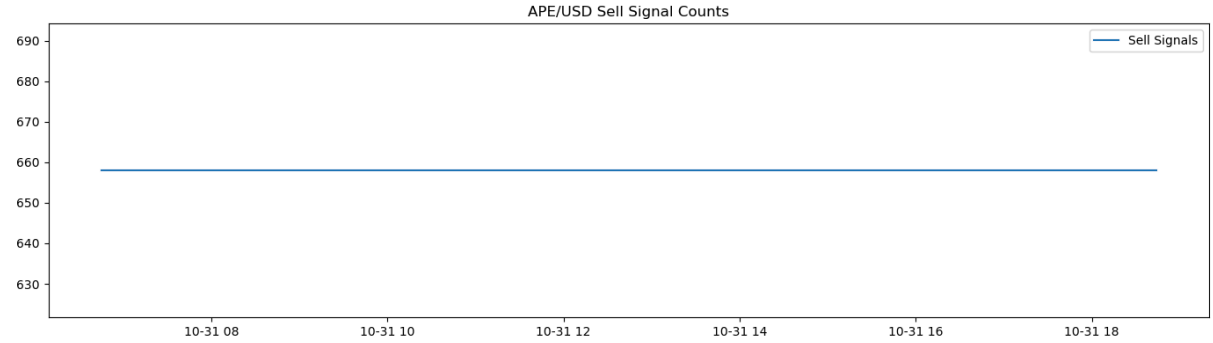

ADA/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

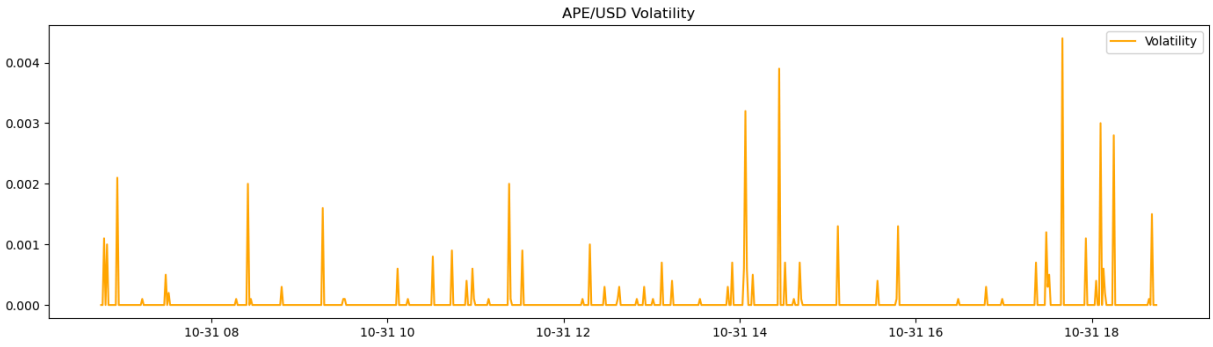

ADA/USD Sell Signal Counts
Sell Signals
560
550
540
530
520
510
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

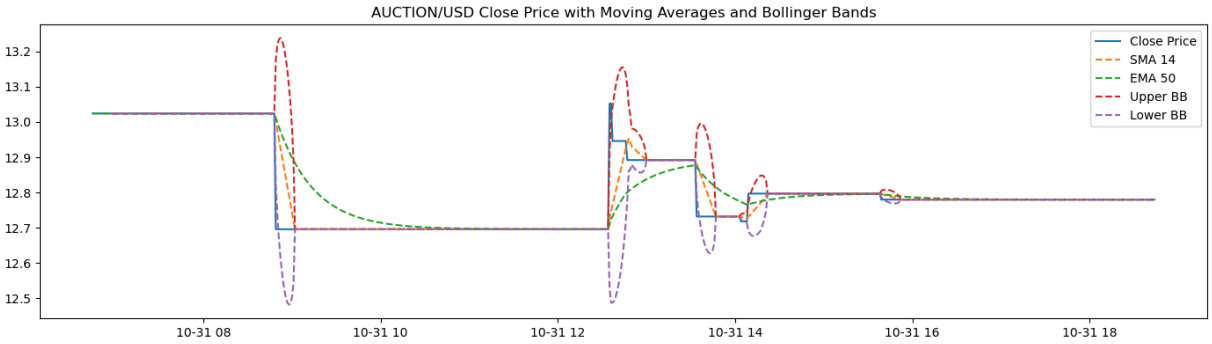

ADA/USD Volatility
Volatility
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

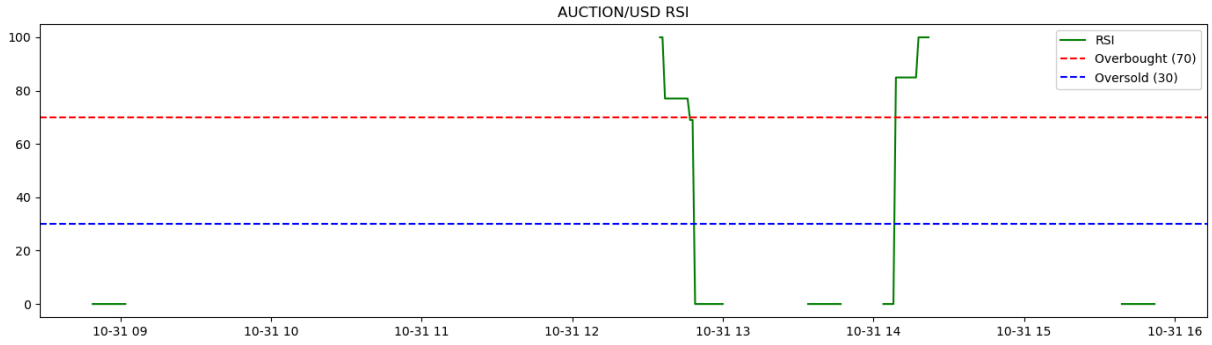

APE/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.07
1.06
1.05
1.04
1.03
1.02
1.01
1.00
0.99
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

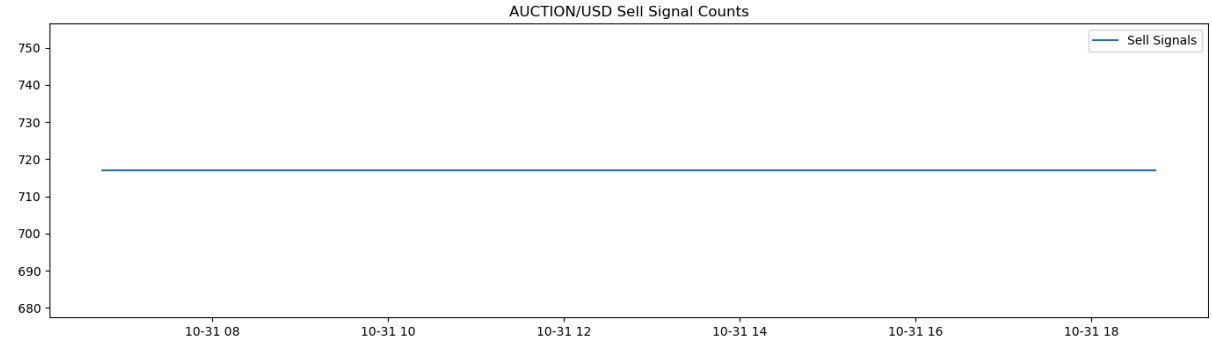

APE/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

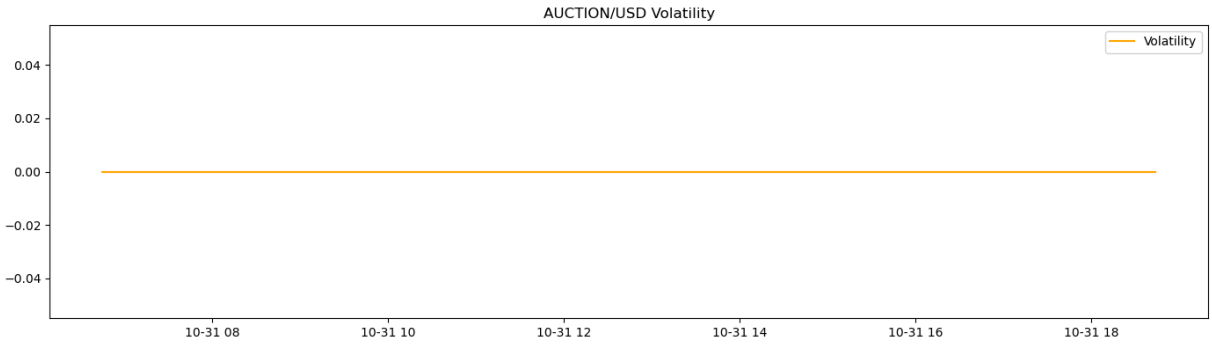

APE/USD Sell Signal Counts
Sell Signals
690
680
670
660
650
640
630
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

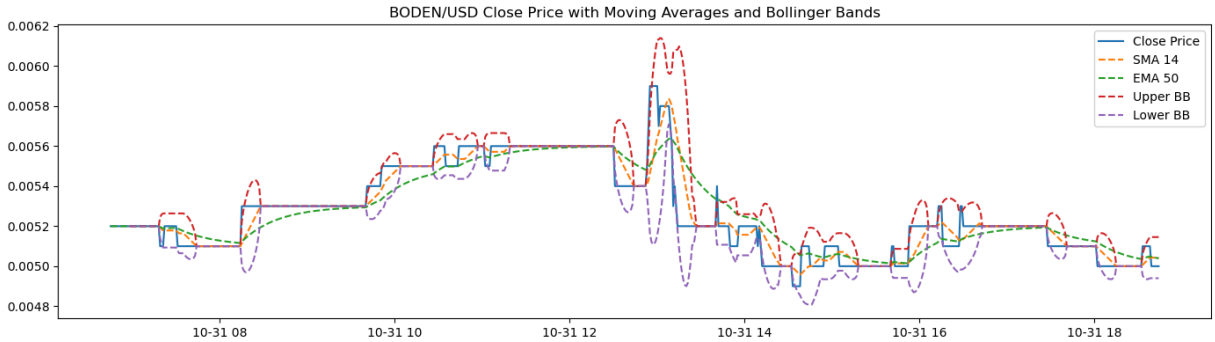

APE/USD Volatility
Volatility
0.004
0.003
0.002
0.001
0.000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

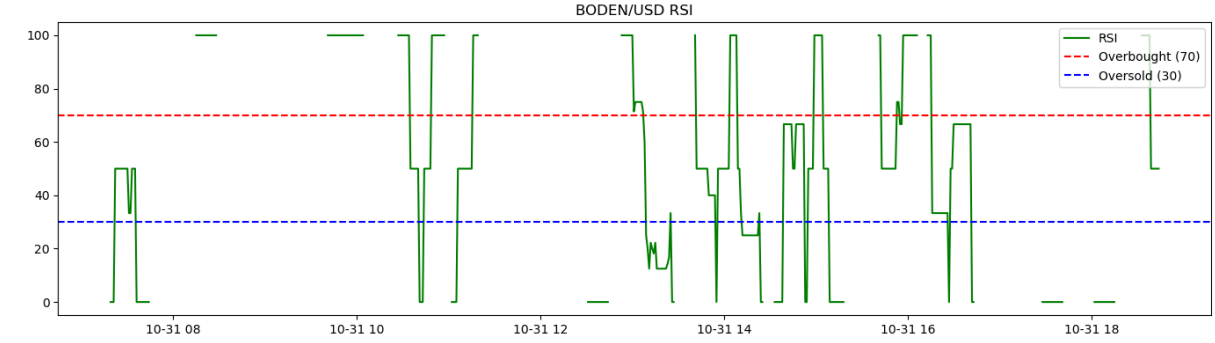

AUCTION/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
13.2
13.1
13.0
12.9
12.8
12.7
12.6
12.5
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

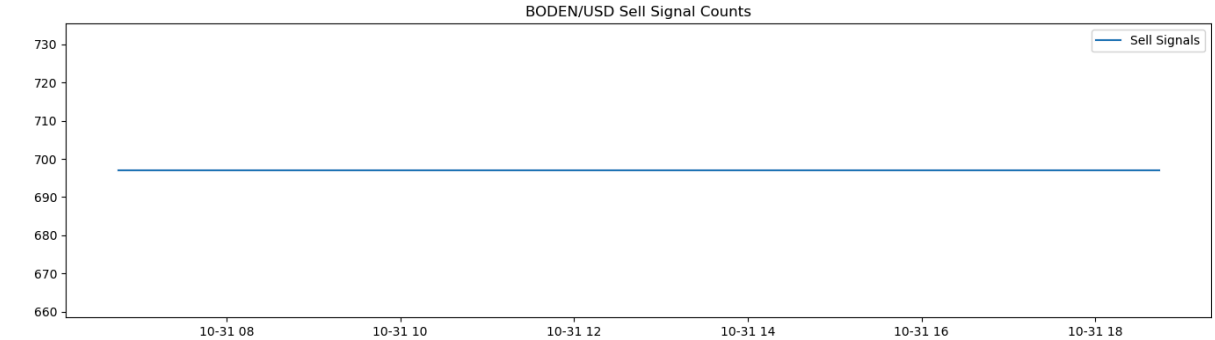

AUCTION/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16

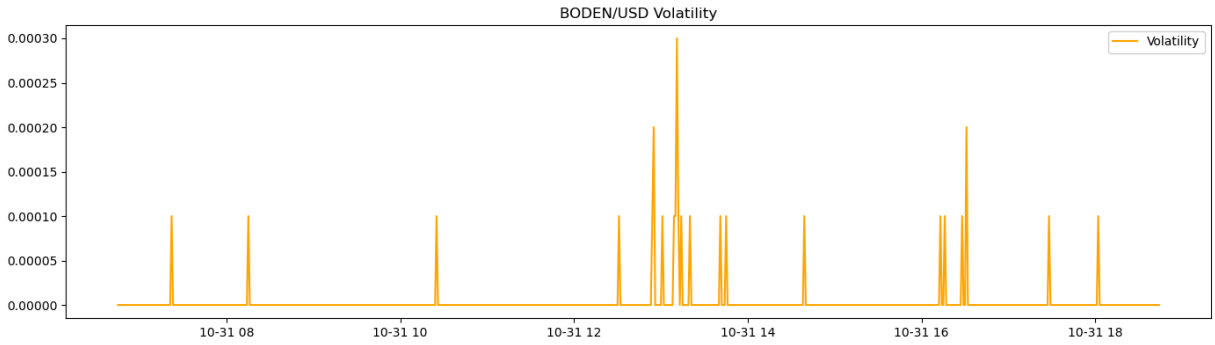

AUCTION/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

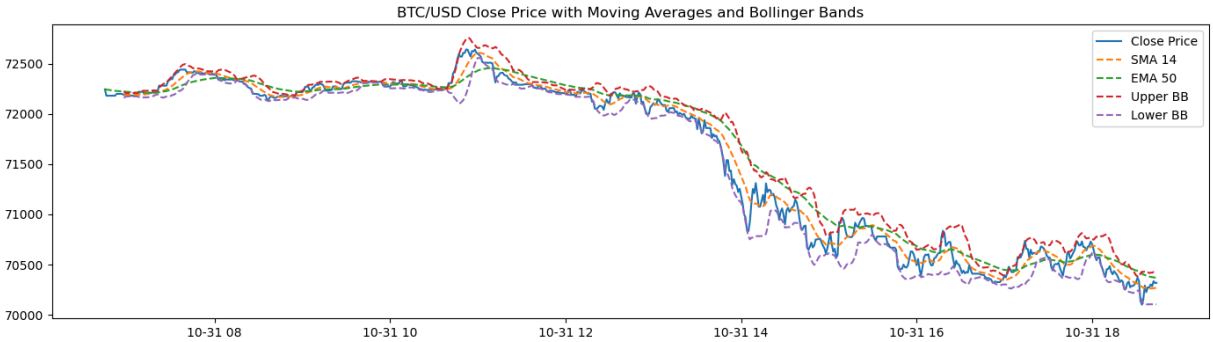

AUCTION/USD Volatility
Volatility
0.04
0.02
0.00
−0.02
−0.04
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

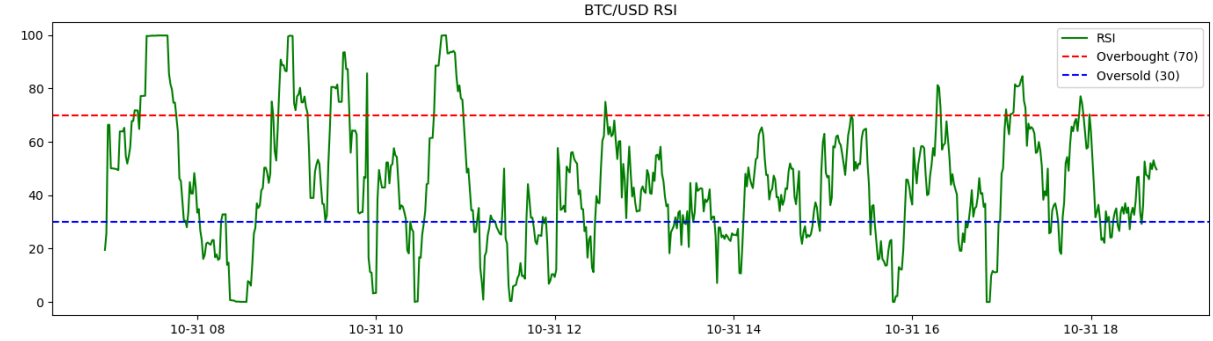

BODEN/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.0062
0.0060
0.0058
0.0056
0.0054
0.0052
0.0050
0.0048
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

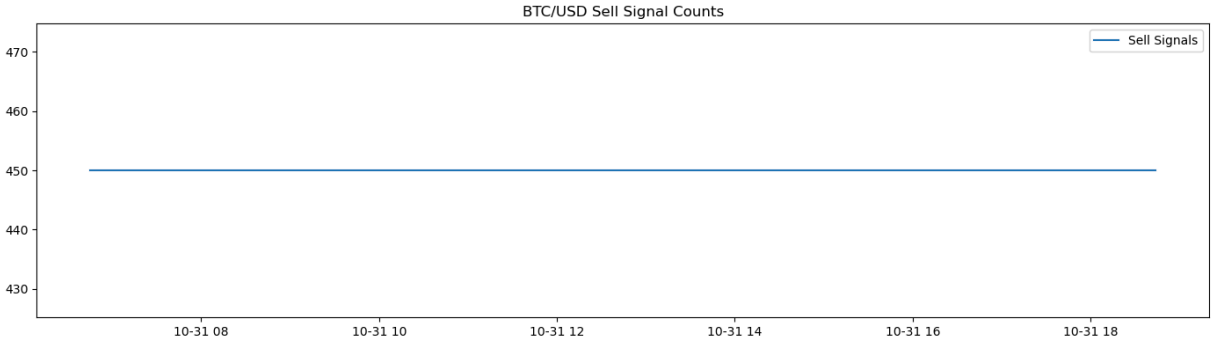

BODEN/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

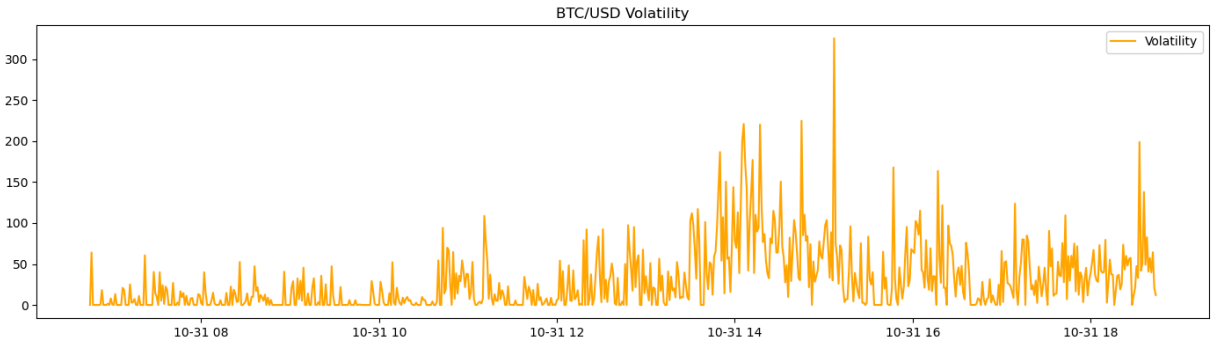

BODEN/USD Sell Signal Counts
Sell Signals
730
720
710
700
690
680
670
660
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

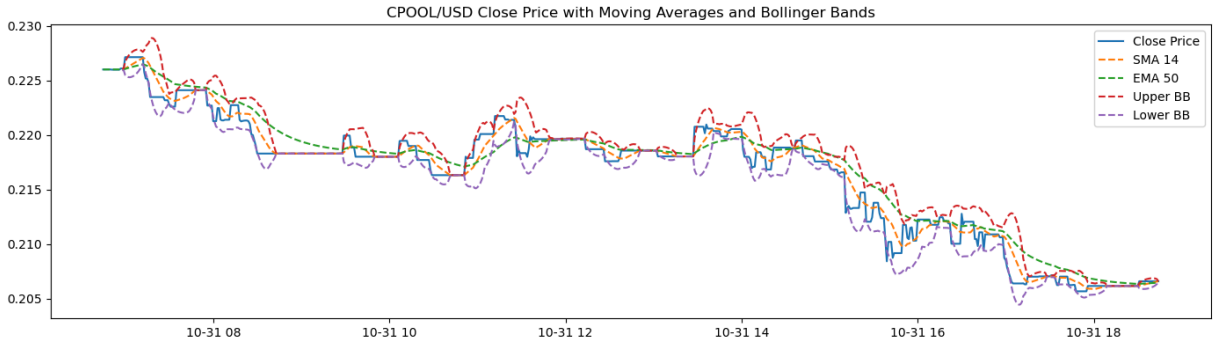

BODEN/USD Volatility
Volatility
0.00030
0.00025
0.00020
0.00015
0.00010
0.00005
0.00000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

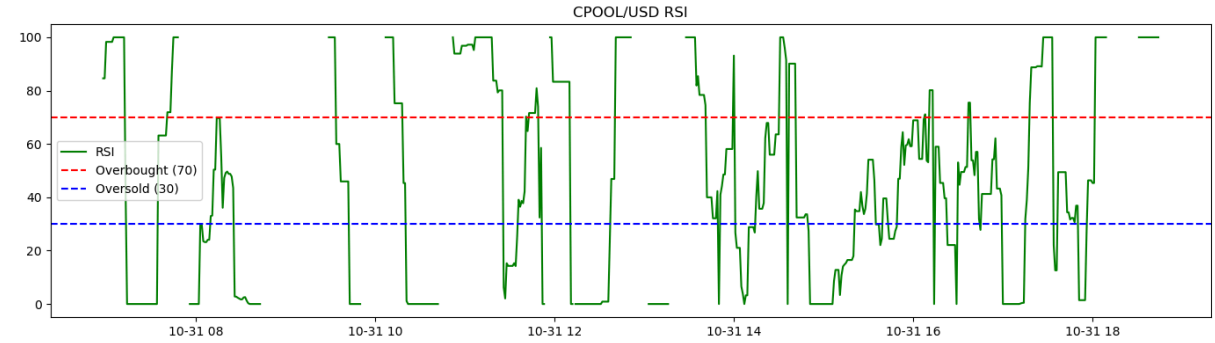

BTC/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
72500
72000
71500
71000
70500
70000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

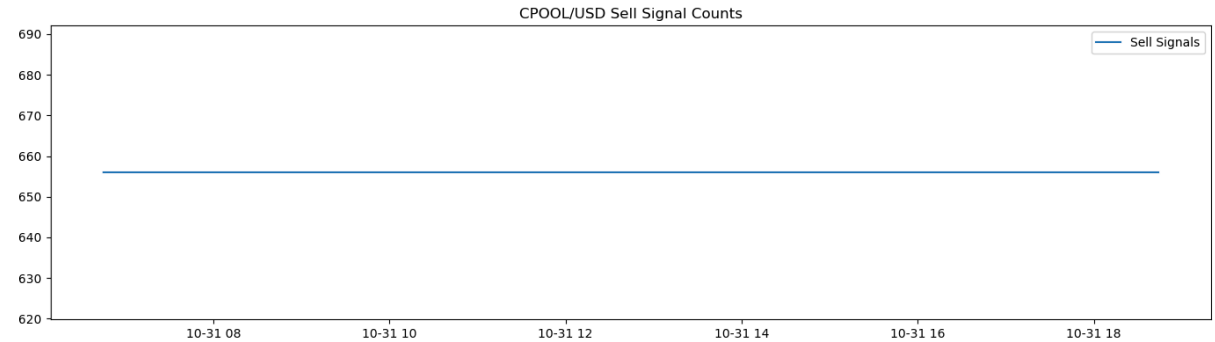

BTC/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

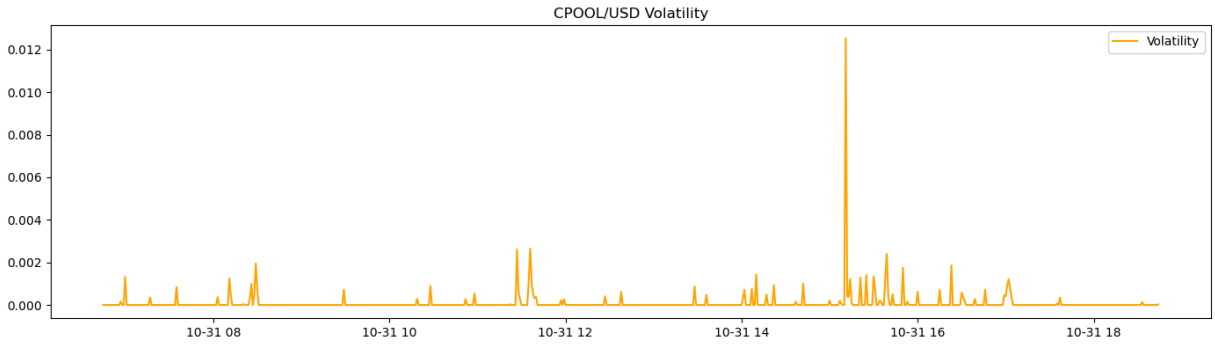

BTC/USD Sell Signal Counts
Sell Signals
470
460
450
440
430
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

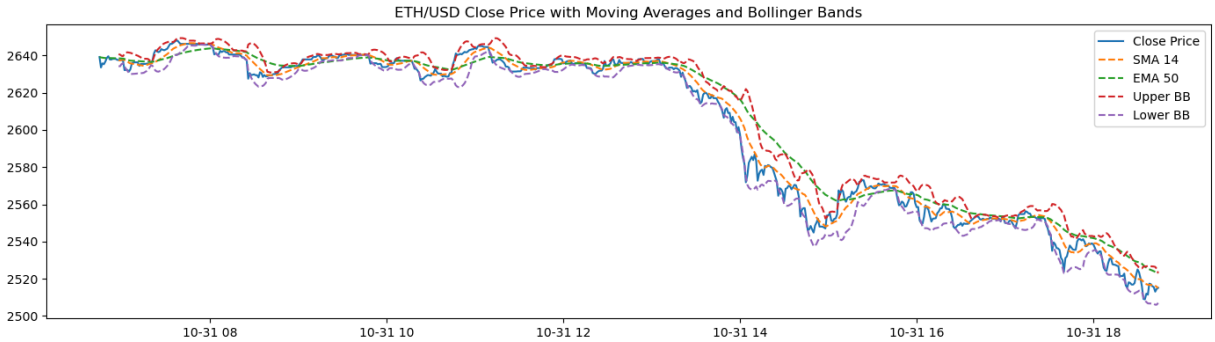

BTC/USD Volatility
Volatility
300
250
200
150
100
50
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

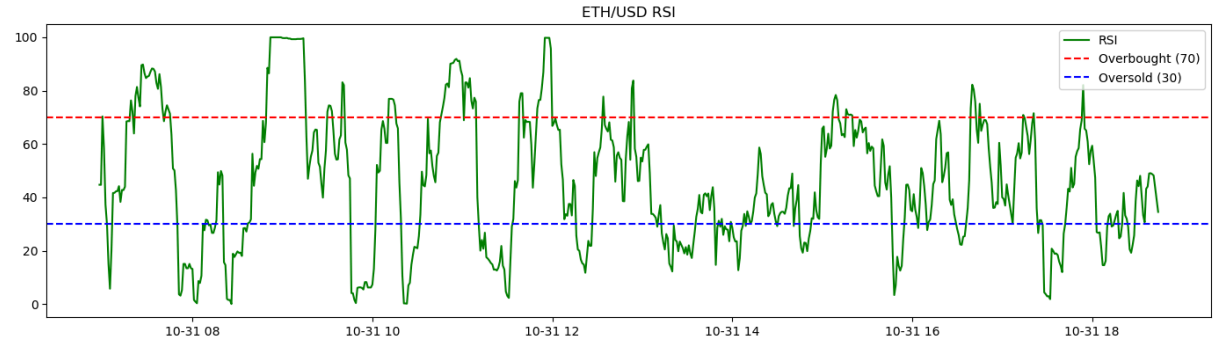

CPOOL/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.230
0.225
0.220
0.215
0.210
0.205
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

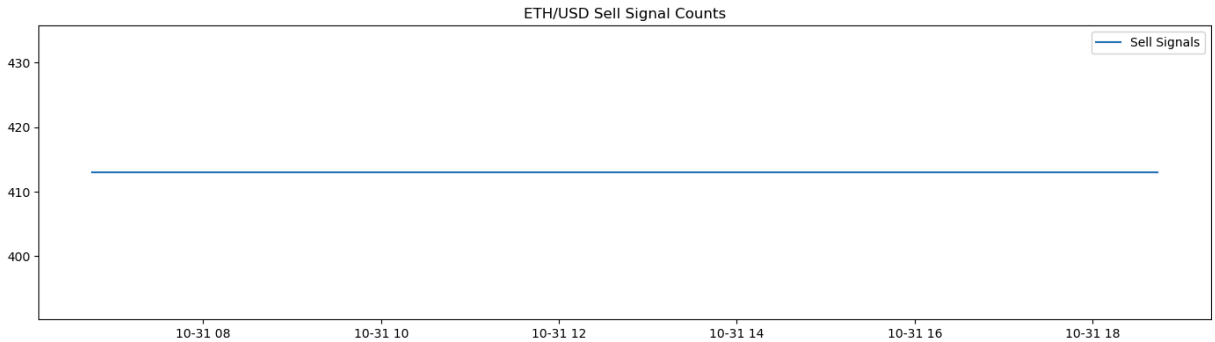

CPOOL/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

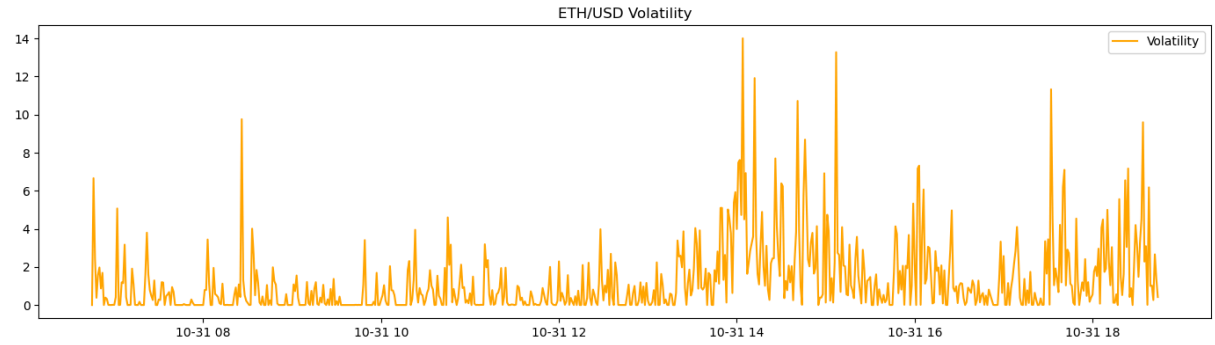

CPOOL/USD Sell Signal Counts
Sell Signals
690
680
670
660
650
640
630
620
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

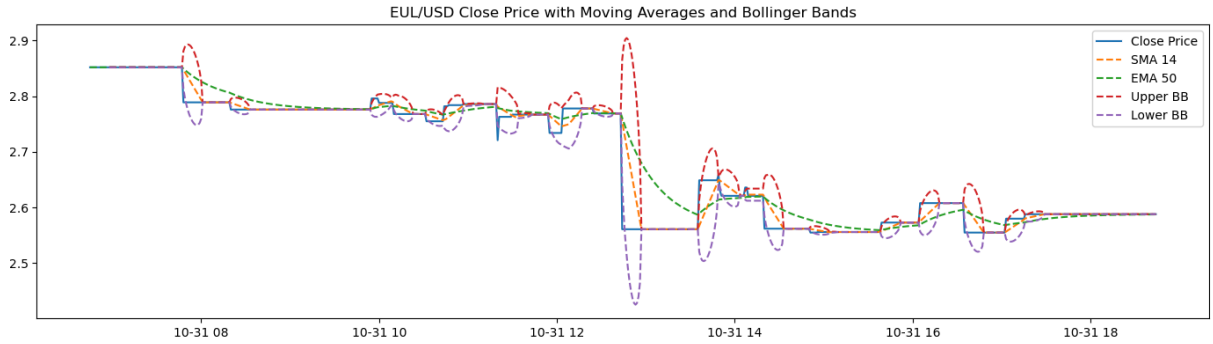

CPOOL/USD Volatility
Volatility
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

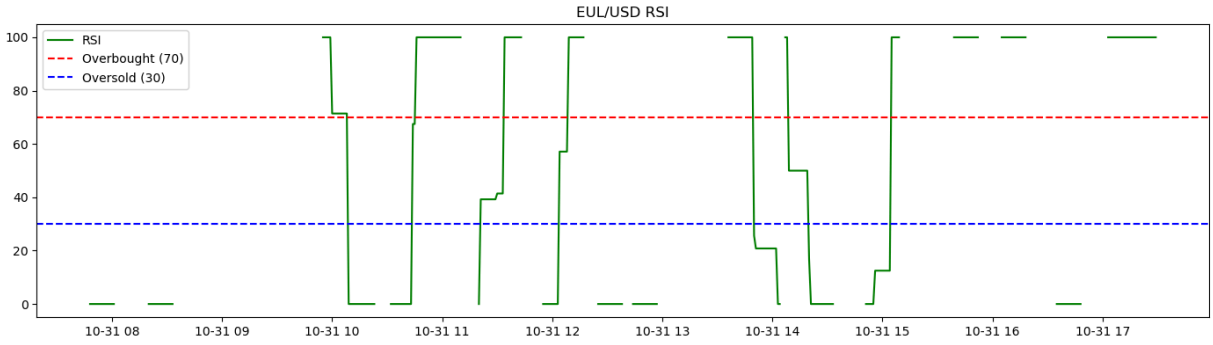

ETH/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
2640
2620
2600
2580
2560
2540
2520
2500
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

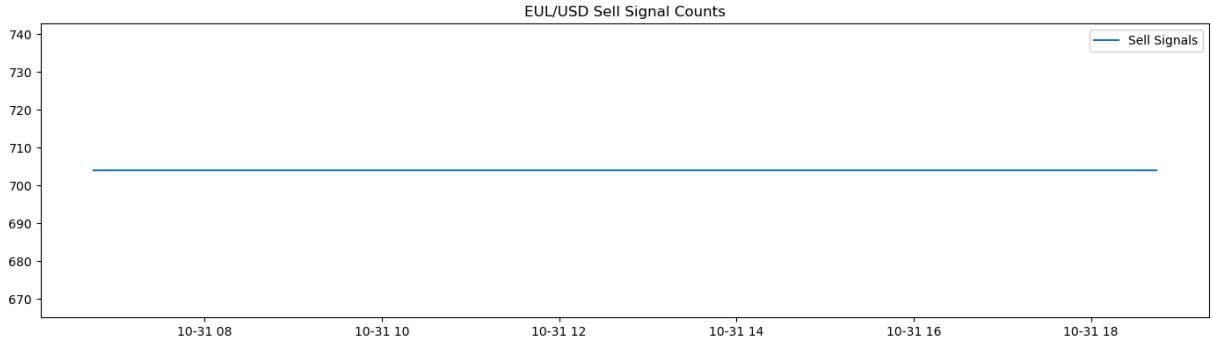

ETH/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

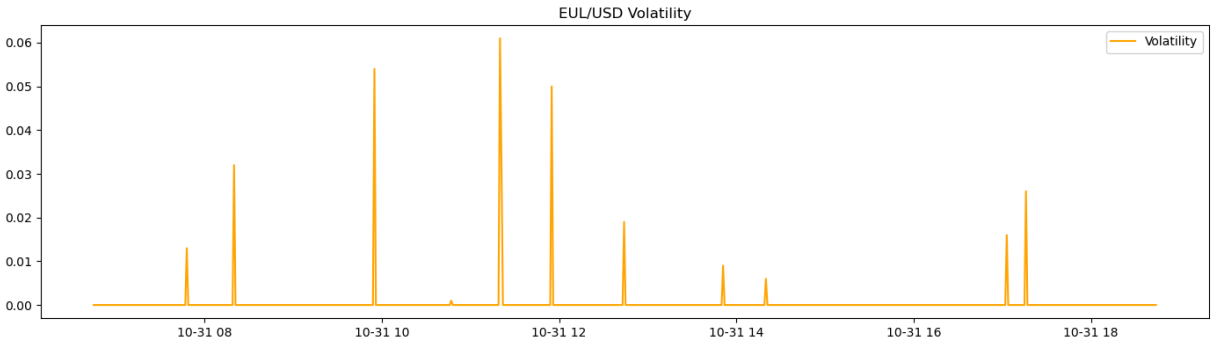

ETH/USD Sell Signal Counts
Sell Signals
430
420
410
400
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

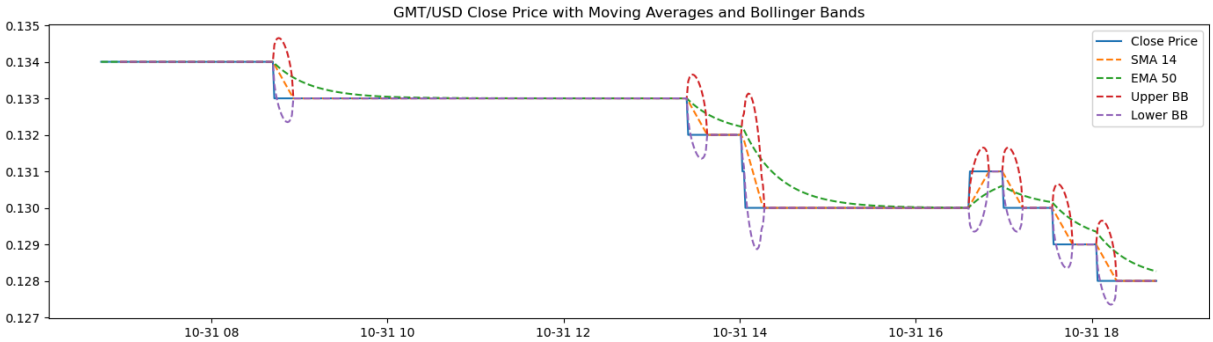

ETH/USD Volatility
Volatility
14
12
10
8
6
4
2
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

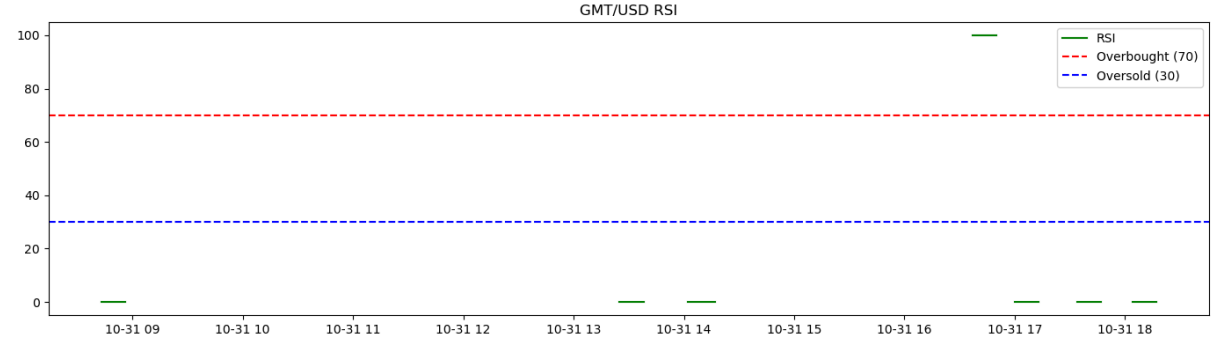

EUL/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
2.9
2.8
2.7
2.6
2.5
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

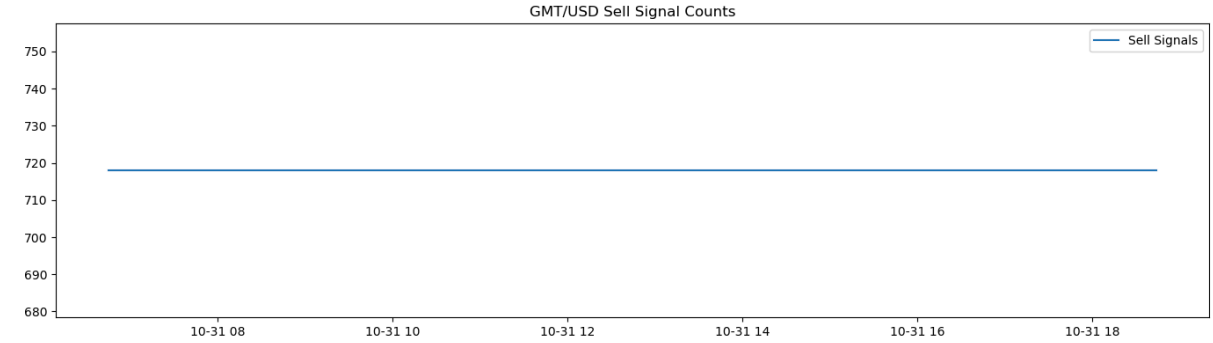

EUL/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16
10-31 17

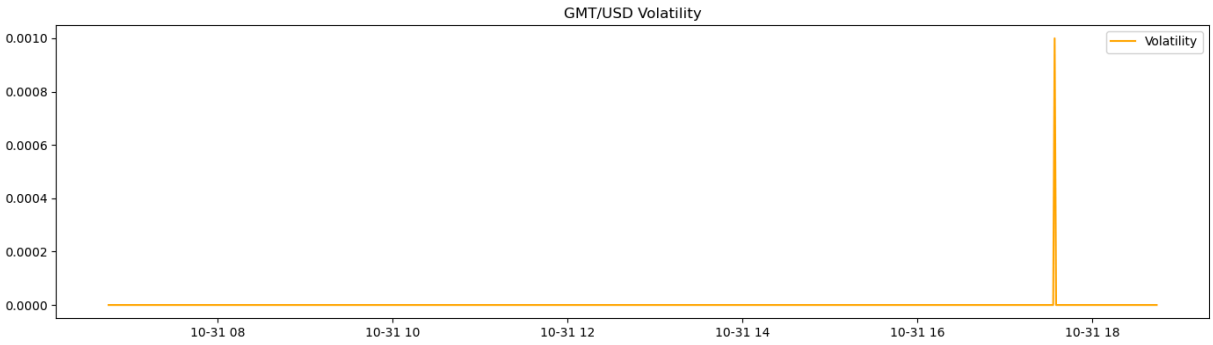

EUL/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
670
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

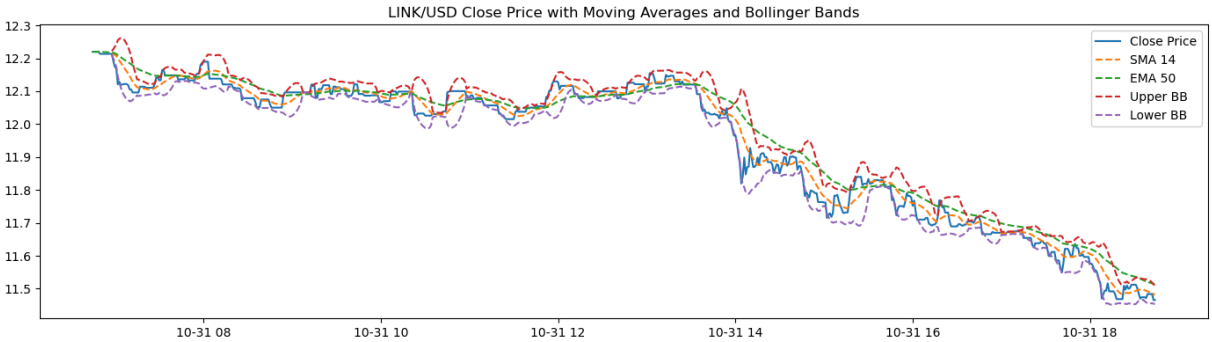

EUL/USD Volatility
Volatility
0.06
0.05
0.04
0.03
0.02
0.01
0.00
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

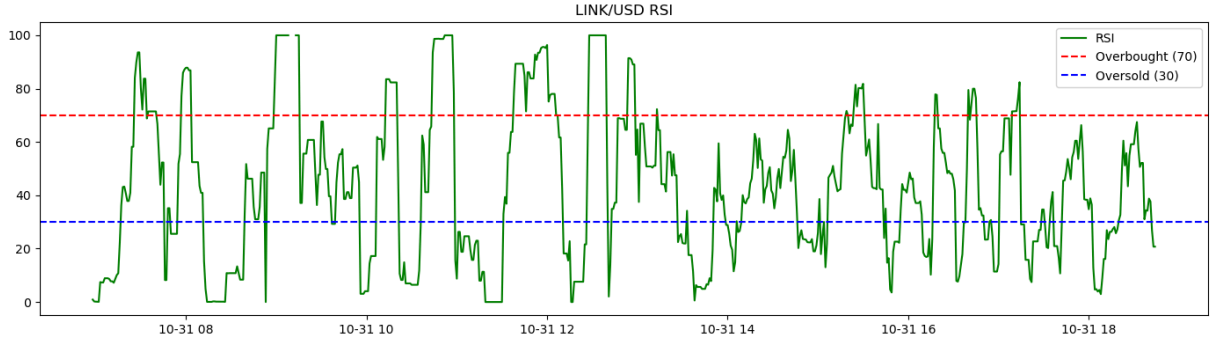

GMT/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.135
0.134
0.133
0.132
0.131
0.130
0.129
0.128
0.127
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

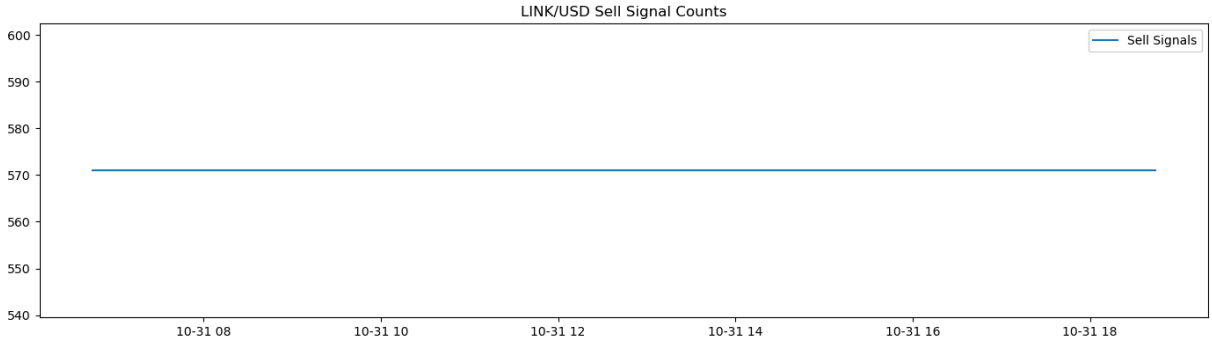

GMT/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16
10-31 17
10-31 18

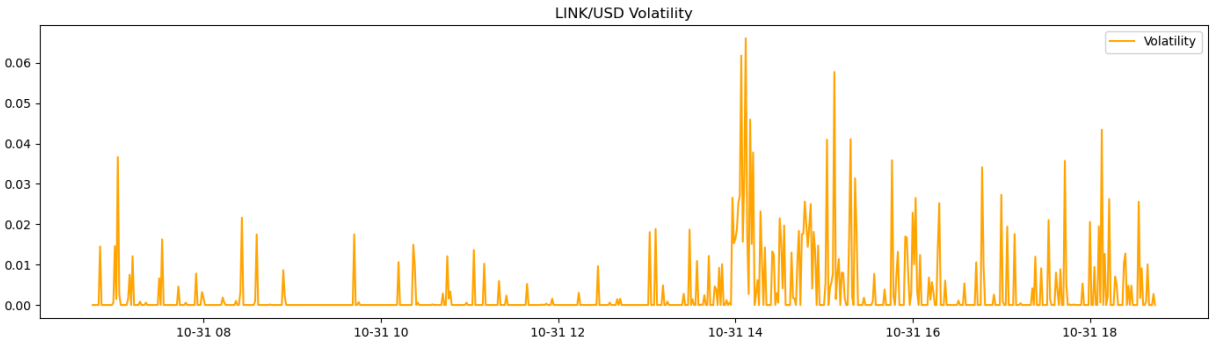

GMT/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

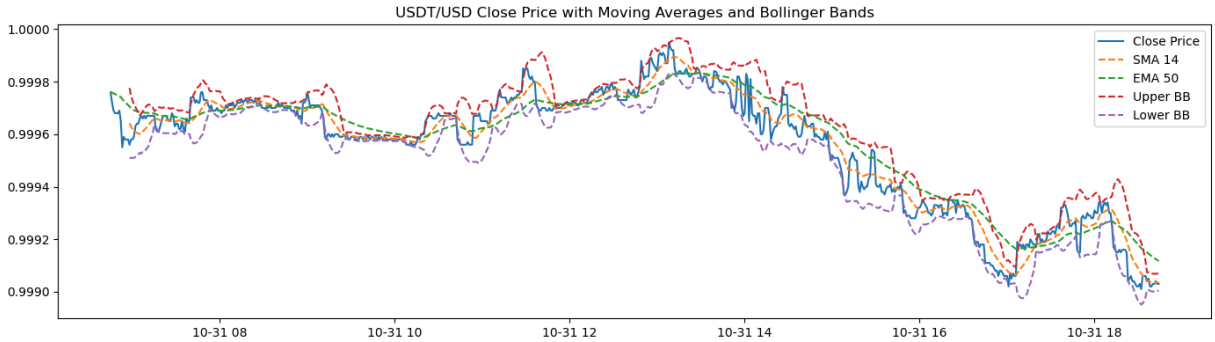

GMT/USD Volatility
Volatility
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

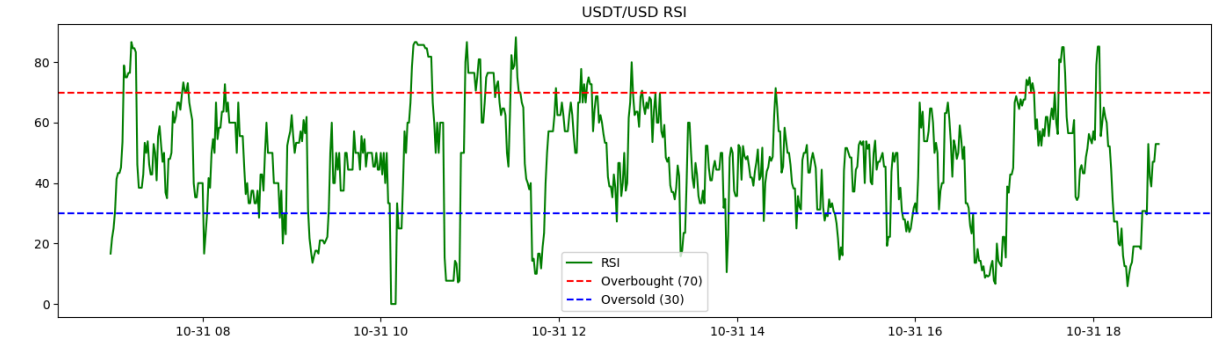

LINK/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
12.3
12.2
12.1
12.0
11.9
11.8
11.7
11.6
11.5
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

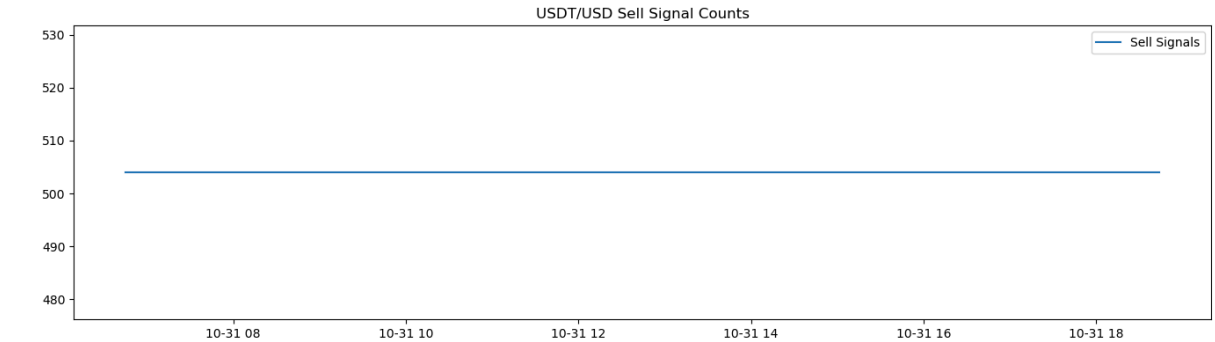

LINK/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

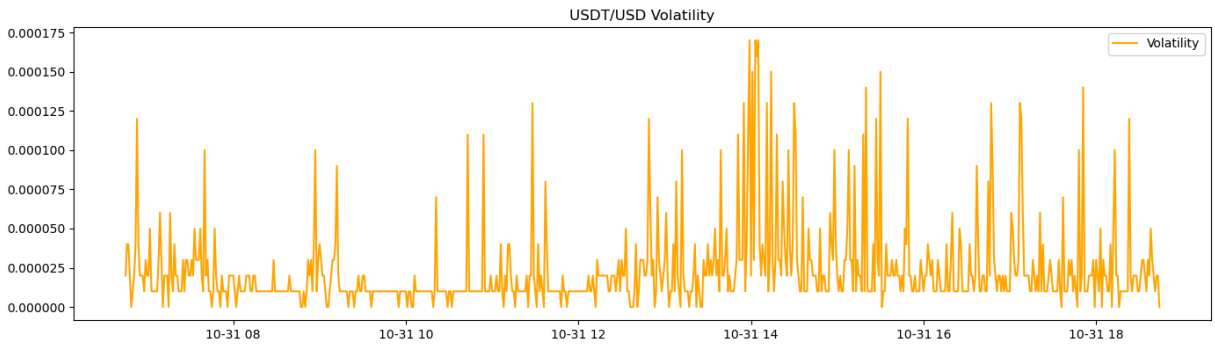

LINK/USD Sell Signal Counts
Sell Signals
600
590
580
570
560
550
540
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

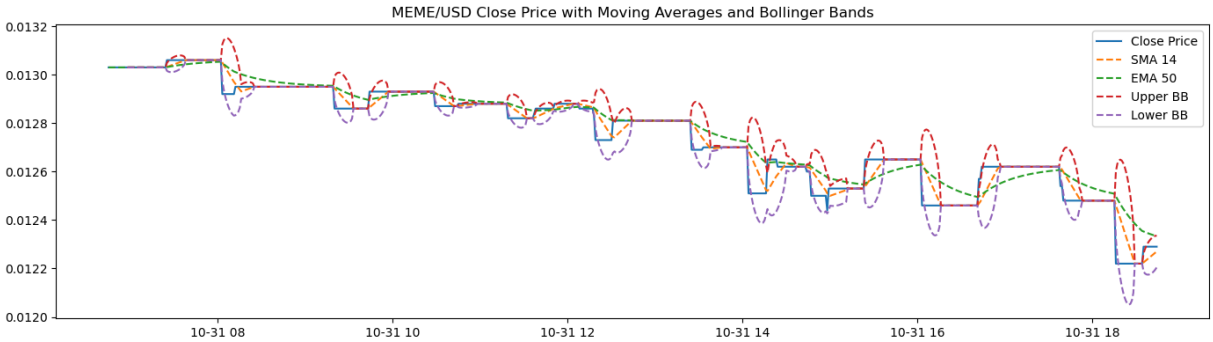

LINK/USD Volatility
Volatility
0.06
0.05
0.04
0.03
0.02
0.01
0.00
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

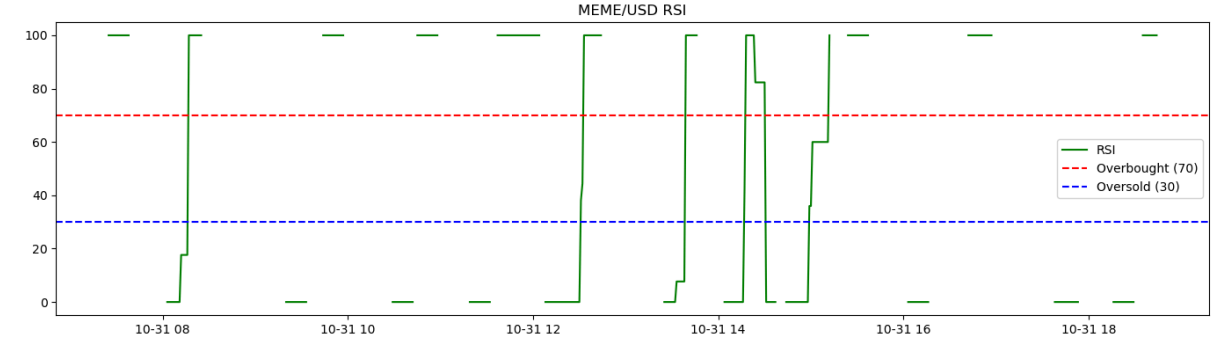

USDT/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.0000
0.9998
0.9996
0.9994
0.9992
0.9990
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

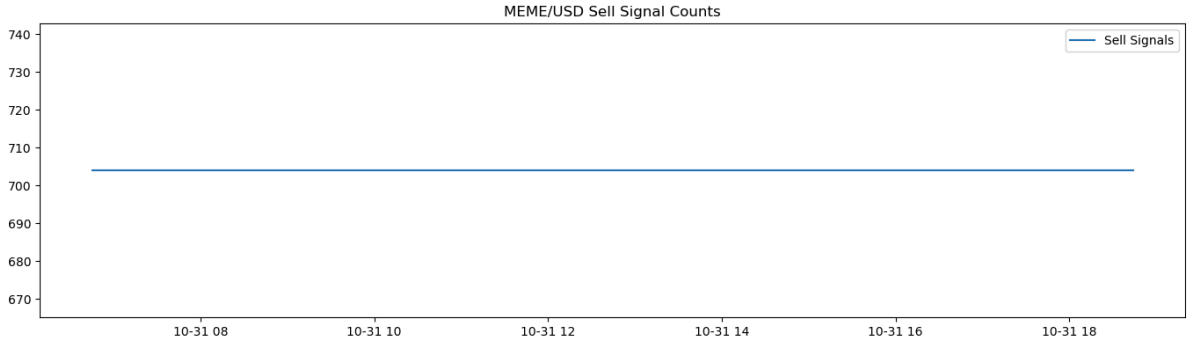

USDT/USD RSI
RSI
Overbought (70)
Oversold (30)
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

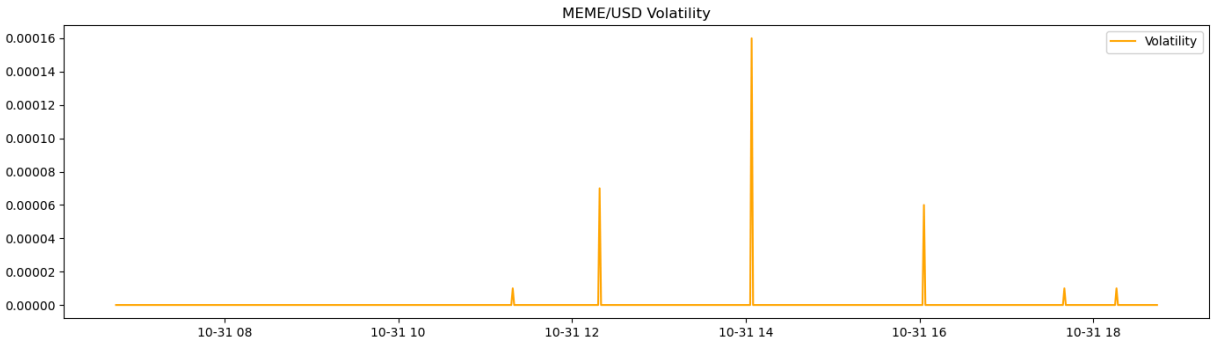

USDT/USD Sell Signal Counts
Sell Signals
530
520
510
500
490
480
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

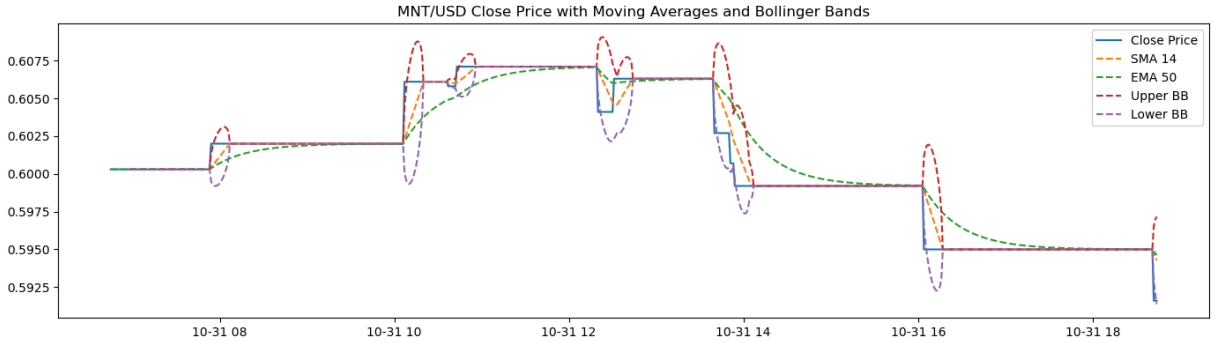

USDT/USD Volatility
Volatility
0.000175
0.000150
0.000125
0.000100
0.000075
0.000050
0.000025
0.000000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

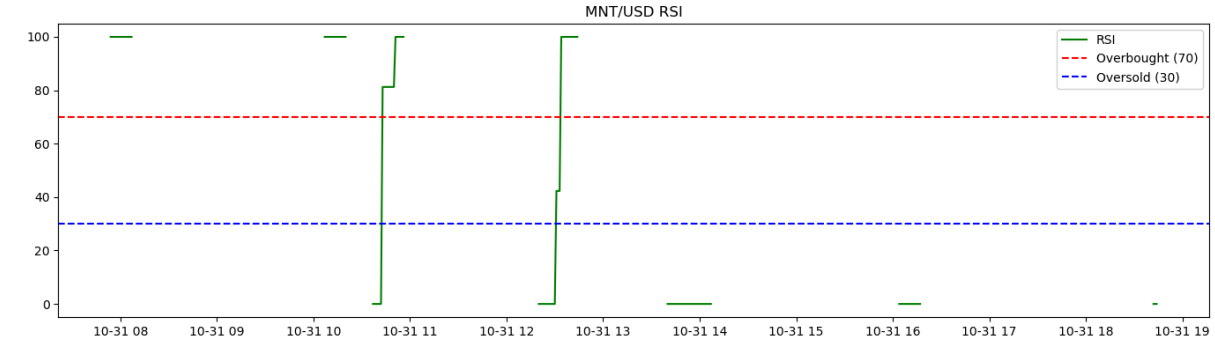

MEME/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.0132
0.0130
0.0128
0.0126
0.0124
0.0122
0.0120
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

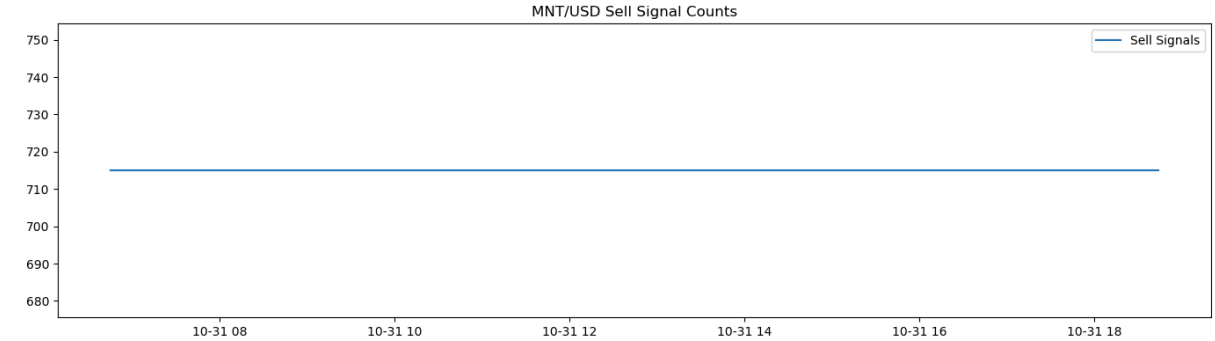

MEME/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

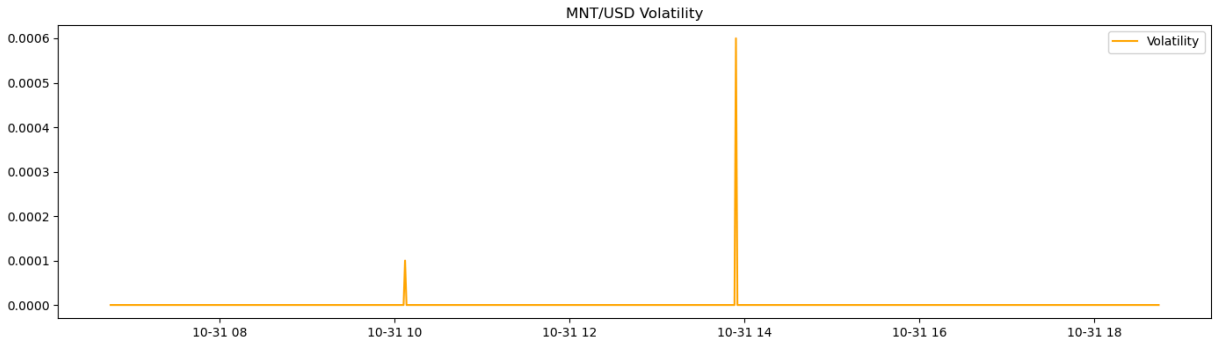

MEME/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
670
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

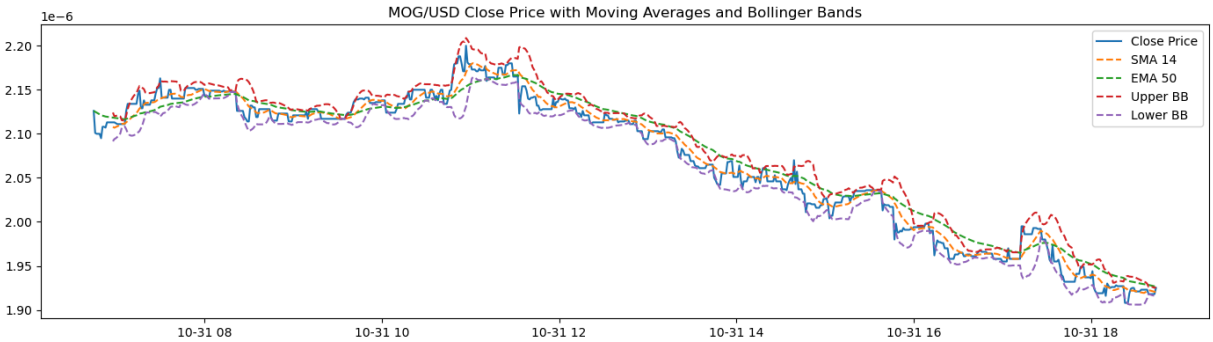

MEME/USD Volatility
Volatility
0.00016
0.00014
0.00012
0.00010
0.00008
0.00006
0.00004
0.00002
0.00000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

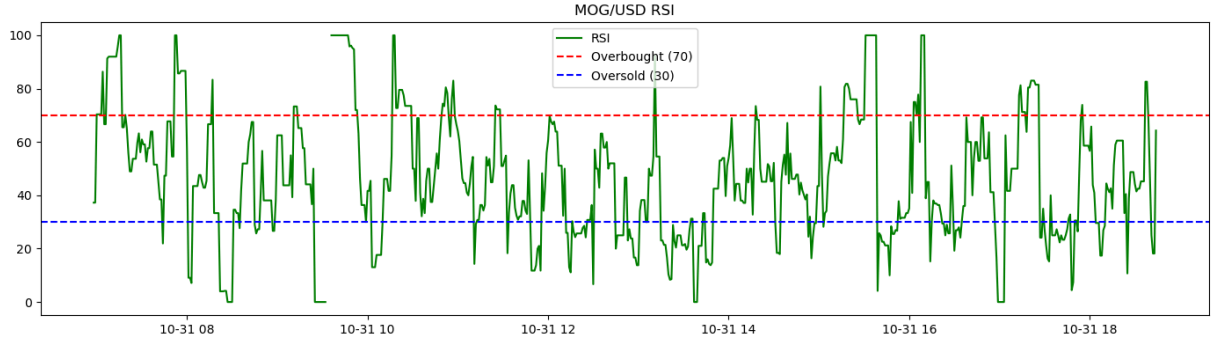

MNT/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.6075
0.6050
0.6025
0.6000
0.5975
0.5950
0.5925
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

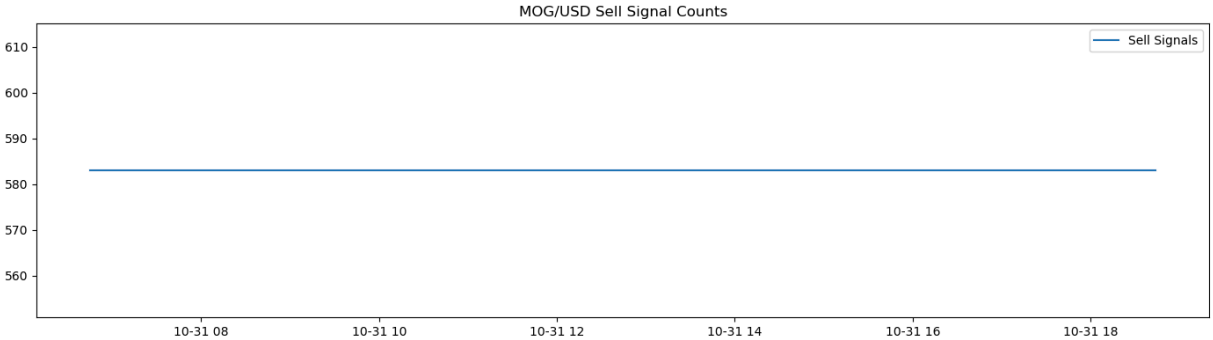

MNT/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16
10-31 17
10-31 18
10-31 19

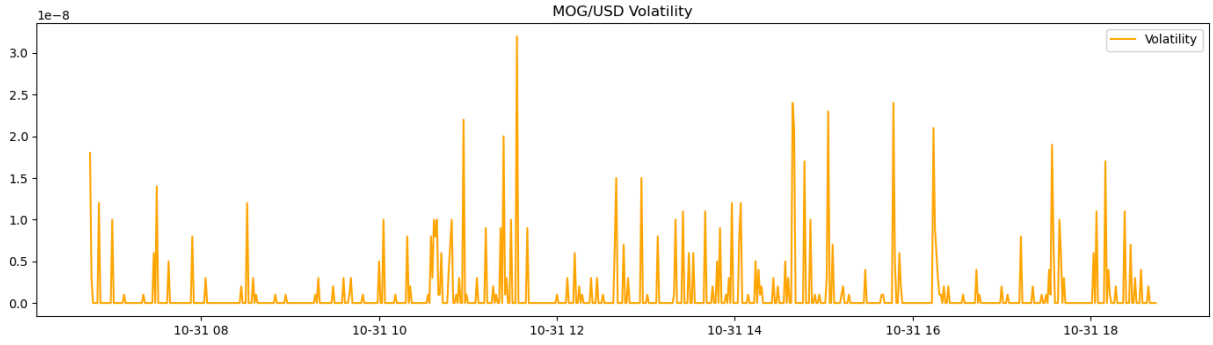

MNT/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

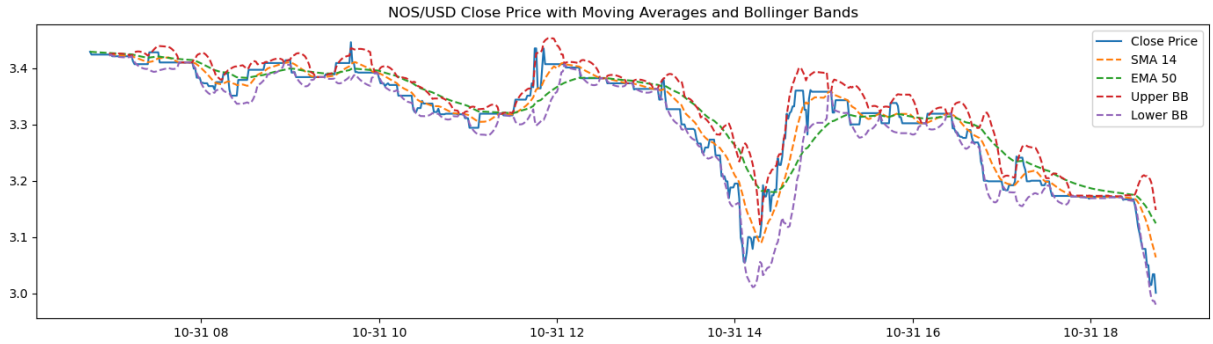

MNT/USD Volatility
Volatility
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.0000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

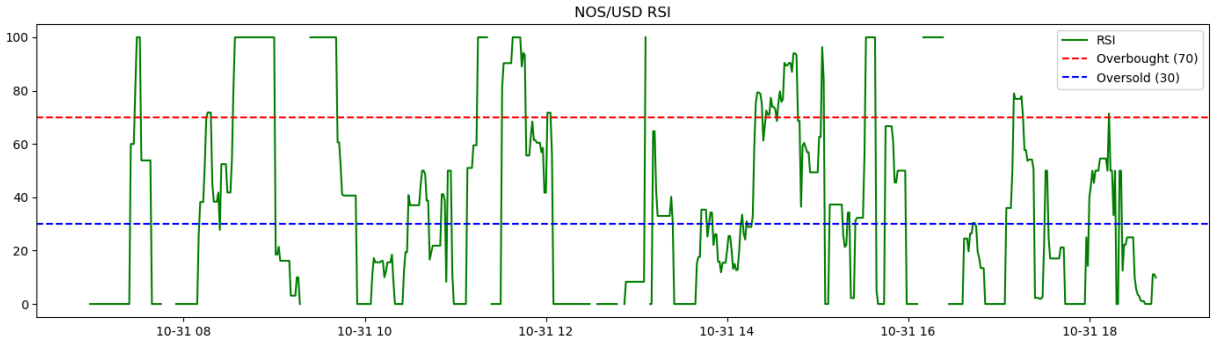

MOG/USD Close Price with Moving Averages and Bollinger Bands
1e−6
2.20
2.15
2.10
2.05
2.00
1.95
1.90
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

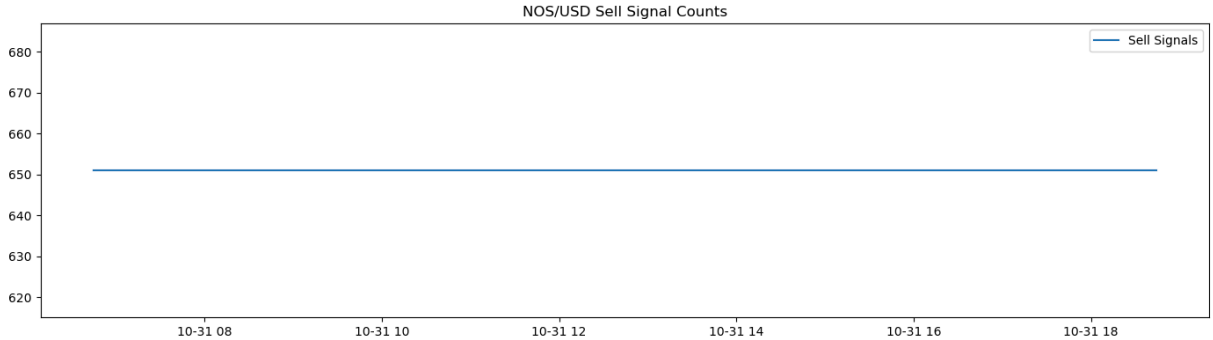

MOG/USD RSI
100
80
60
40
20
0
RSI
Overbought (70)
Oversold (30)
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

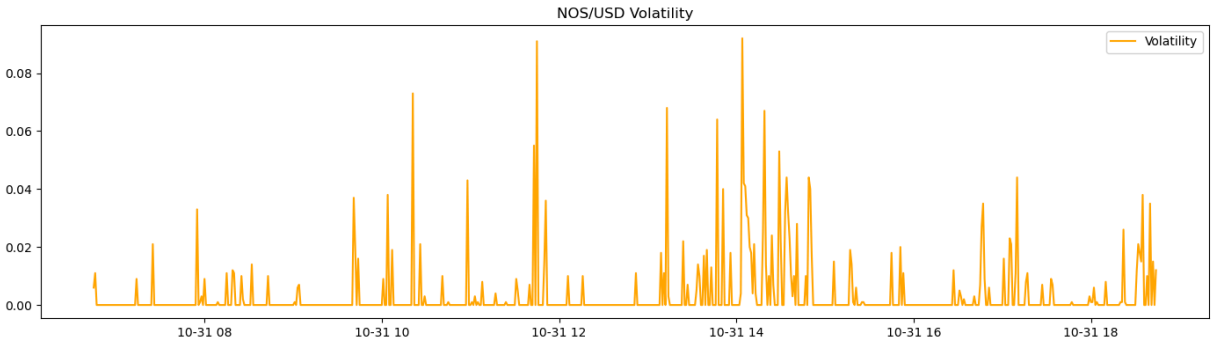

MOG/USD Sell Signal Counts
610
600
590
580
570
560
Sell Signals
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

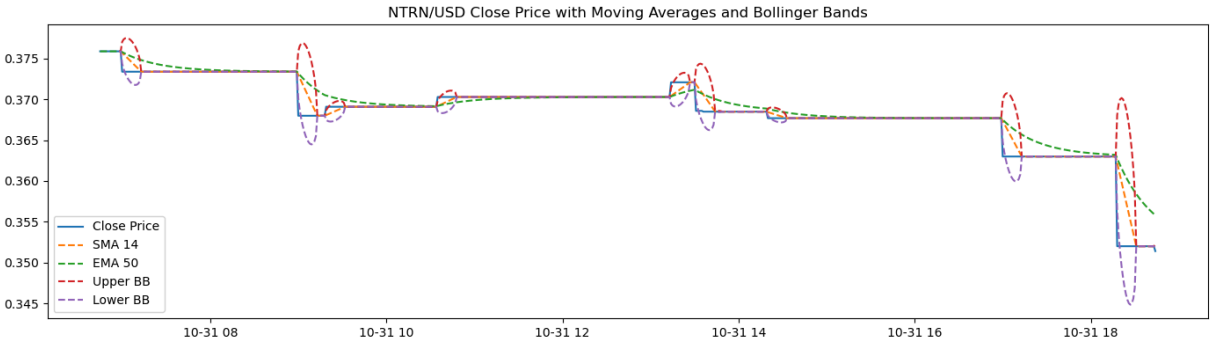

MOG/USD Volatility
1e−8
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Volatility
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

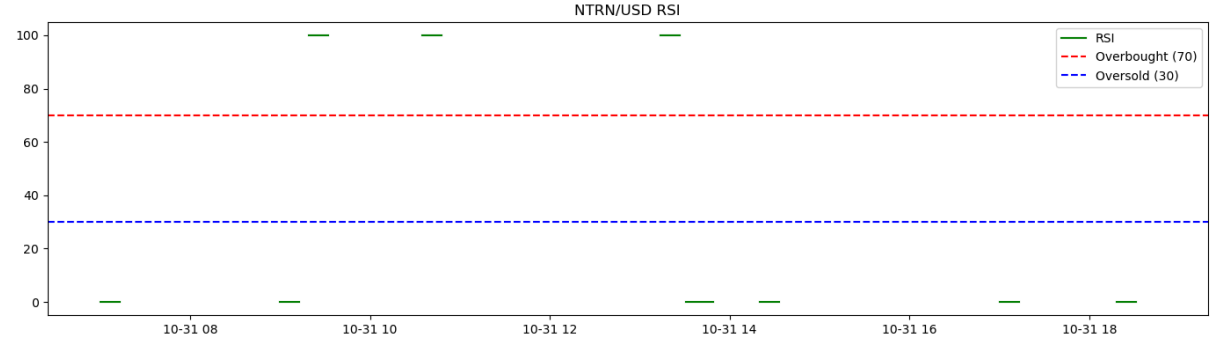

NOS/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
3.4
3.3
3.2
3.1
3.0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

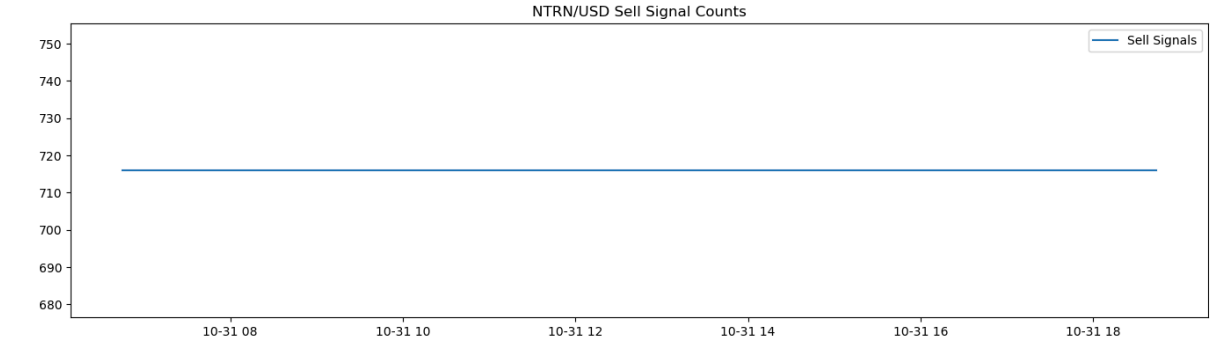

NOS/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

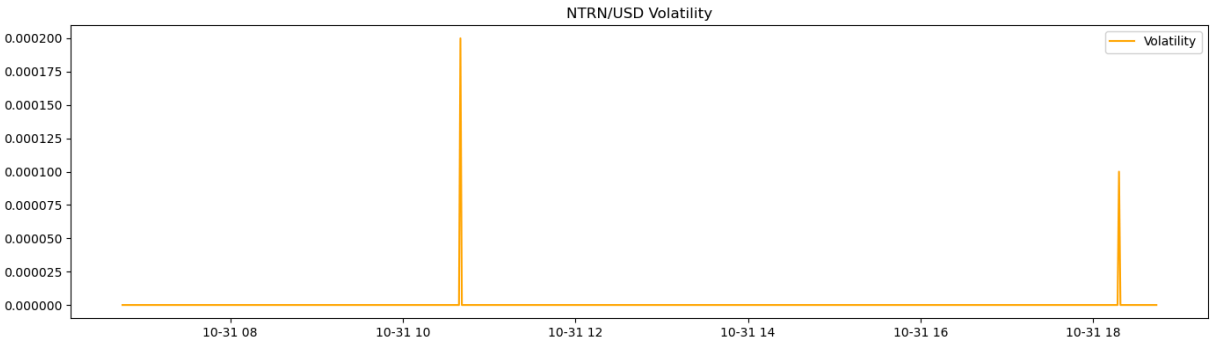

NOS/USD Sell Signal Counts
Sell Signals
680
670
660
650
640
630
620
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

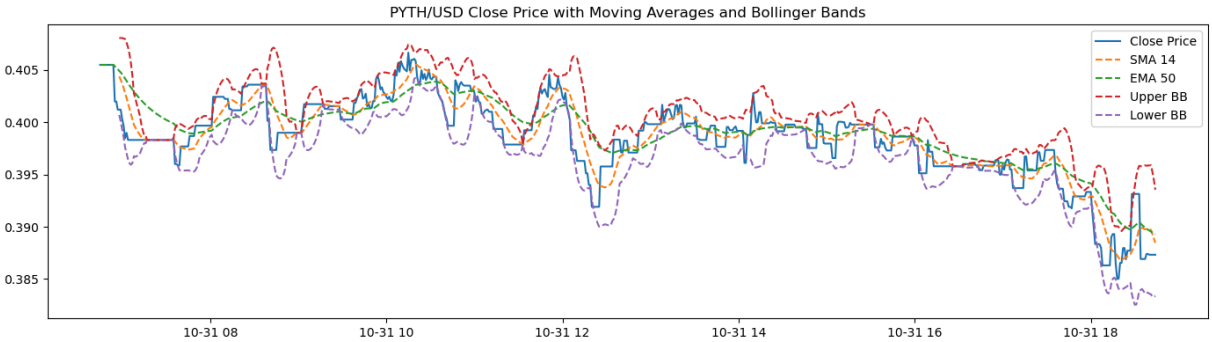

NOS/USD Volatility
Volatility
0.08
0.06
0.04
0.02
0.00
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

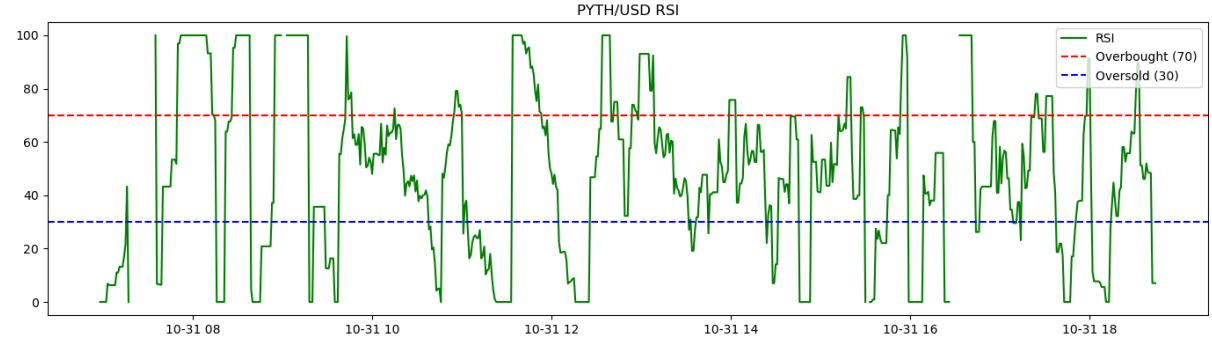

NTRN/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.375
0.370
0.365
0.360
0.355
0.350
0.345
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

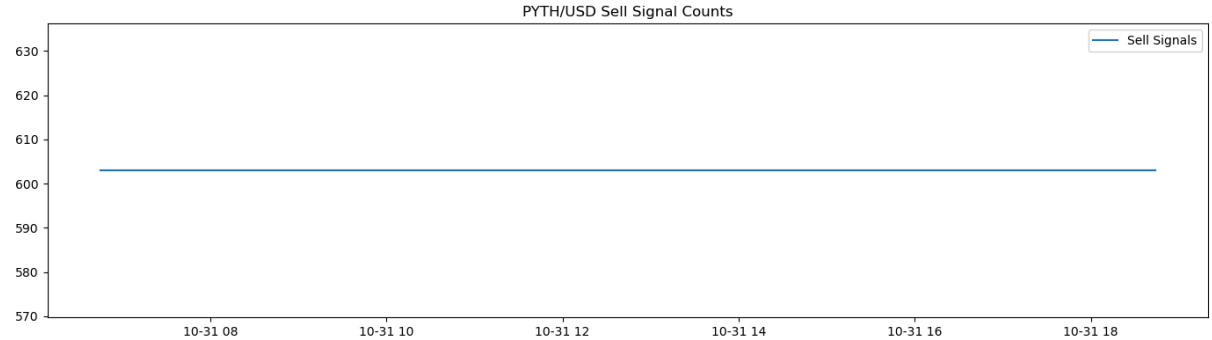

NTRN/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

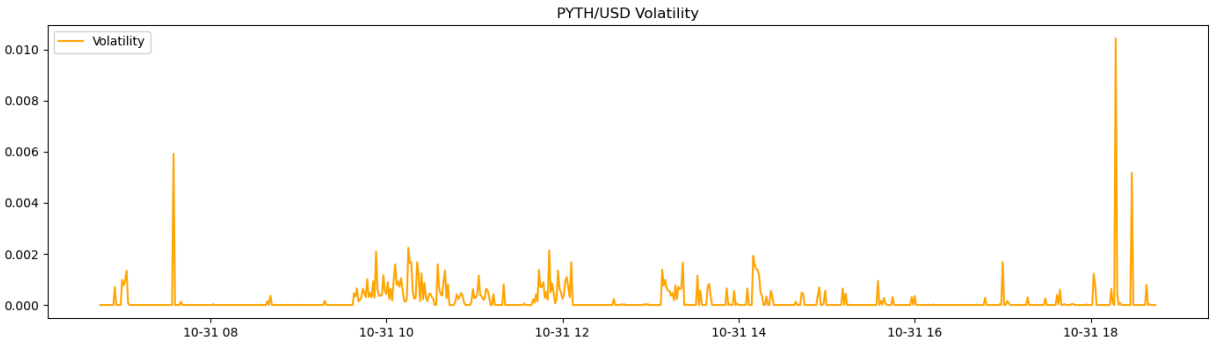

NTRN/USD Sell Signal Counts
Sell Signals
750
740
730
720
710
700
690
680
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

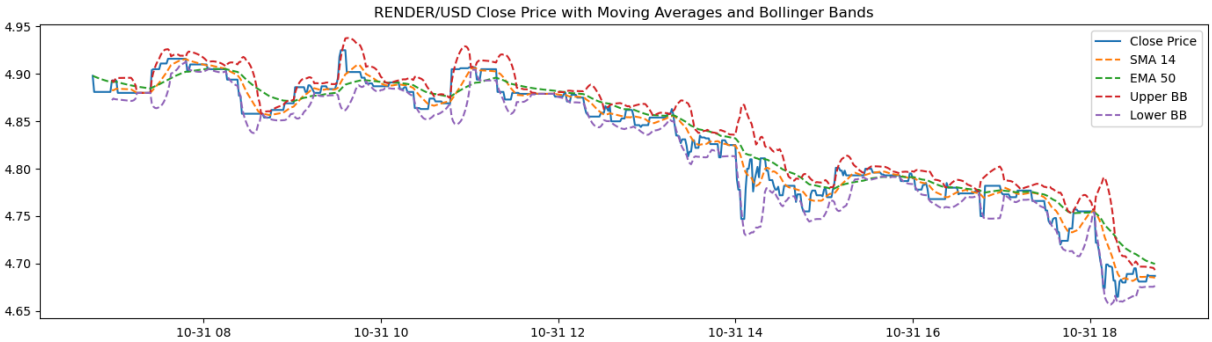

NTRN/USD Volatility
Volatility
0.000200
0.000175
0.000150
0.000125
0.000100
0.000075
0.000050
0.000025
0.000000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

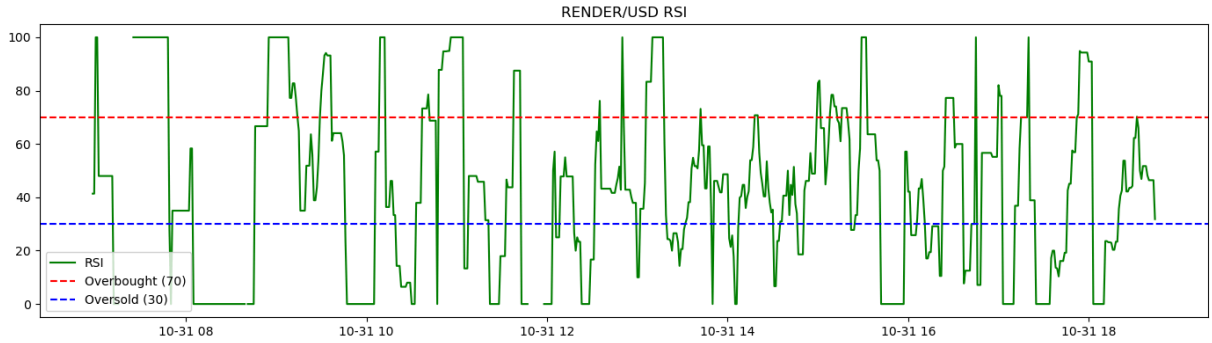

PYTH/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.405
0.400
0.395
0.390
0.385
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

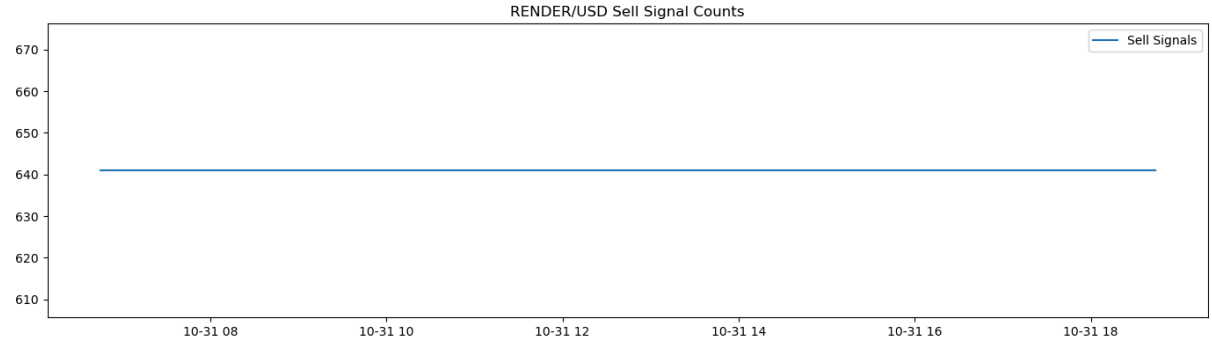

PYTH/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

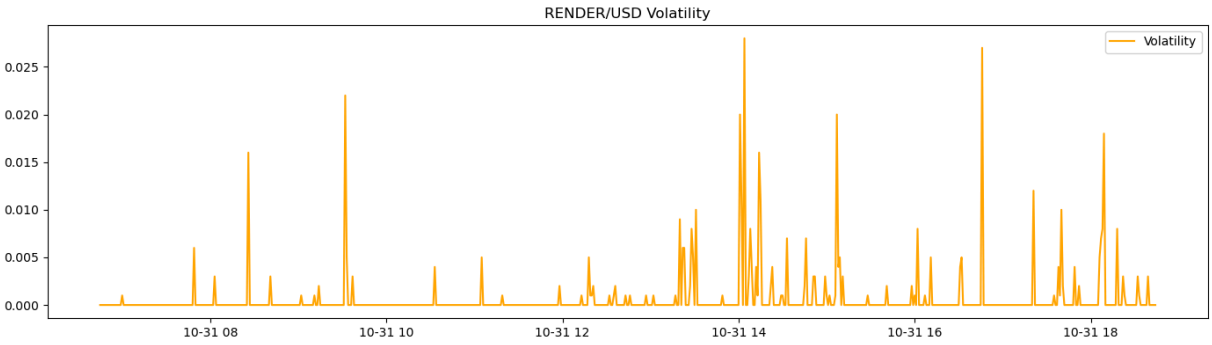

PYTH/USD Sell Signal Counts
Sell Signals
630
620
610
600
590
580
570
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

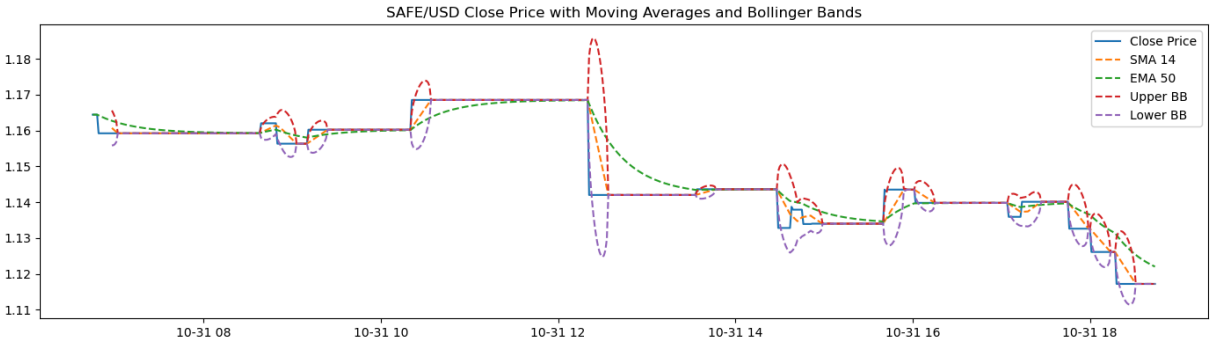

PYTH/USD Volatility
Volatility
0.010
0.008
0.006
0.004
0.002
0.000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

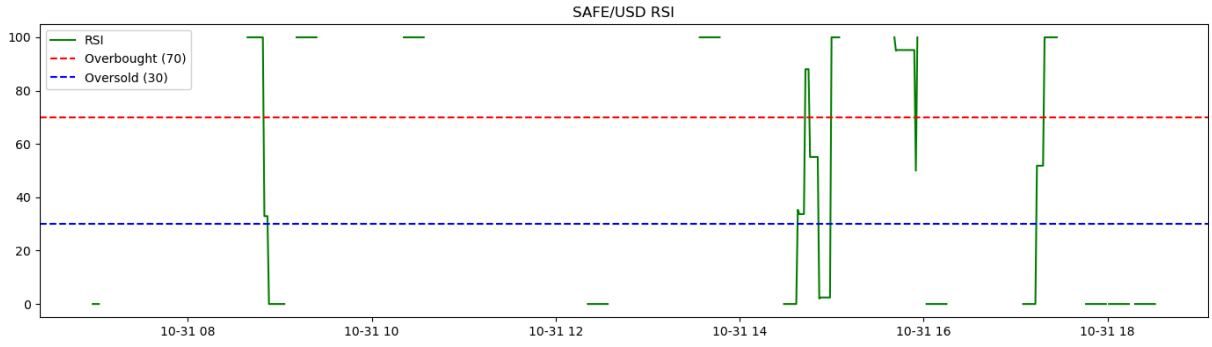

RENDER/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
4.95
4.90
4.85
4.80
4.75
4.70
4.65
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

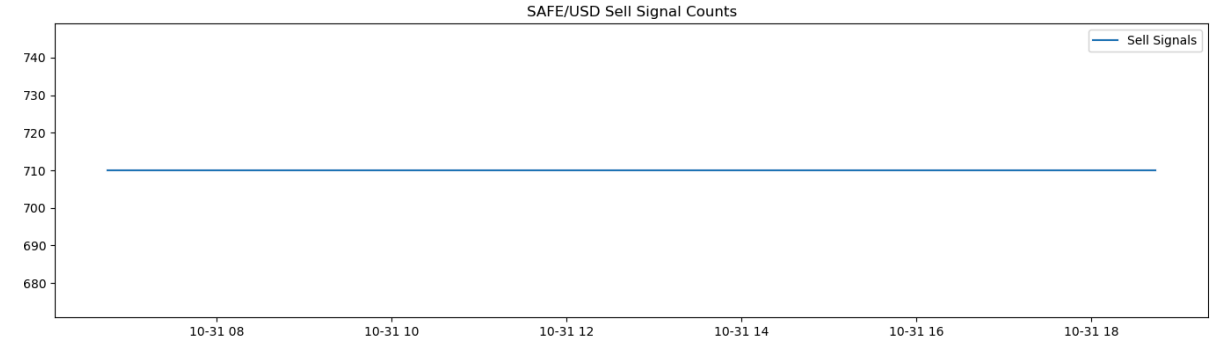

RENDER/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

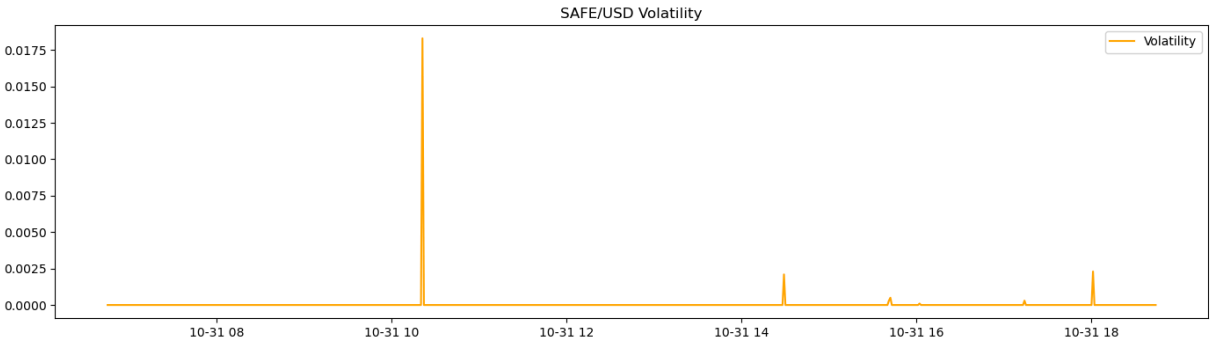

RENDER/USD Sell Signal Counts
Sell Signals
670
660
650
640
630
620
610
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

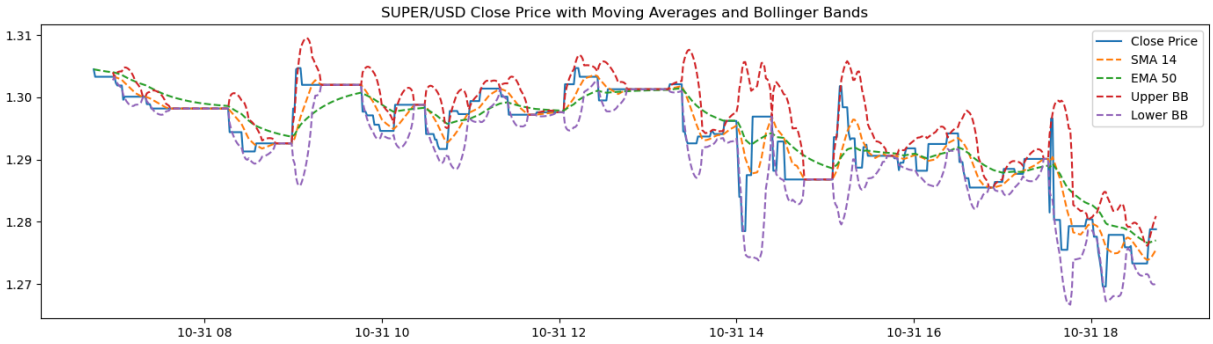

RENDER/USD Volatility
Volatility
0.025
0.020
0.015
0.010
0.005
0.000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

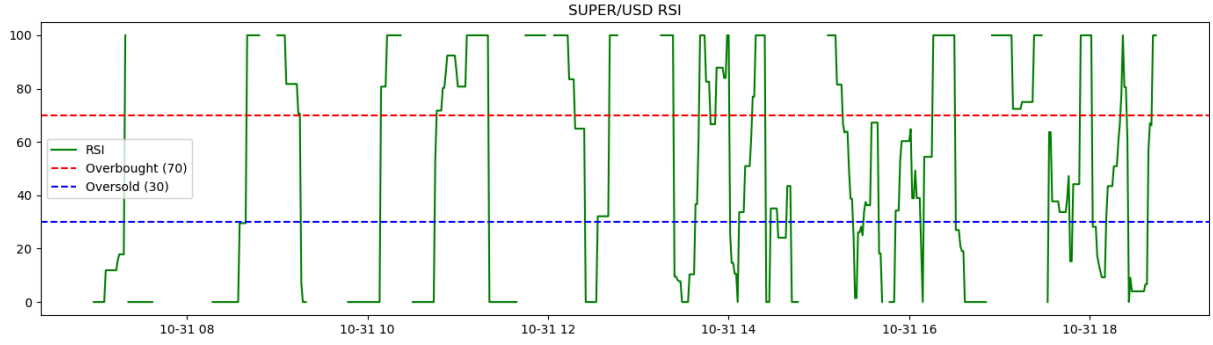

SAFE/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.18
1.17
1.16
1.15
1.14
1.13
1.12
1.11
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

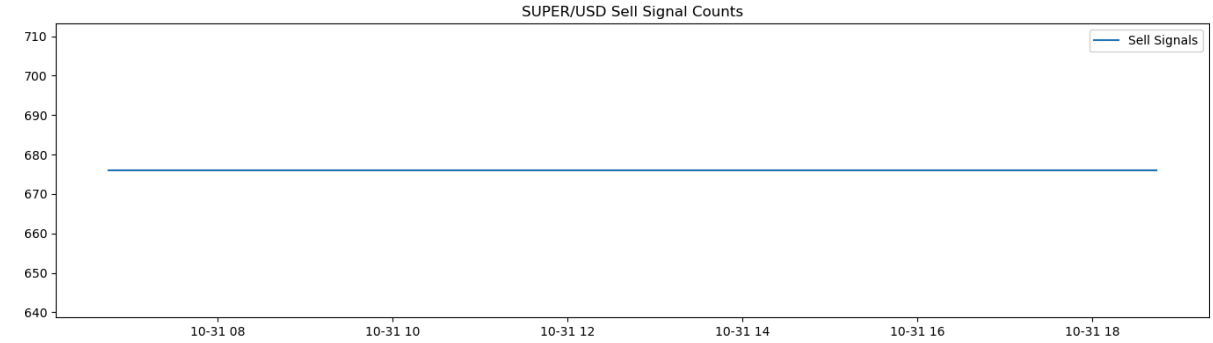

SAFE/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

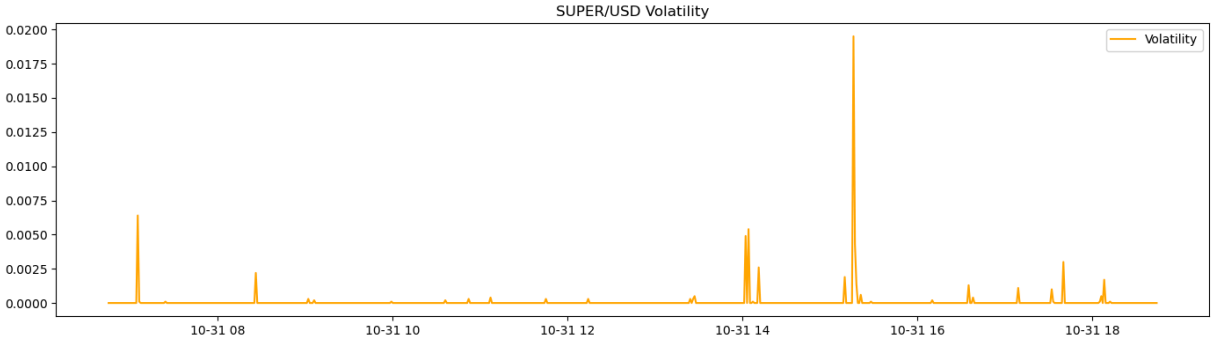

SAFE/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

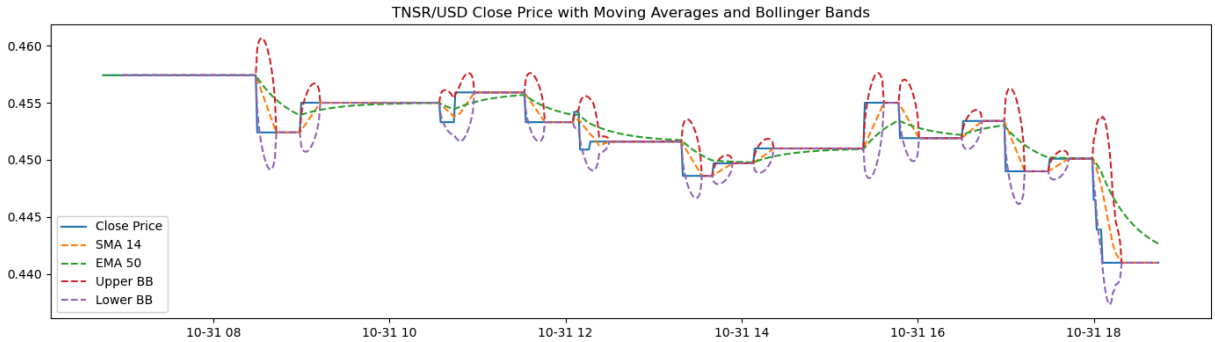

SAFE/USD Volatility
Volatility
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

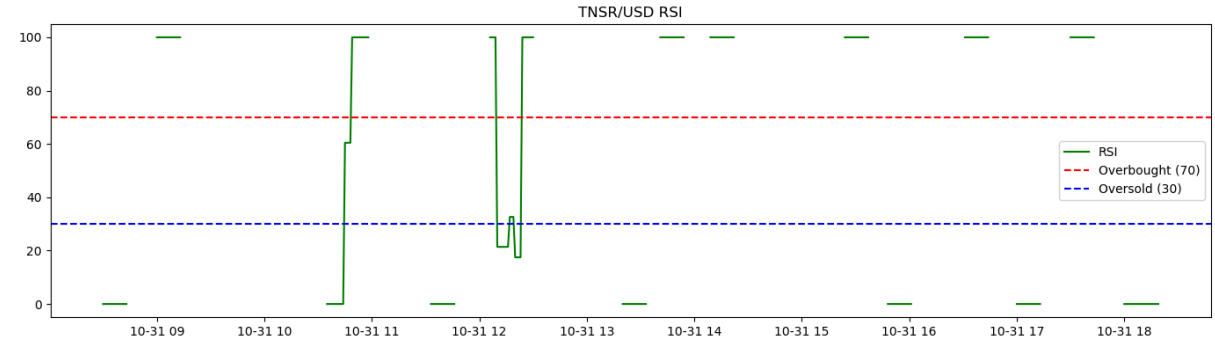

SUPER/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
1.31
1.30
1.29
1.28
1.27
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

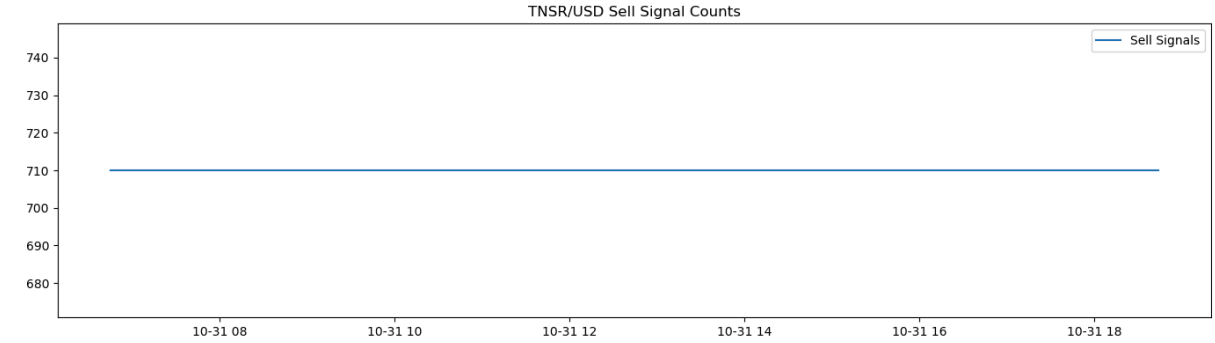

SUPER/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

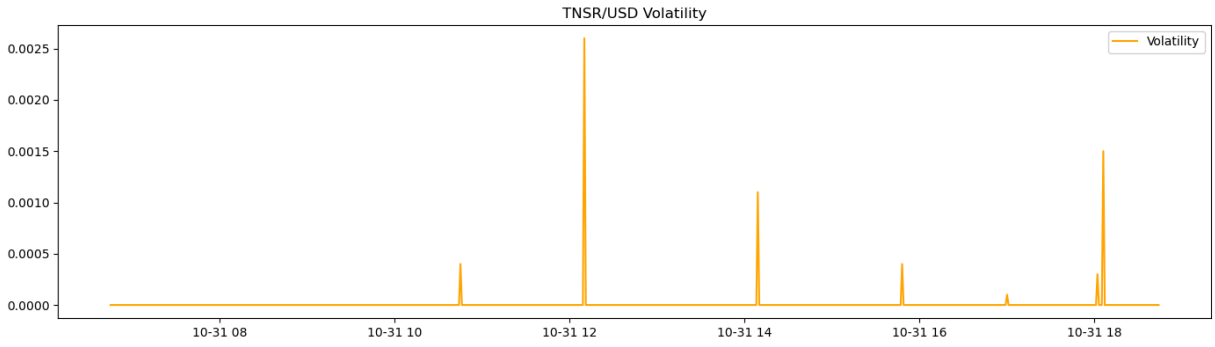

SUPER/USD Sell Signal Counts
Sell Signals
710
700
690
680
670
660
650
640
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

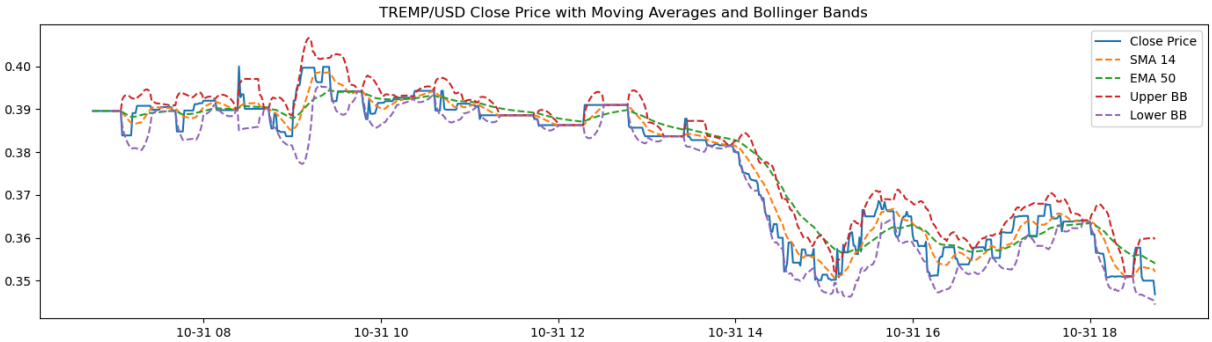

SUPER/USD Volatility
Volatility
0.0200
0.0175
0.0150
0.0125
0.0100
0.0075
0.0050
0.0025
0.0000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

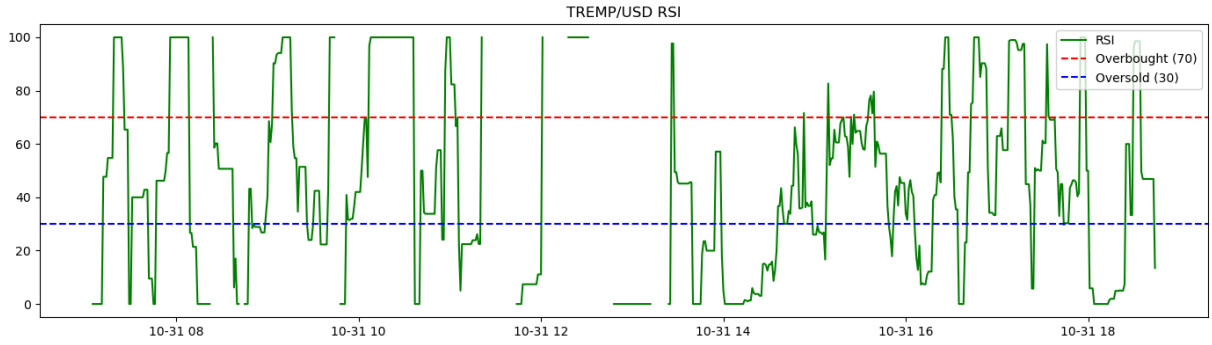

TNSR/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.460
0.455
0.450
0.445
0.440
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

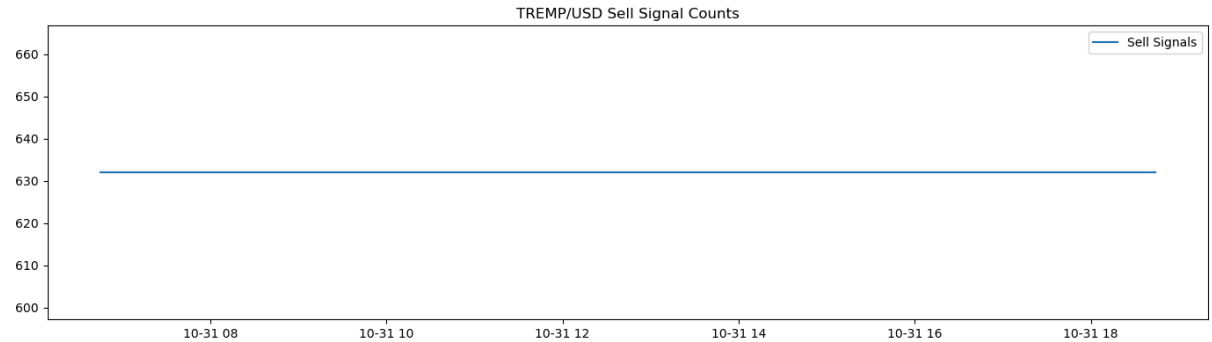

TNSR/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 09
10-31 10
10-31 11
10-31 12
10-31 13
10-31 14
10-31 15
10-31 16
10-31 17
10-31 18

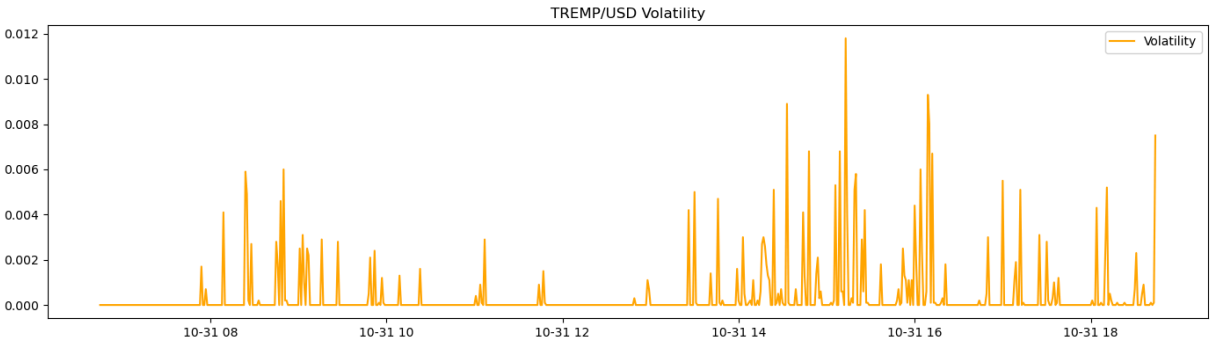

TNSR/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

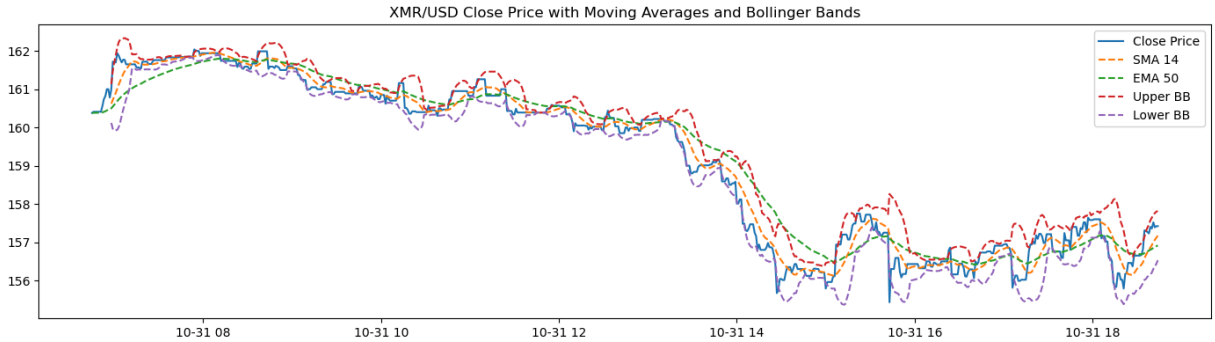

TNSR/USD Volatility
Volatility
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

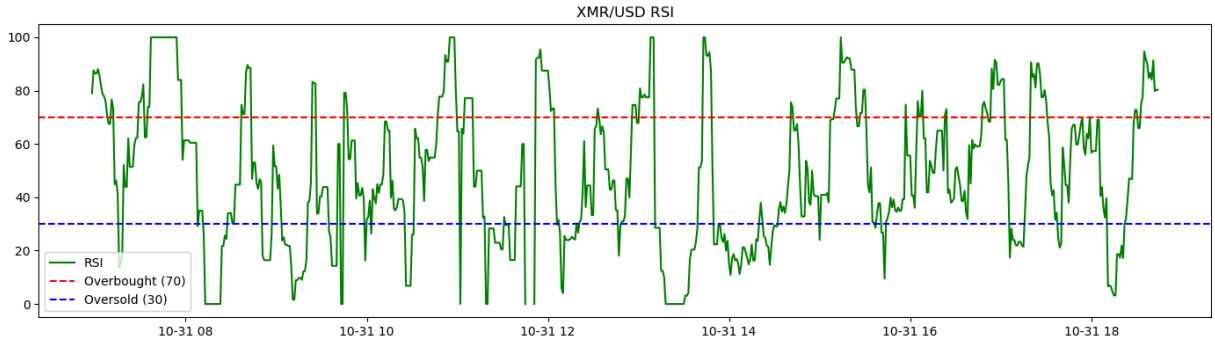

TREMP/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.40
0.39
0.38
0.37
0.36
0.35
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

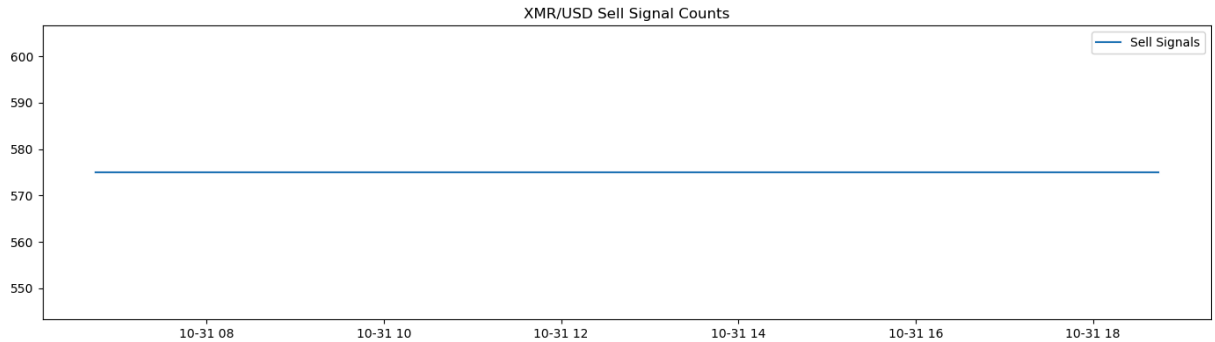

TREMP/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

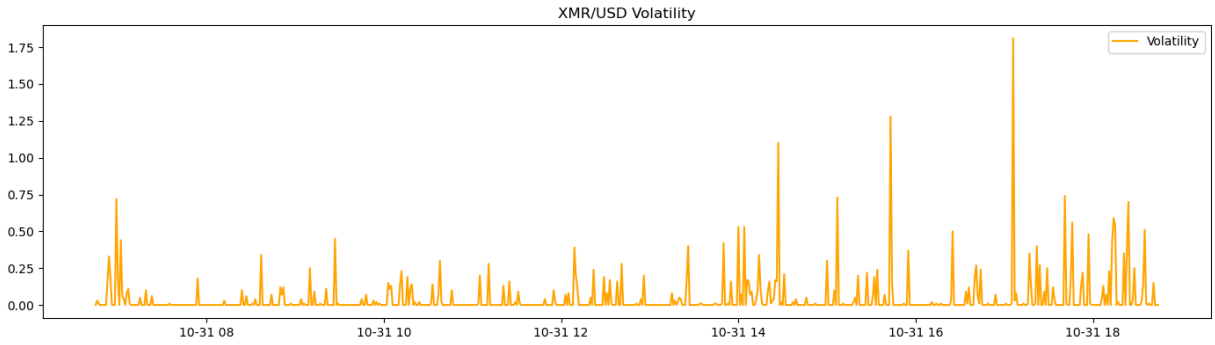

TREMP/USD Sell Signal Counts
Sell Signals
660
650
640
630
620
610
600
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

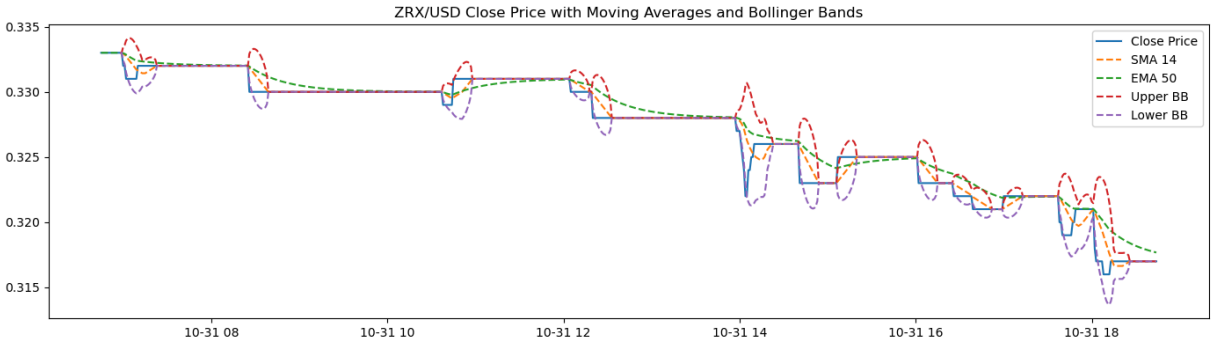

TREMP/USD Volatility
Volatility
0.012
0.010
0.008
0.006
0.004
0.002
0.000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

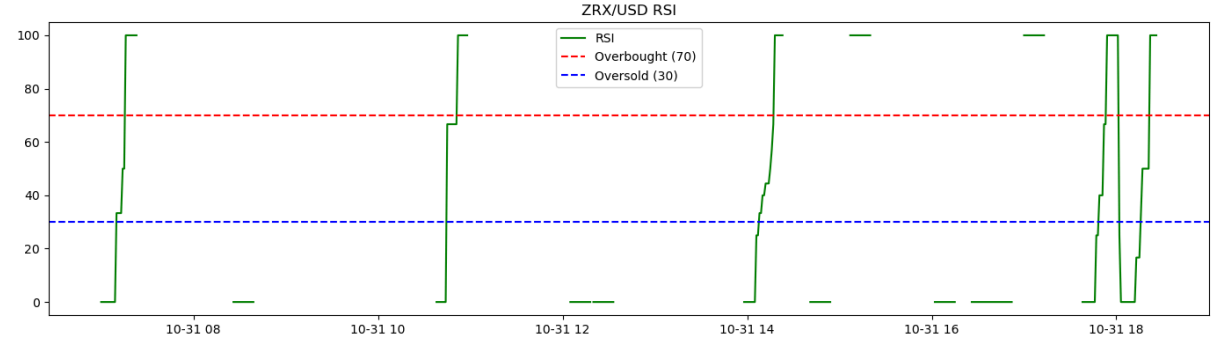

XMR/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
162
161
160
159
158
157
156
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

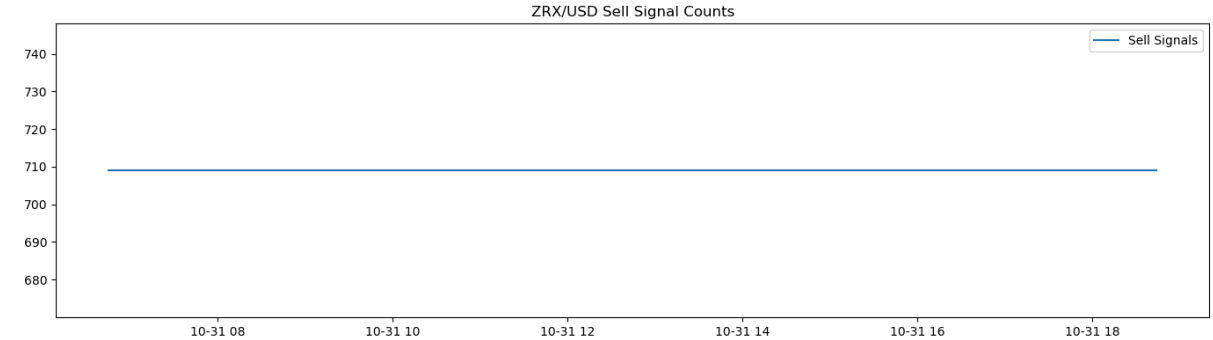

XMR/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

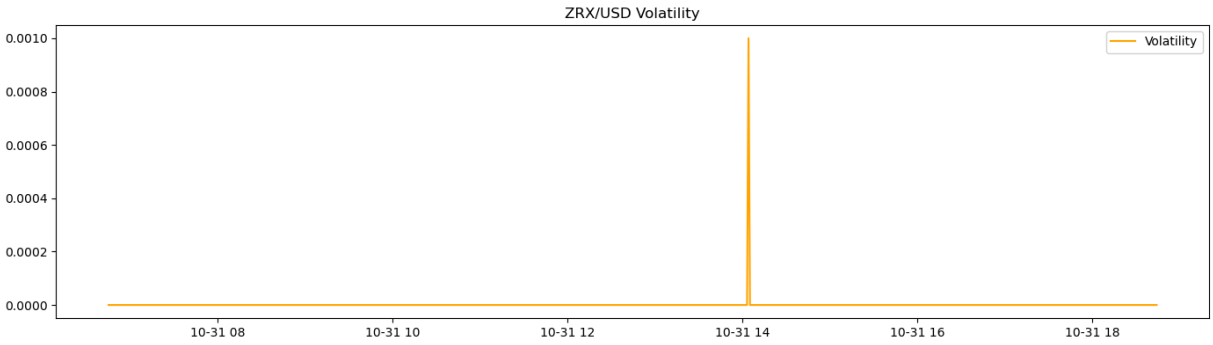

XMR/USD Sell Signal Counts
Sell Signals
600
590
580
570
560
550
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

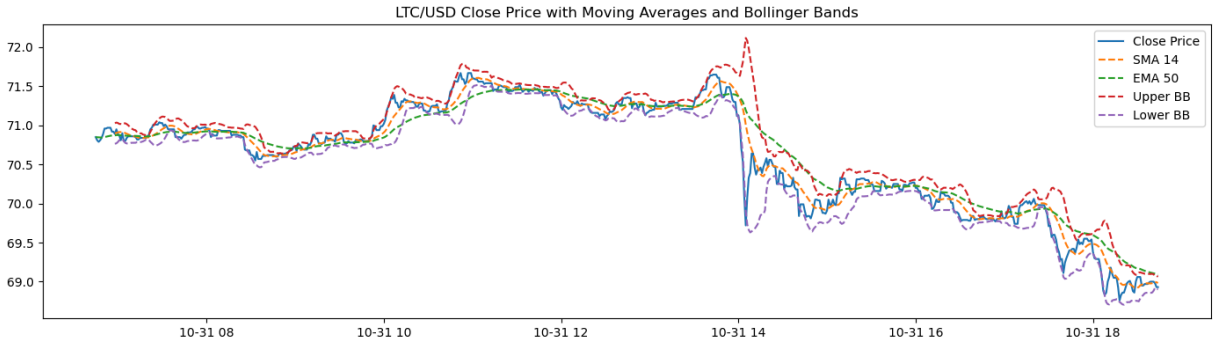

XMR/USD Volatility
Volatility
1.75
1.50
1.25
1.00
0.75
0.50
0.25
0.00
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

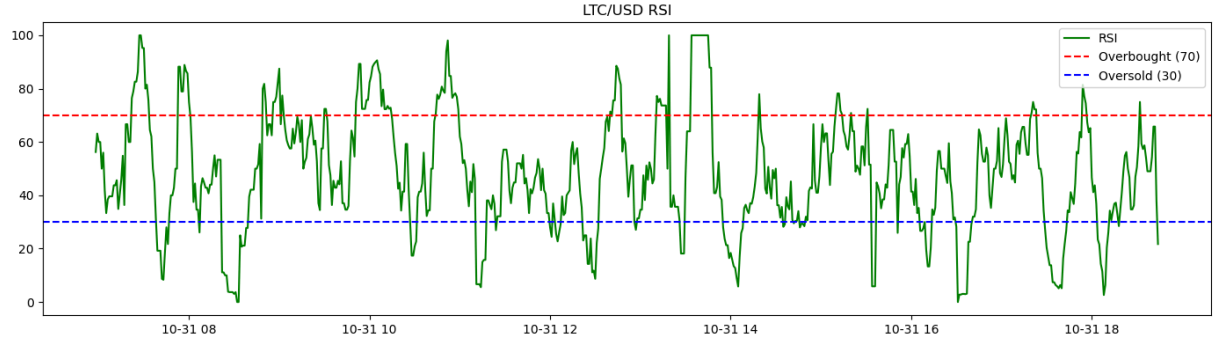

ZRX/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.335
0.330
0.325
0.320
0.315
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

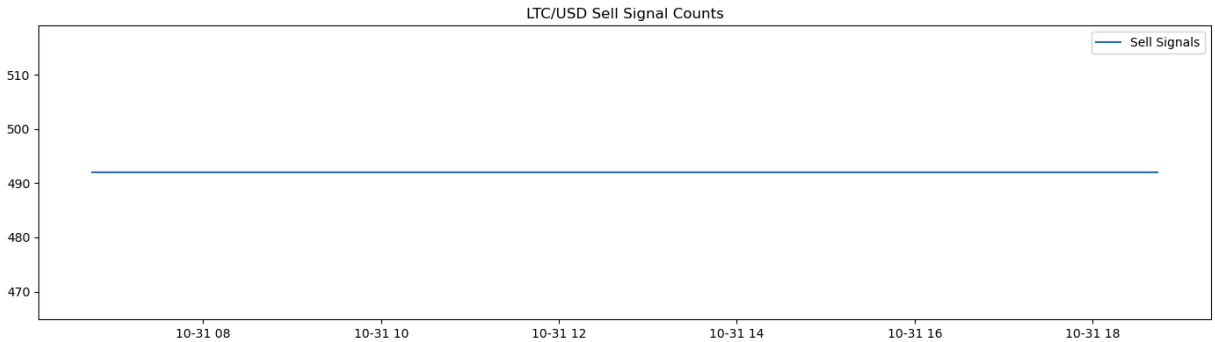

ZRX/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

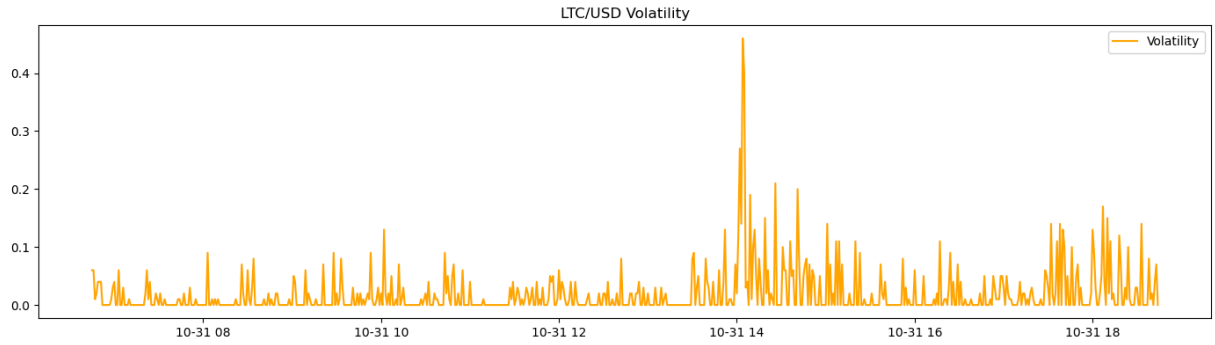

ZRX/USD Sell Signal Counts
Sell Signals
740
730
720
710
700
690
680
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

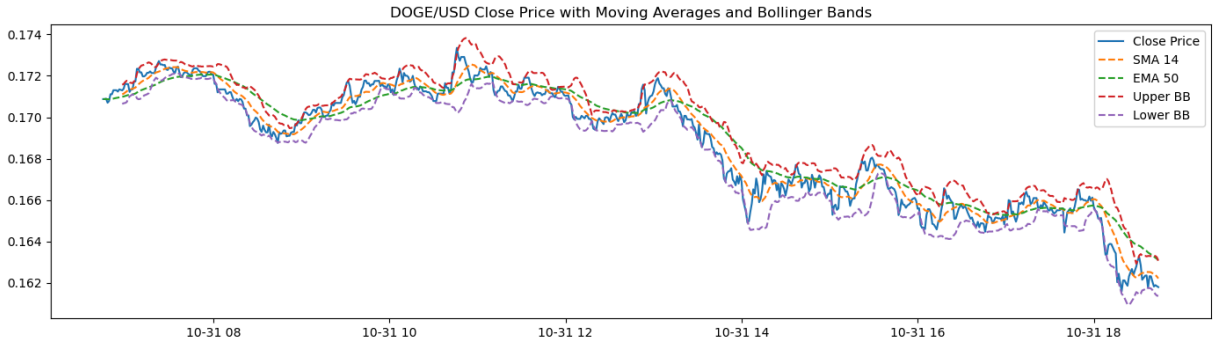

ZRX/USD Volatility
Volatility
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

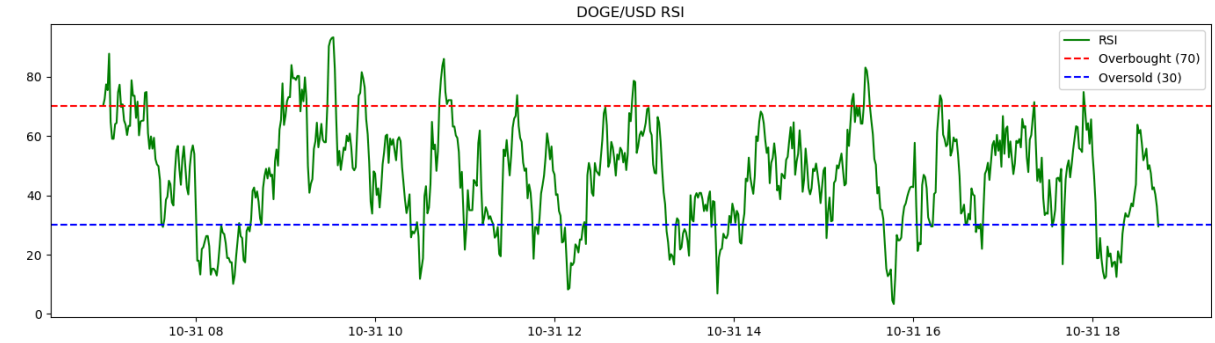

LTC/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
72.0
71.5
71.0
70.5
70.0
69.5
69.0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

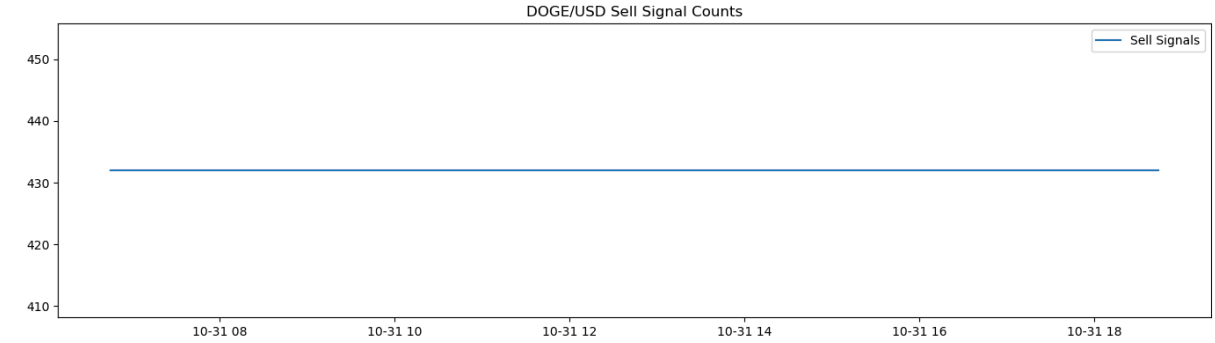

LTC/USD RSI
RSI
Overbought (70)
Oversold (30)
100
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

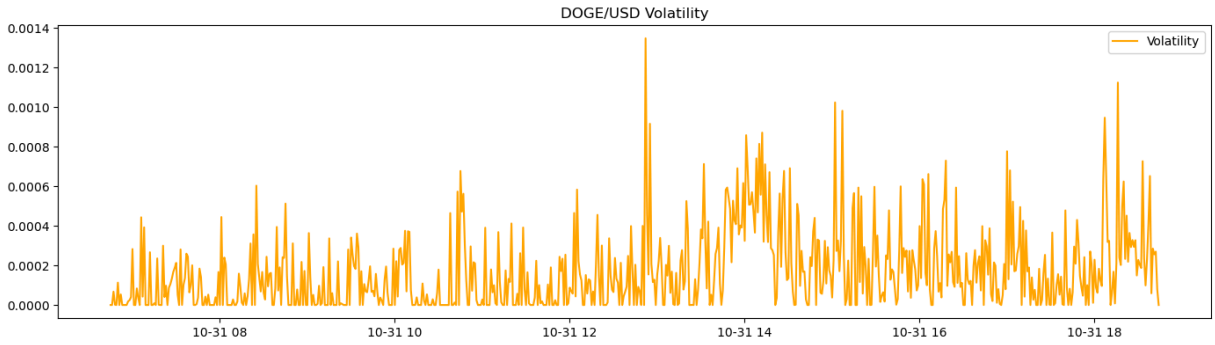

LTC/USD Sell Signal Counts
Sell Signals
510
500
490
480
470
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


LTC/USD Volatility
Volatility
0.4
0.3
0.2
0.1
0.0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18







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SQL connection closed.
Data saved to CSV file: ADA_USD_data.csv
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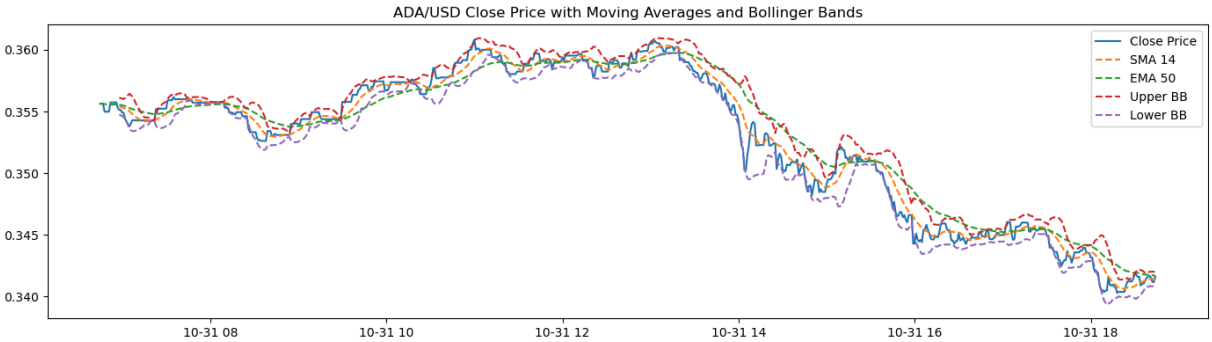

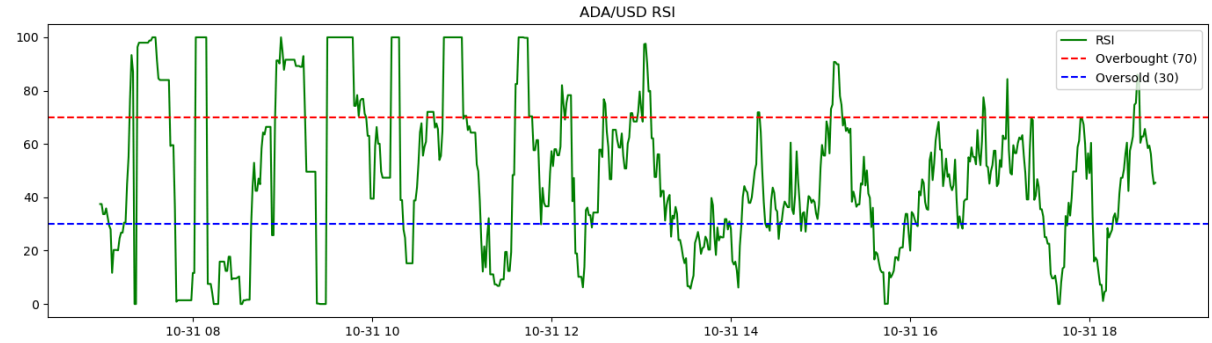

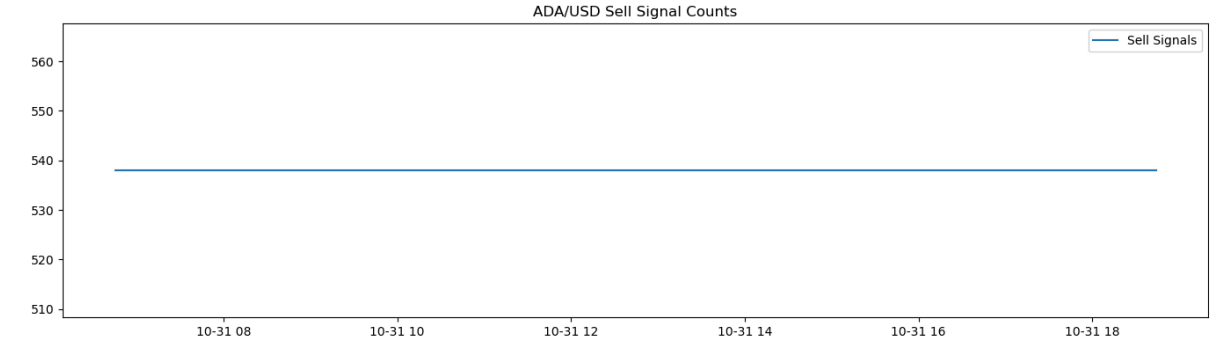

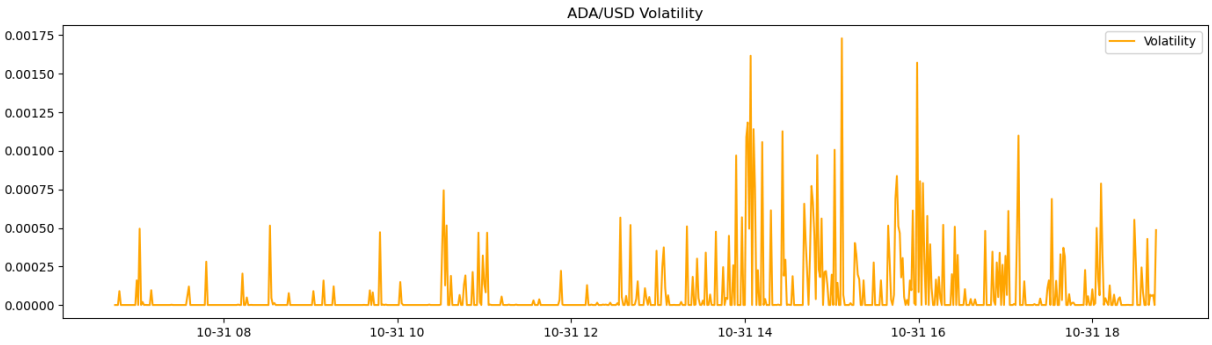


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SQL connection closed.
Data saved to CSV file: APE_USD_data.csv
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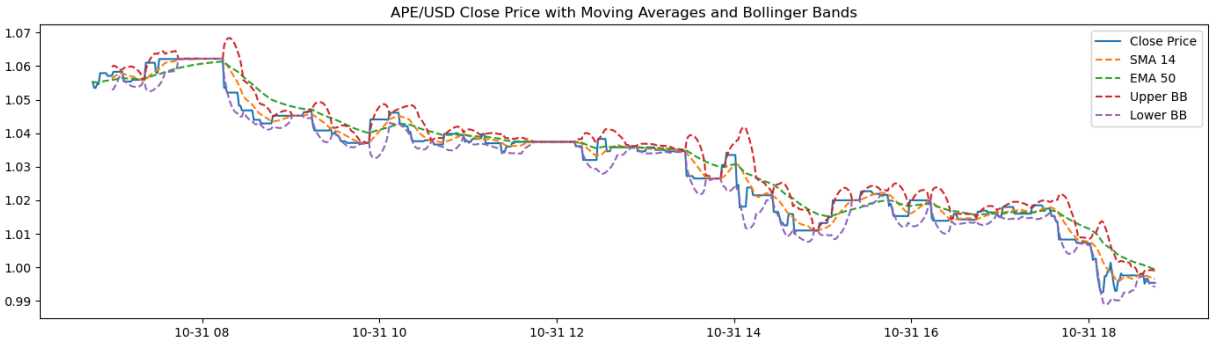

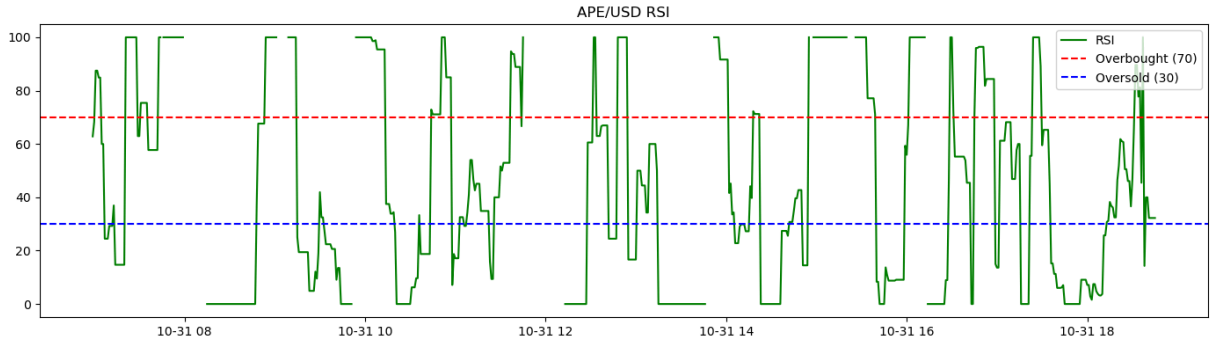

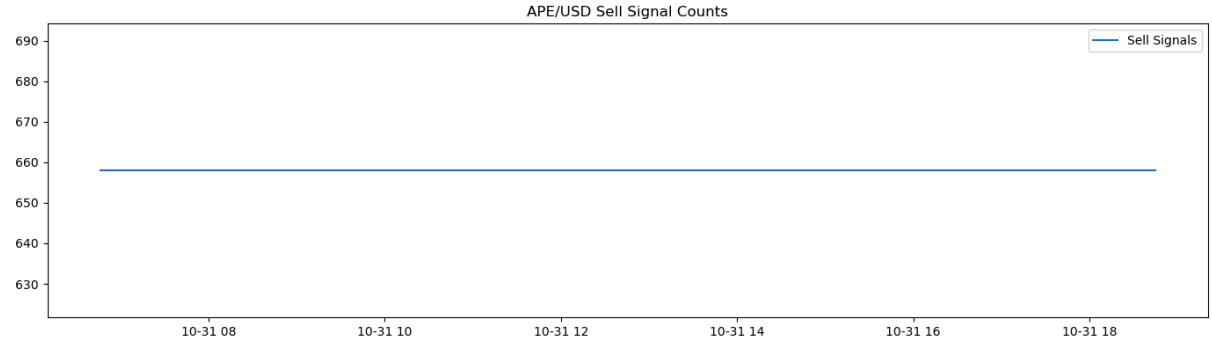

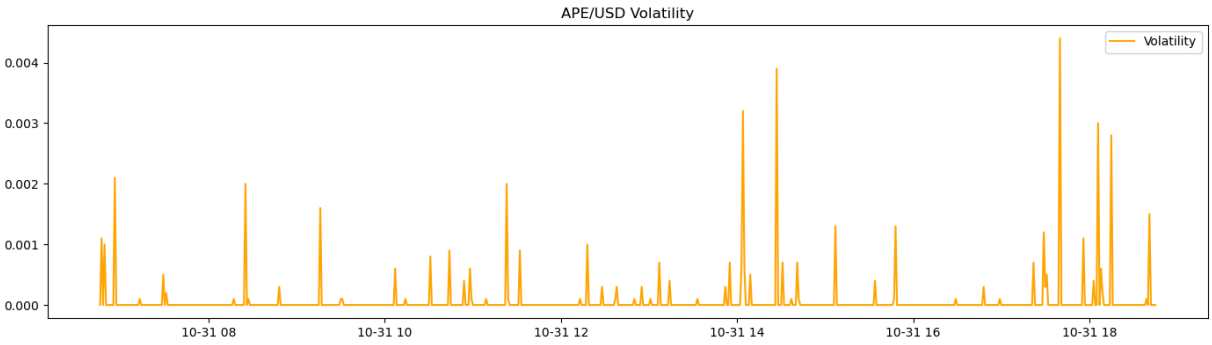

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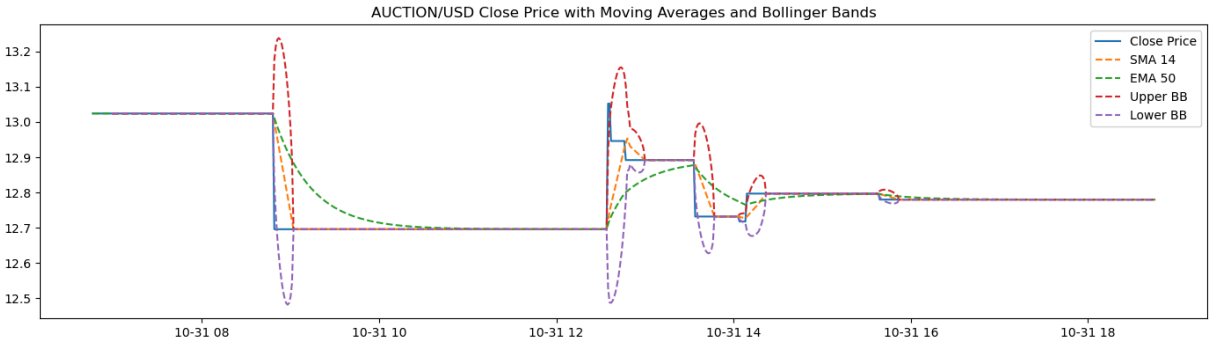
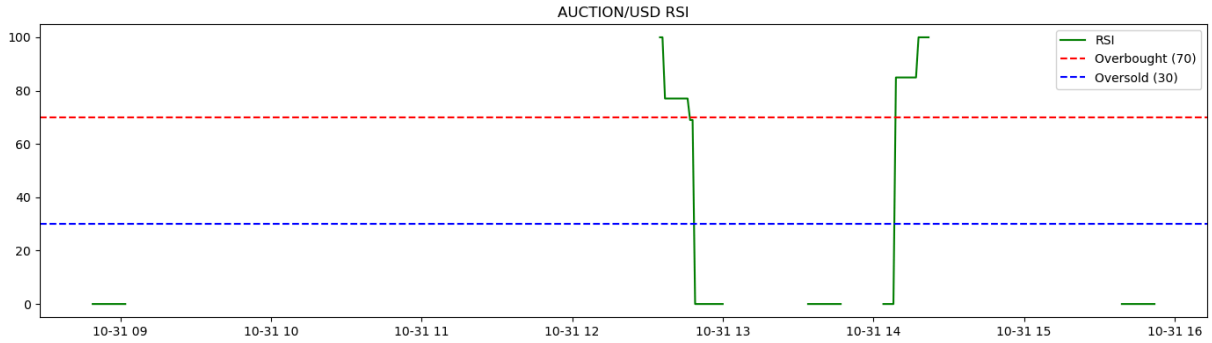
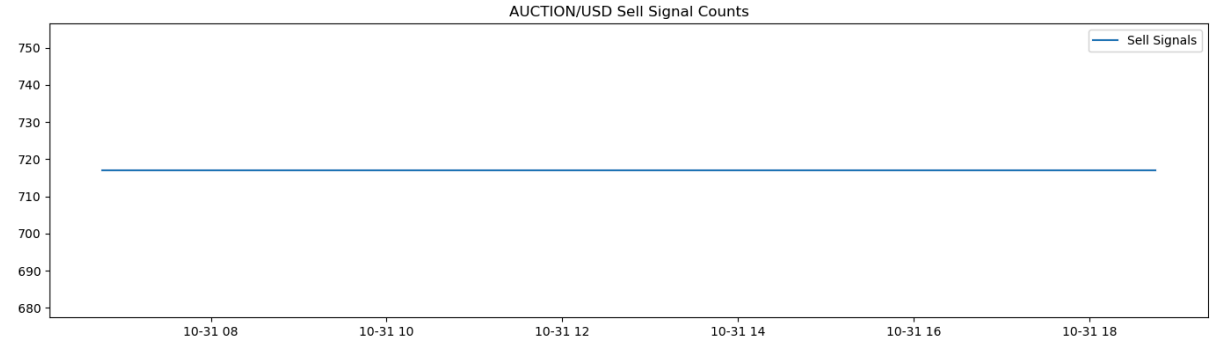
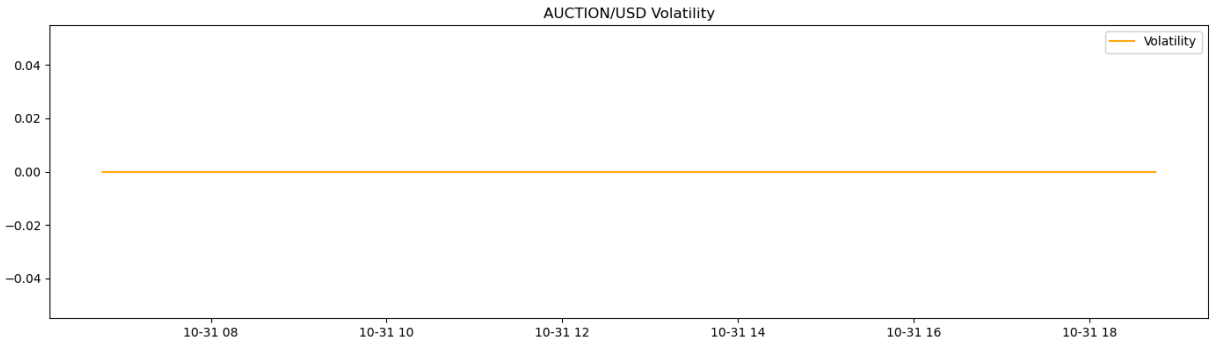
SQL connection closed.
Data saved to CSV file: AUCTION_USD_data.csv







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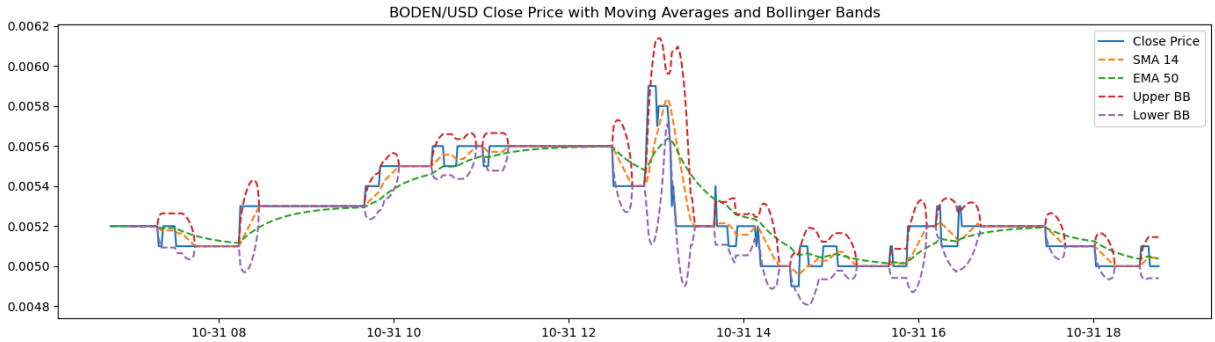

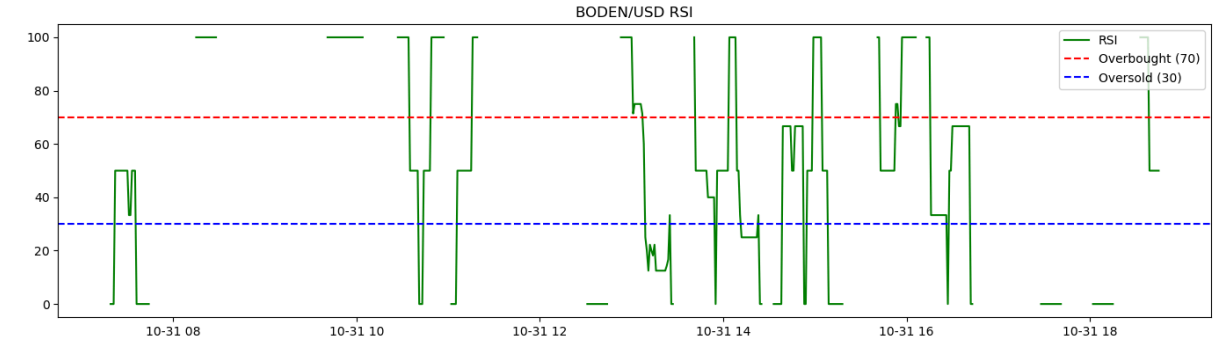

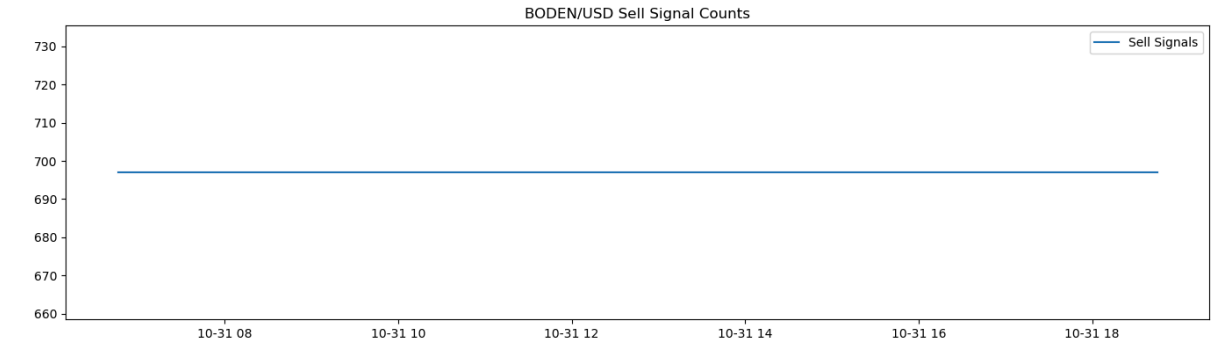

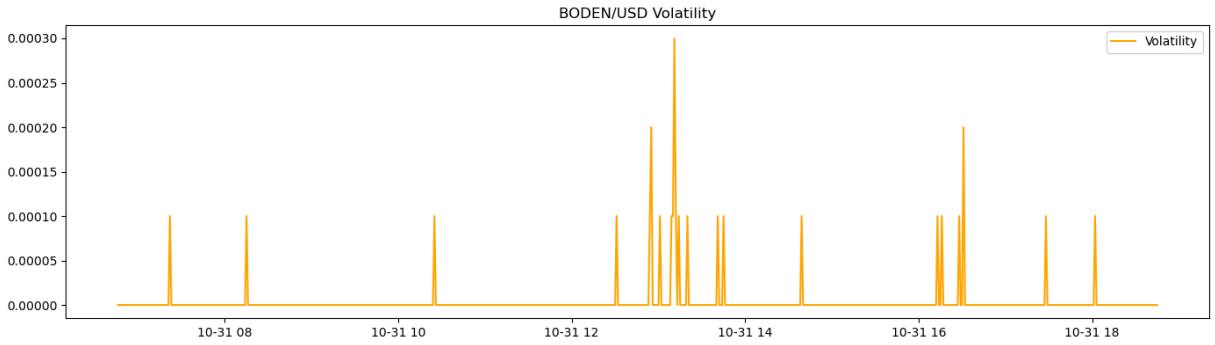


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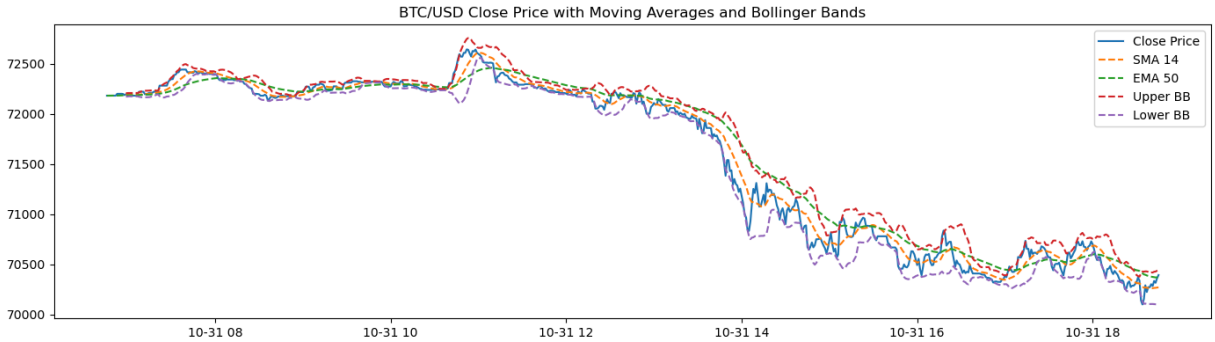

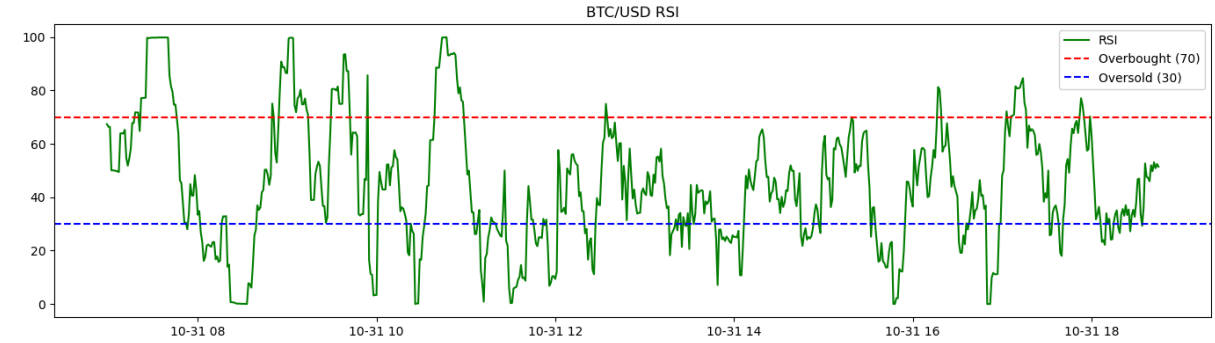

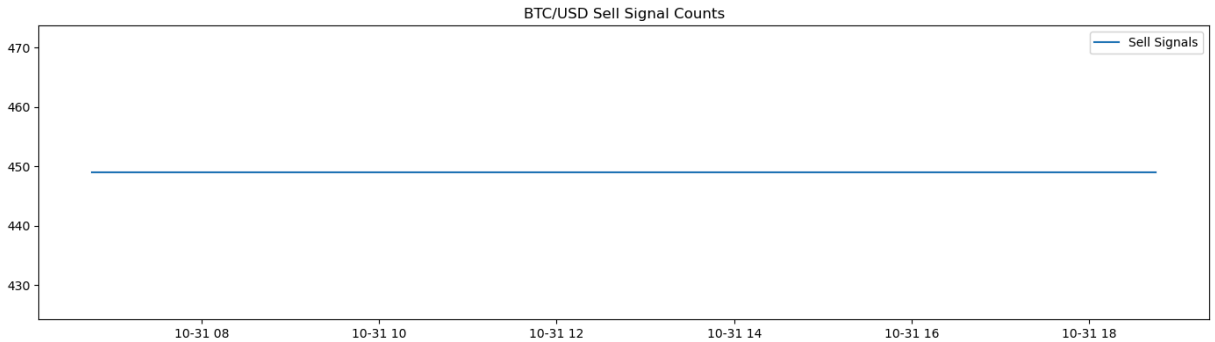

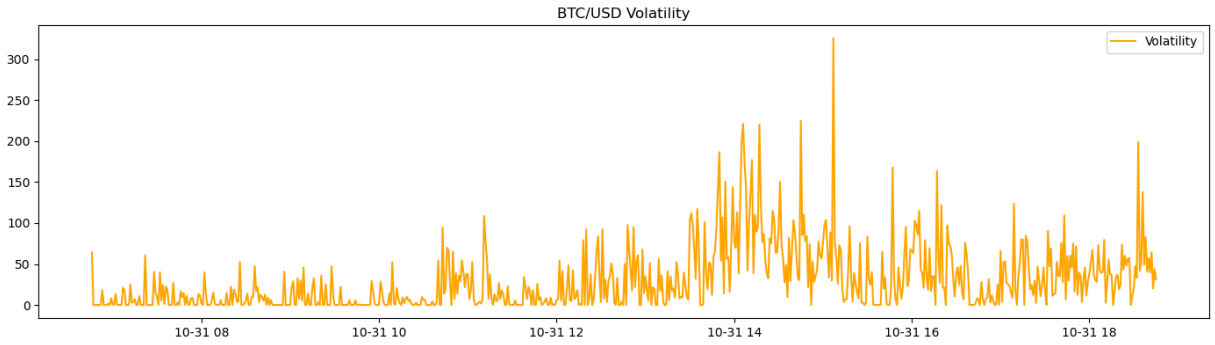


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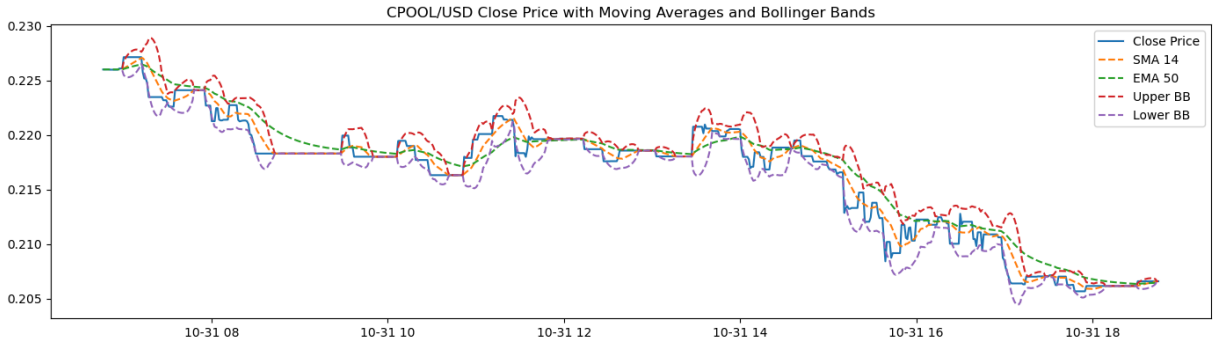

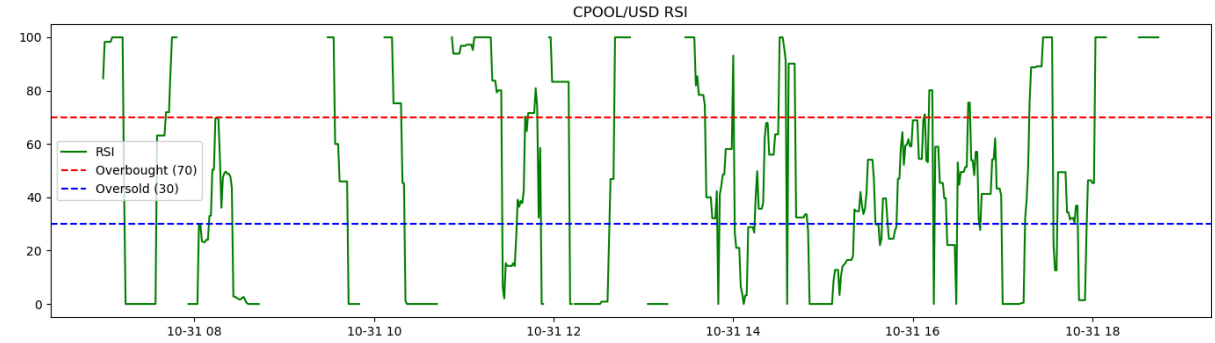

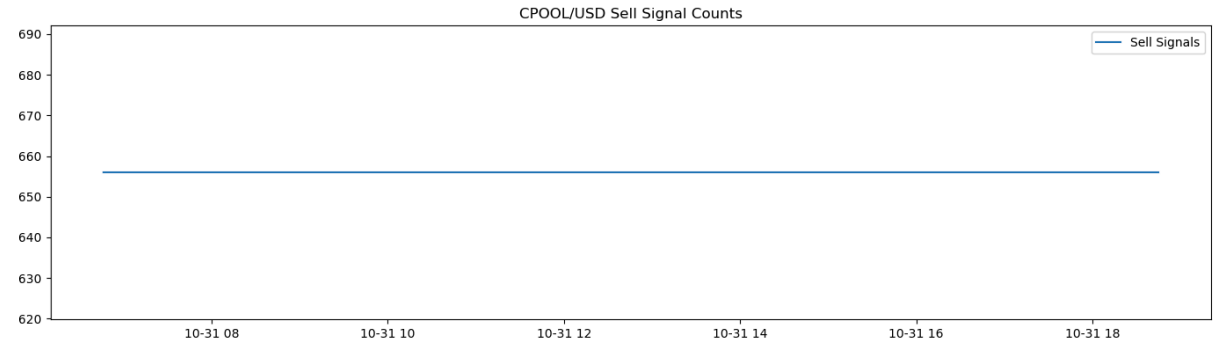

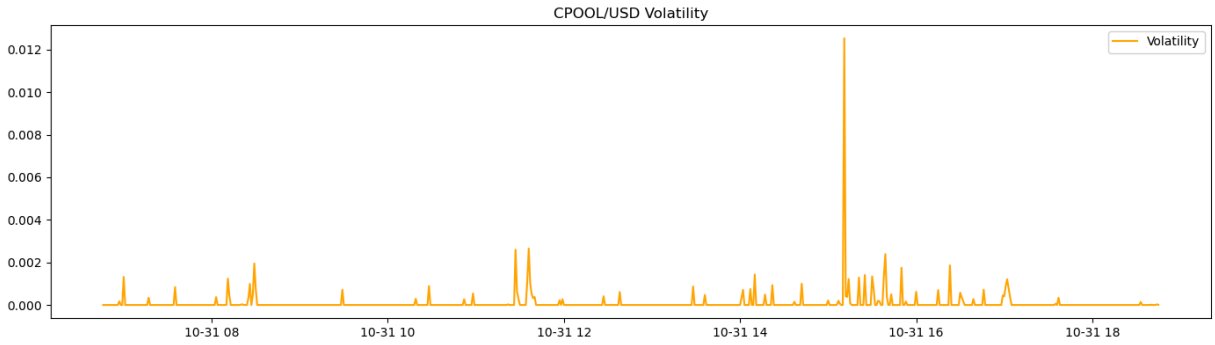


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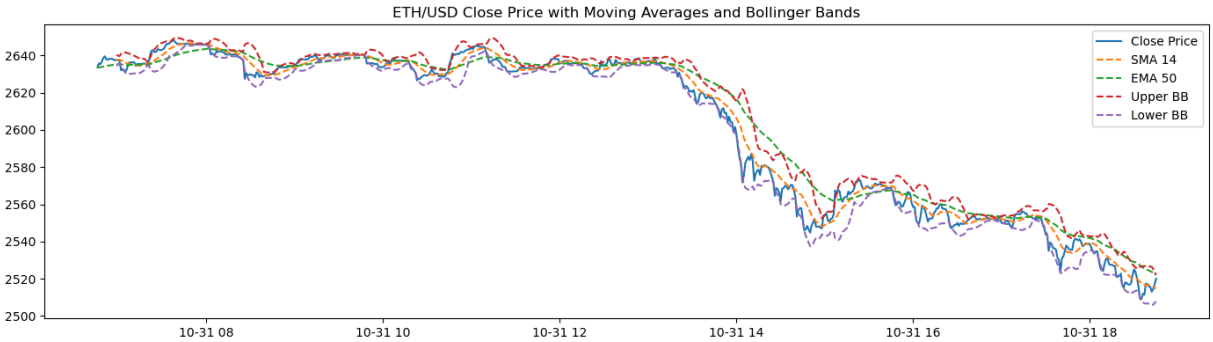

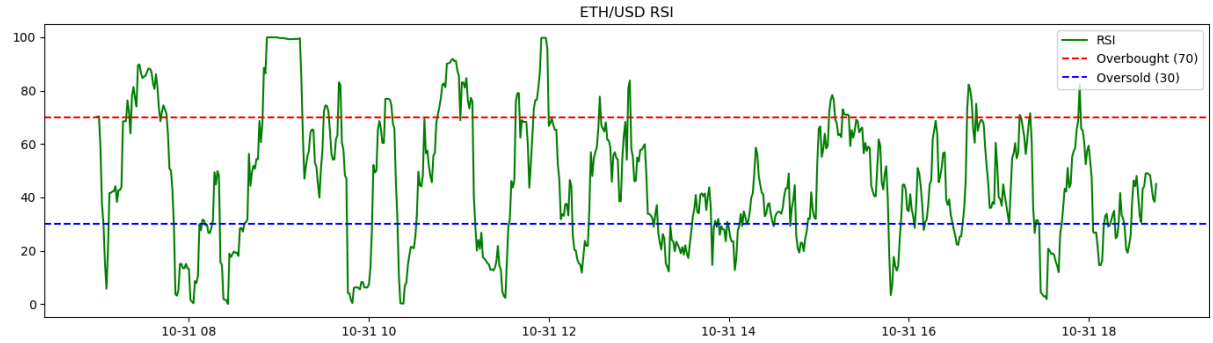

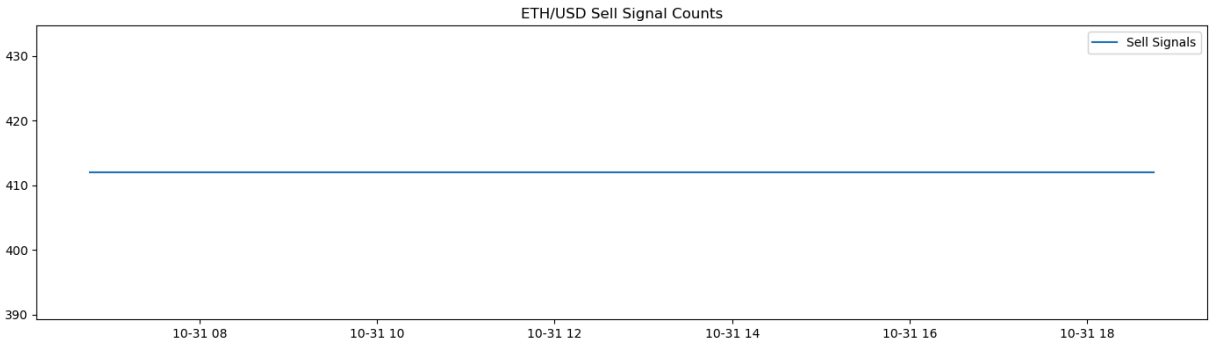

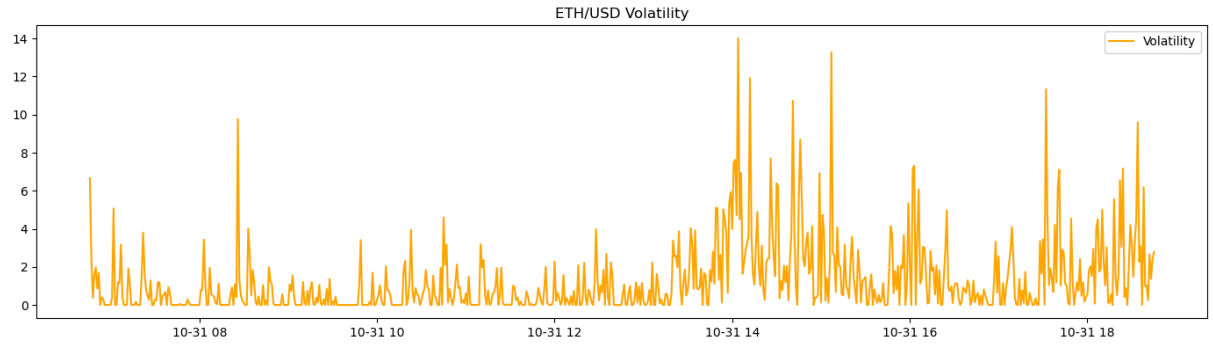


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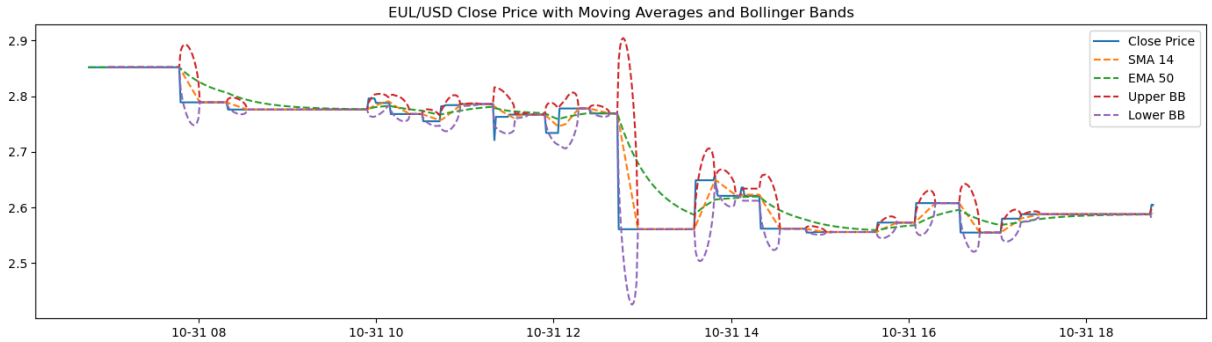

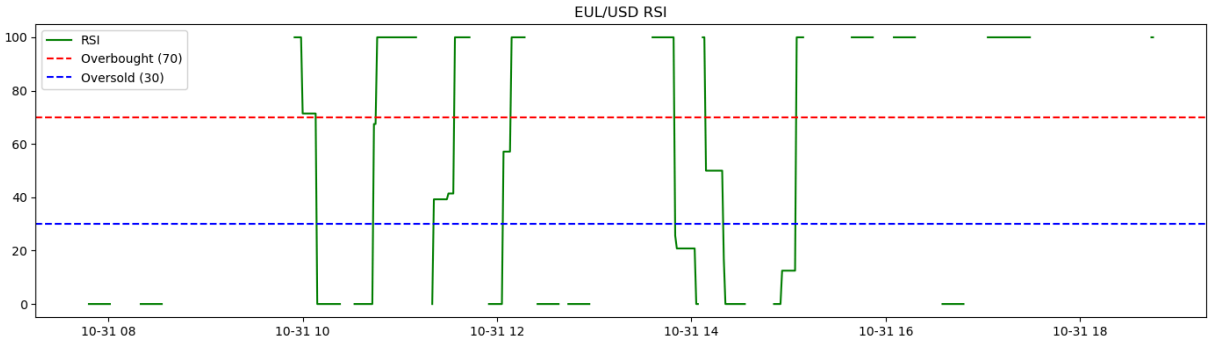

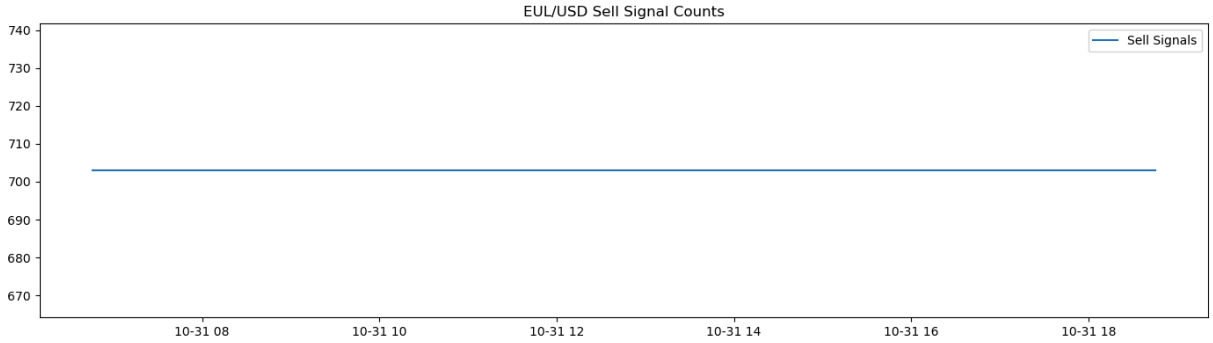

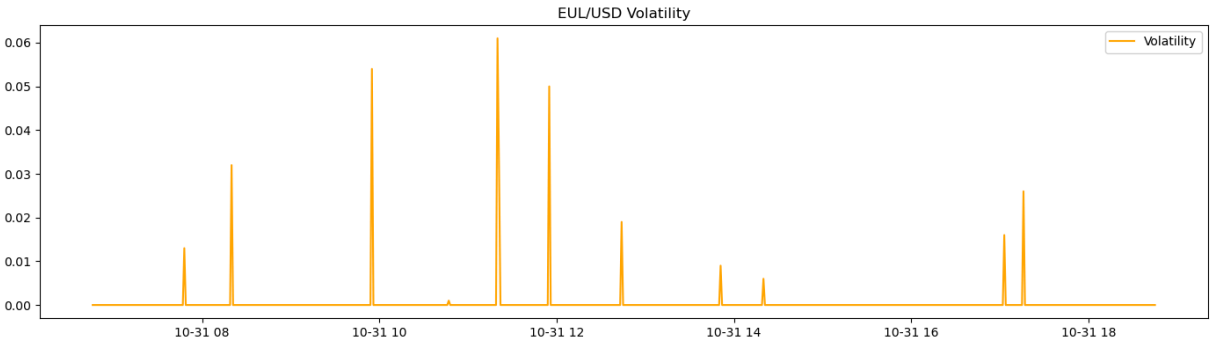


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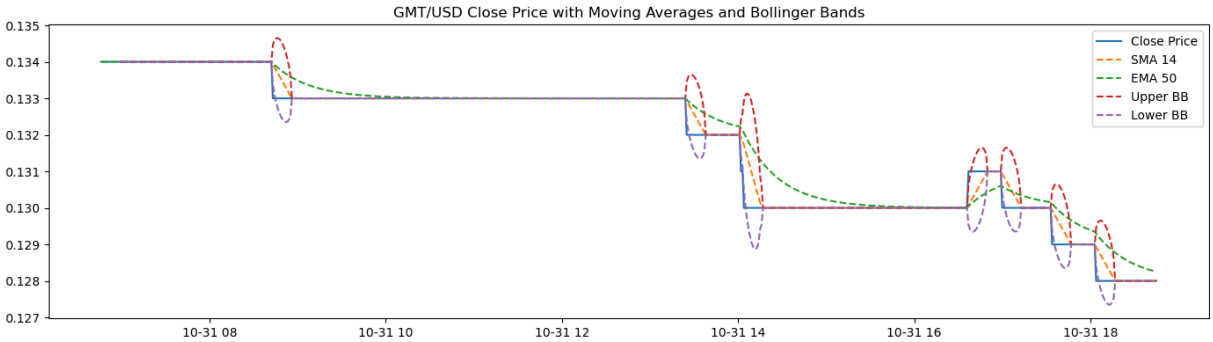

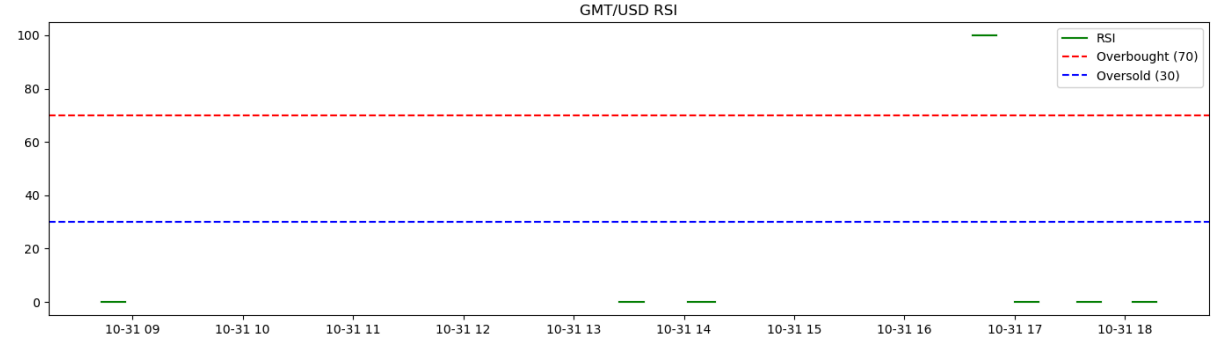

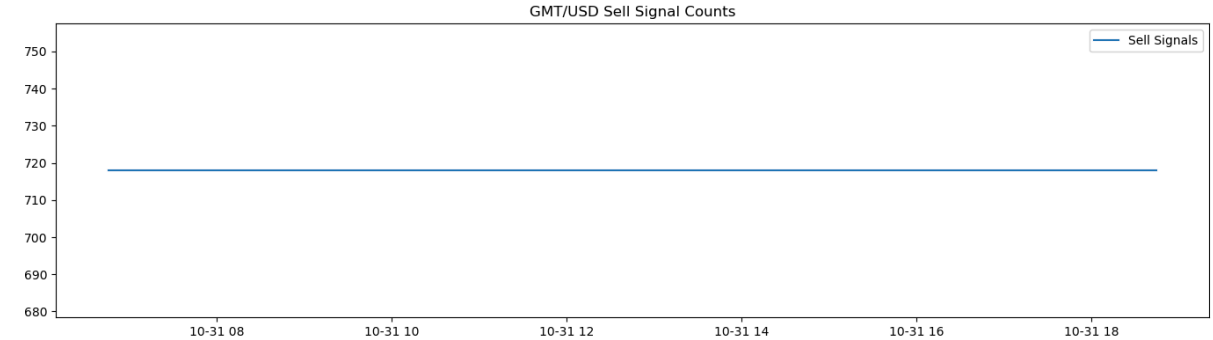

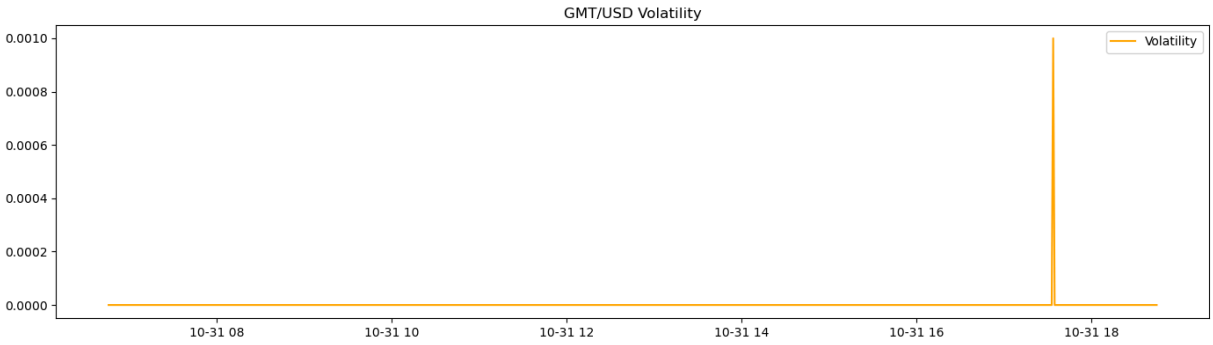


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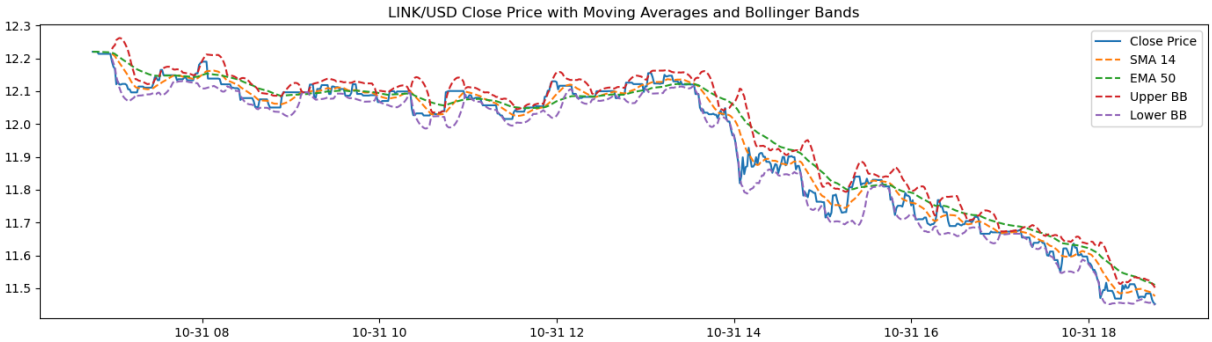

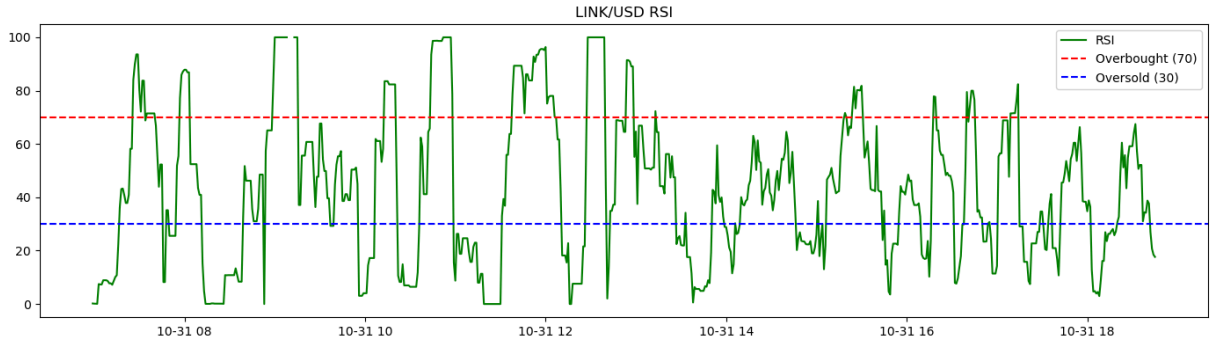

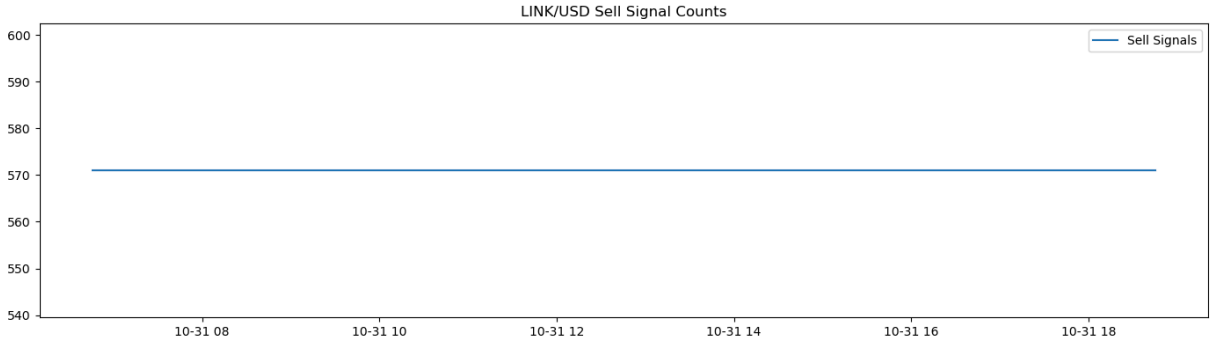

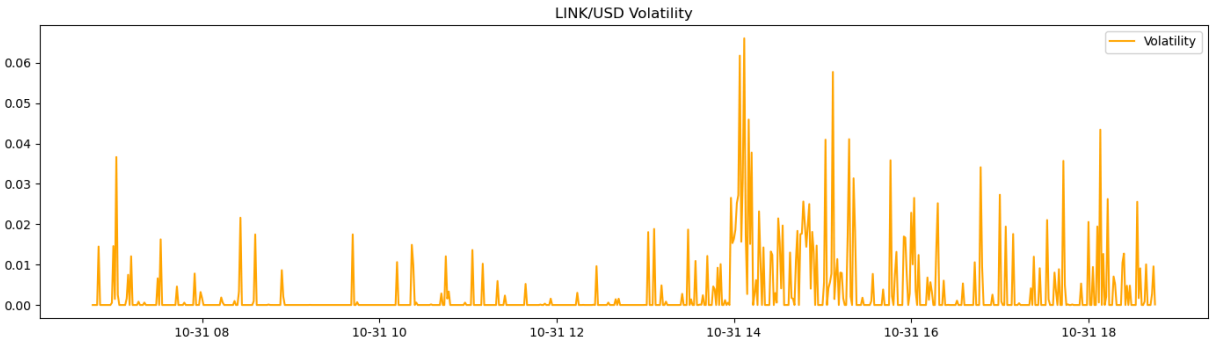


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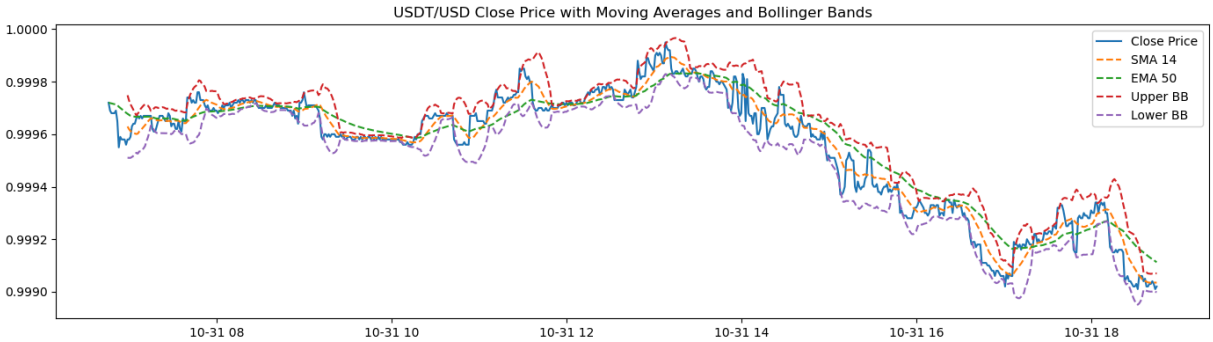

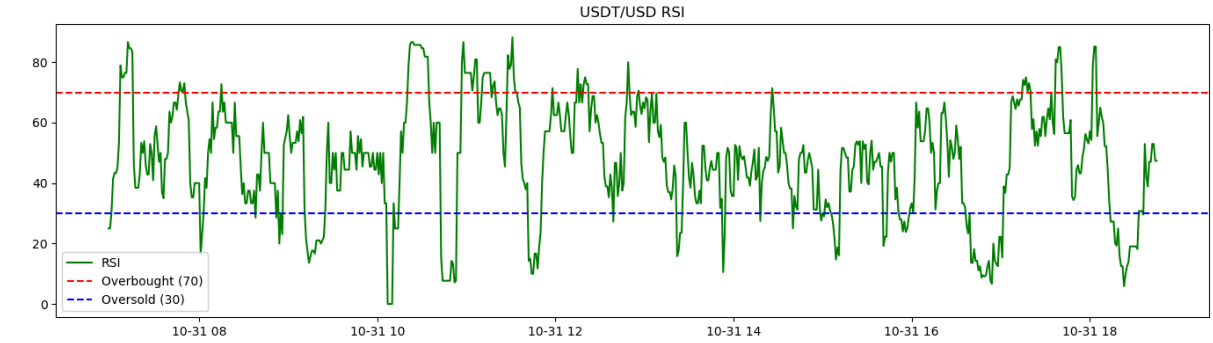

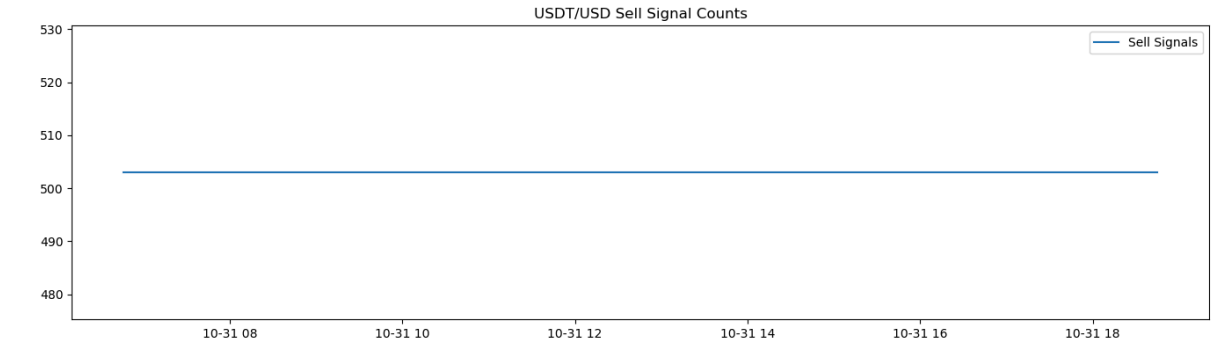

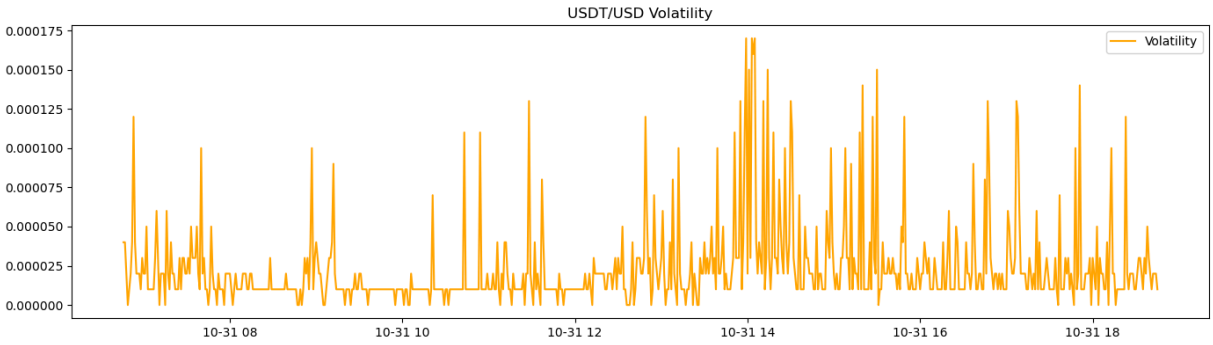


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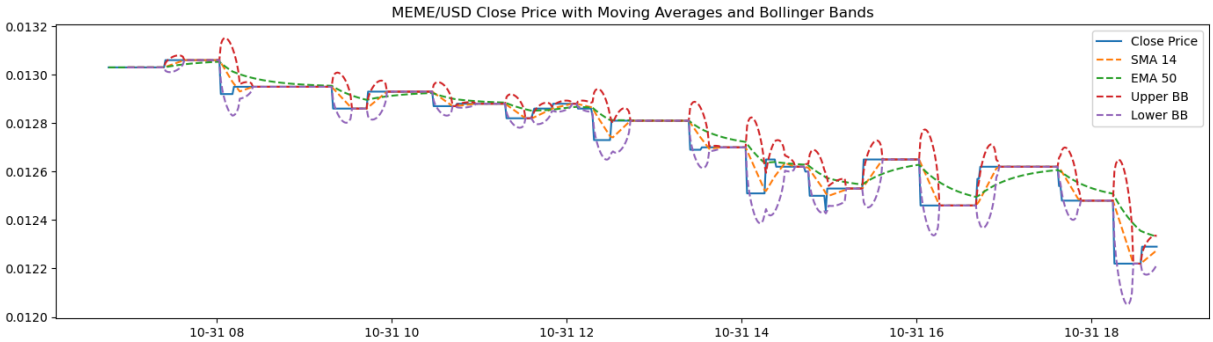

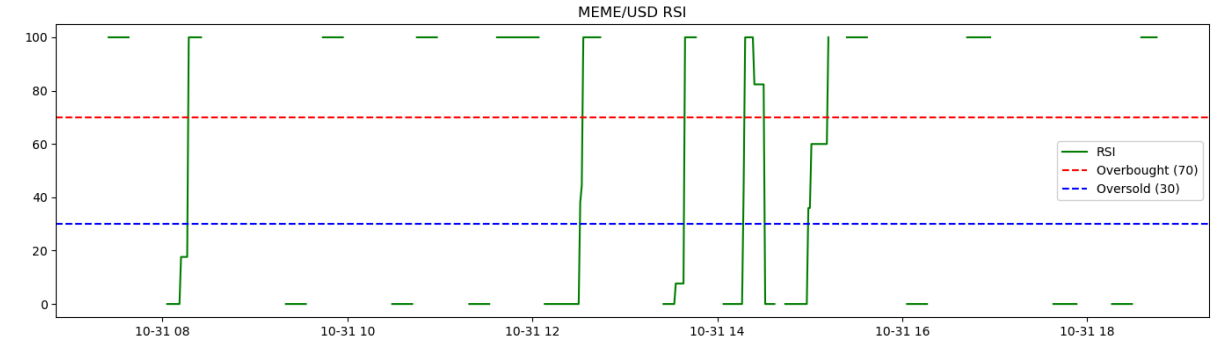

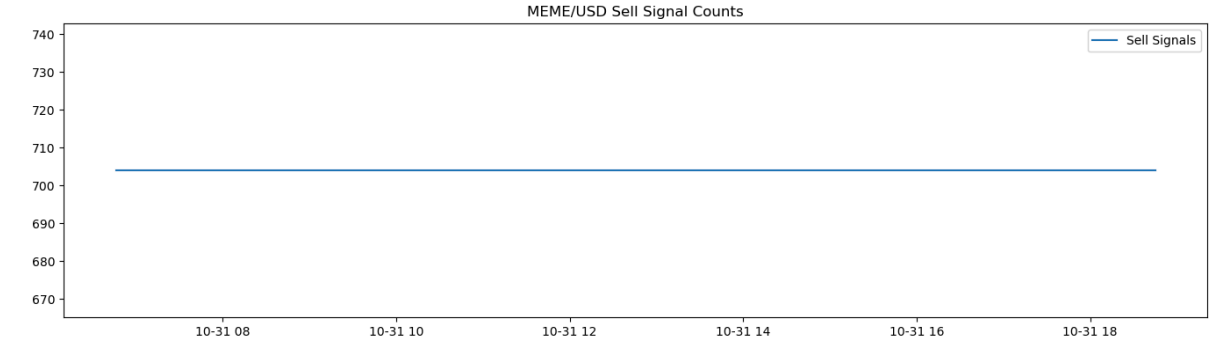

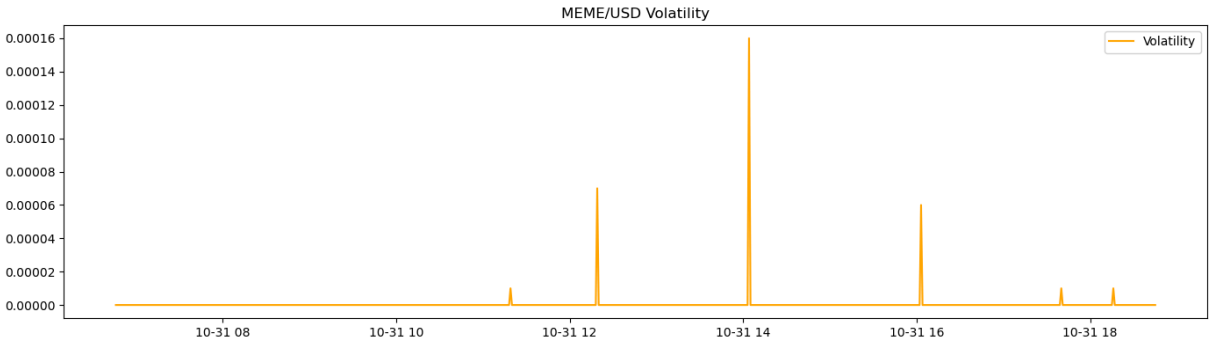

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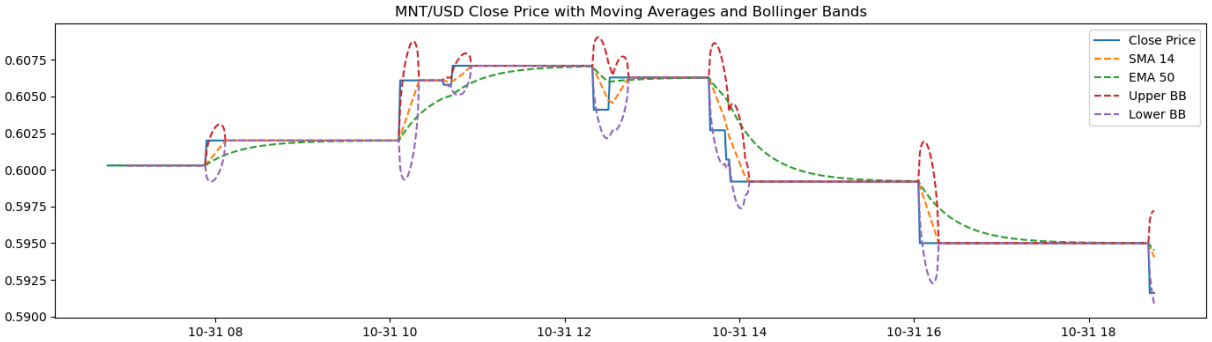

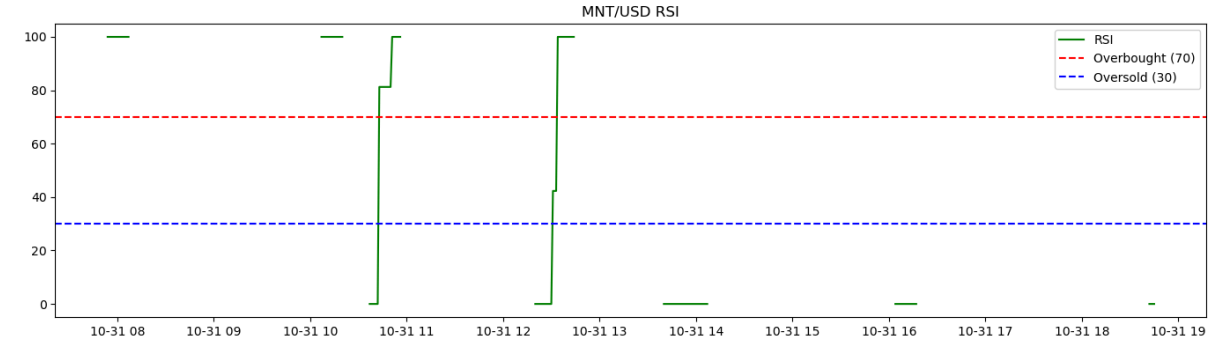

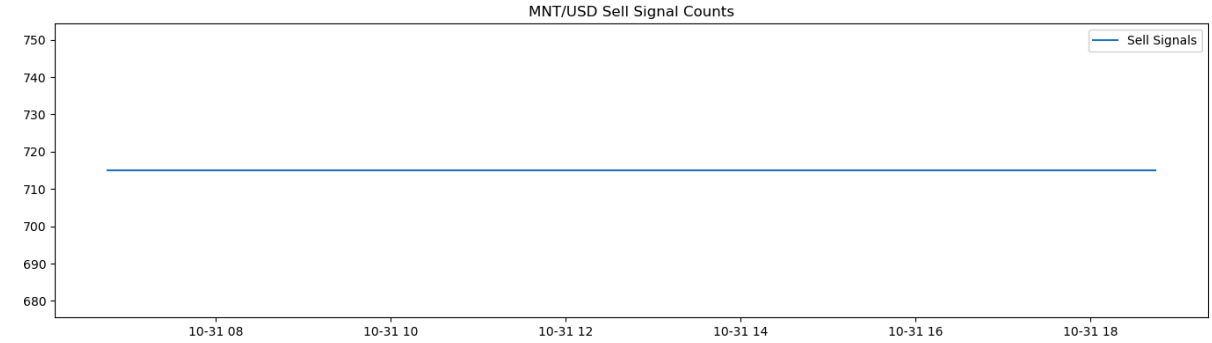

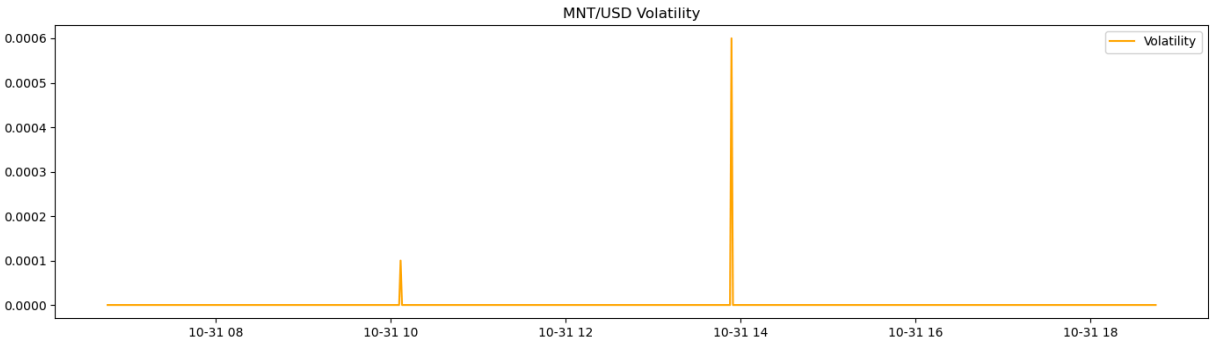


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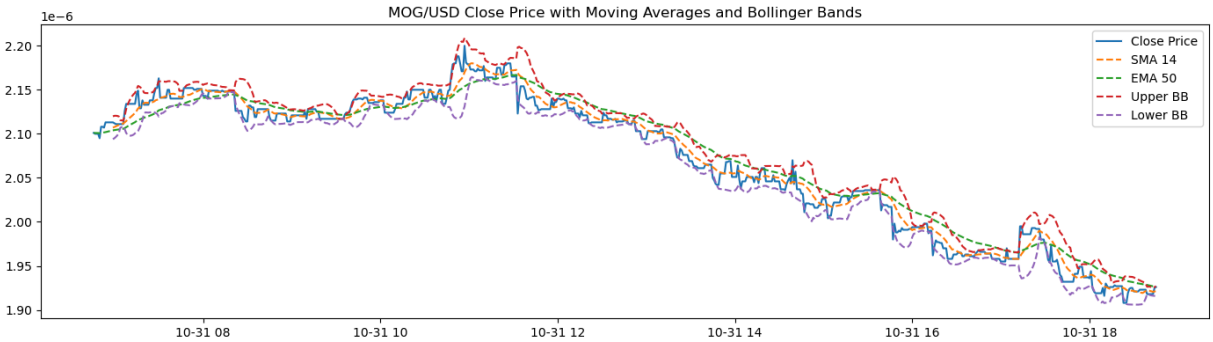

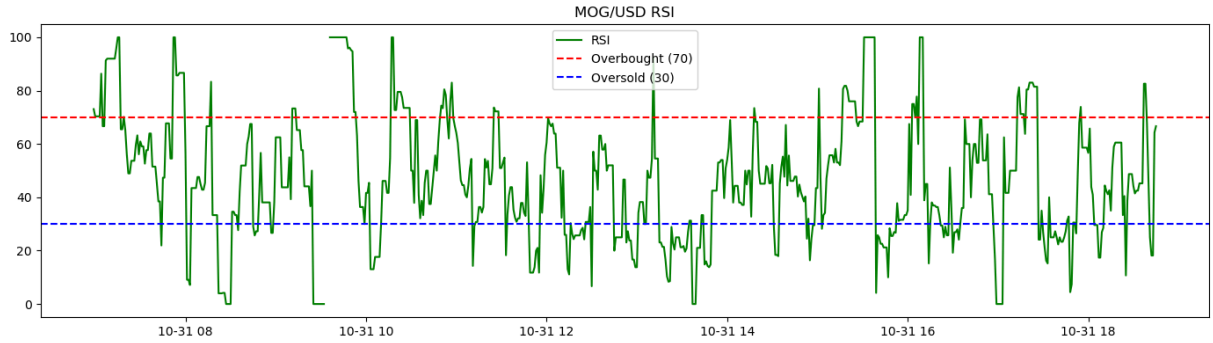

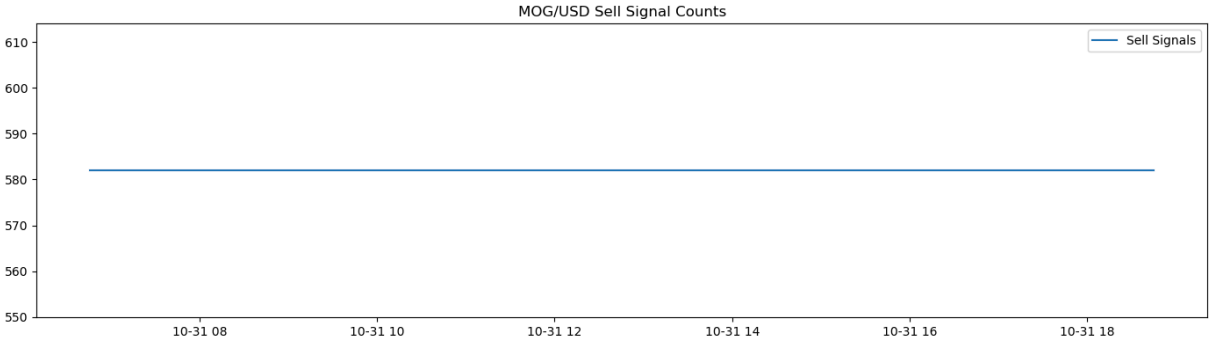

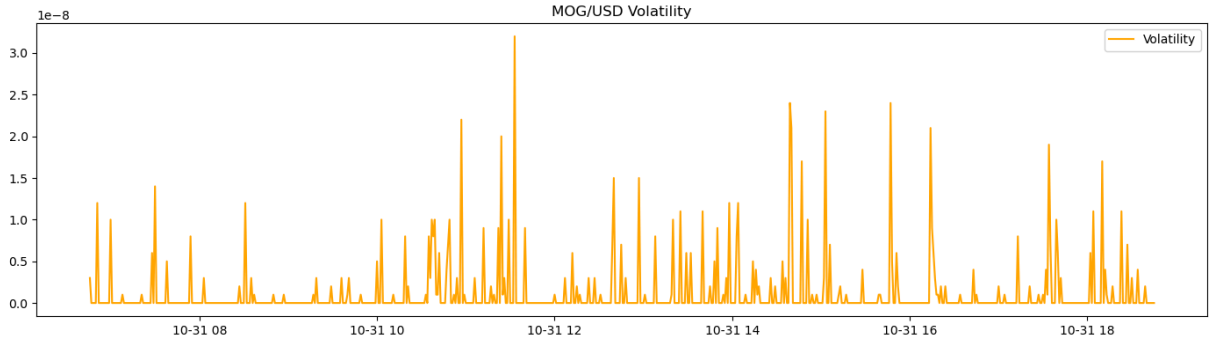


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[ODBC Driver 17 for SQL Server][SQL Server]There is insufficient memory available in
the buffer pool. (802) (SQLExecDirectW)')
[SQL: SELECT [INFORMATION_SCHEMA].[TABLES].[TABLE_NAME]
FROM [INFORMATION_SCHEMA].[TABLES]
WHERE [INFORMATION_SCHEMA].[TABLES].[TABLE_SCHEMA] = CAST(? AS NVARCHAR(max)) AND [I
NFORMATION_SCHEMA].[TABLES].[TABLE_TYPE] = CAST(? AS NVARCHAR(max)) ORDER BY [INFORM
ATION_SCHEMA].[TABLES].[TABLE_NAME]]
[parameters: ('dbo', 'BASE TABLE')]
(Background on this error at: https://sqlalche.me/e/20/f405)
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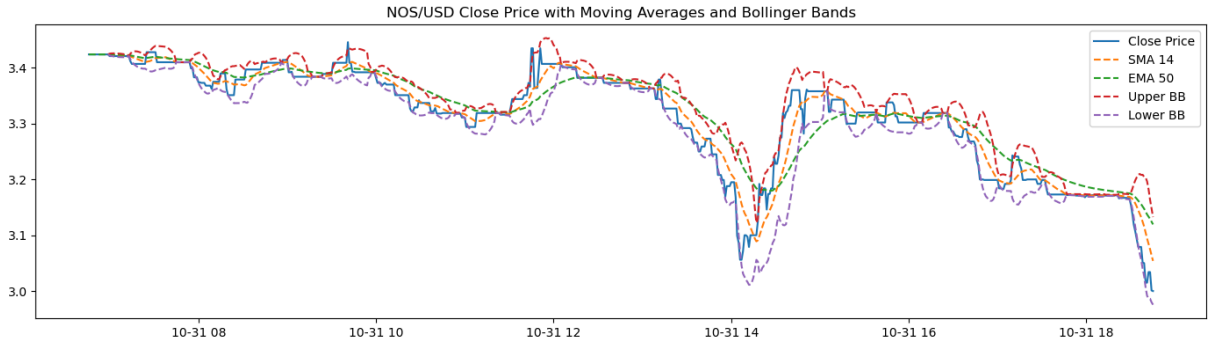

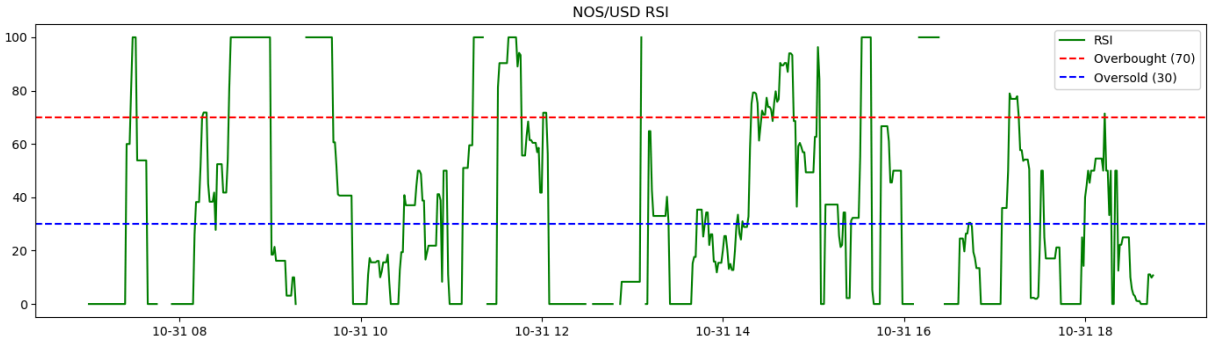

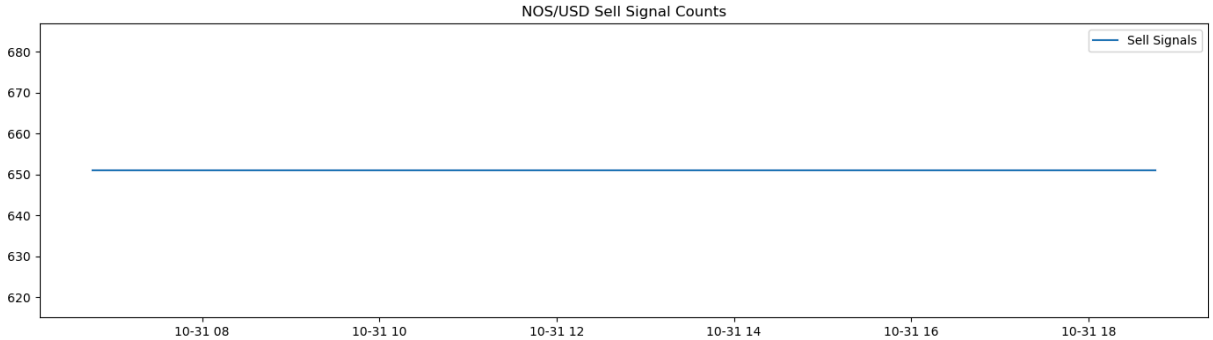

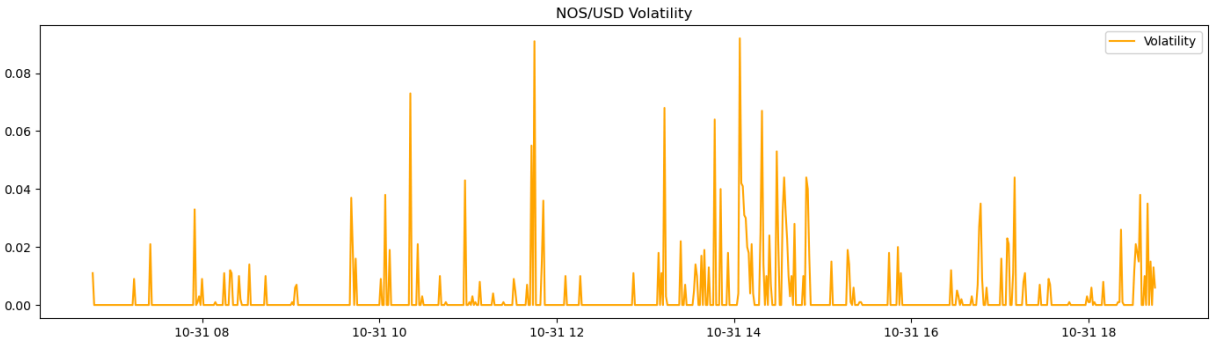


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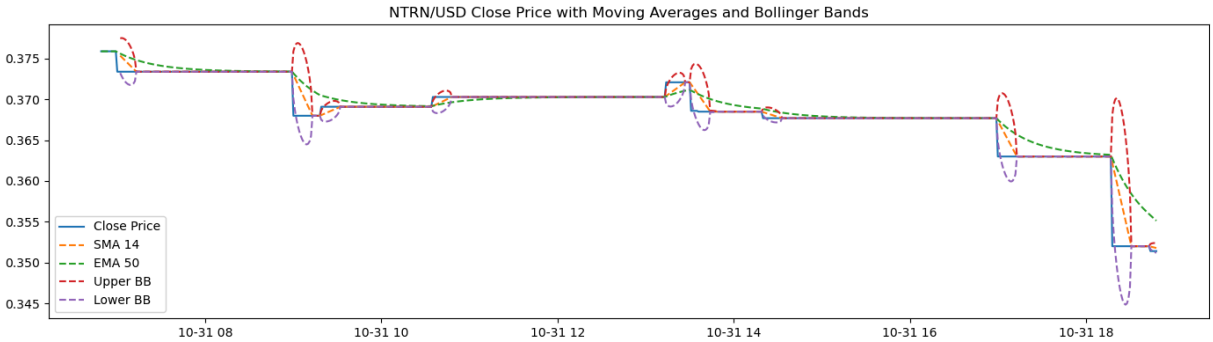

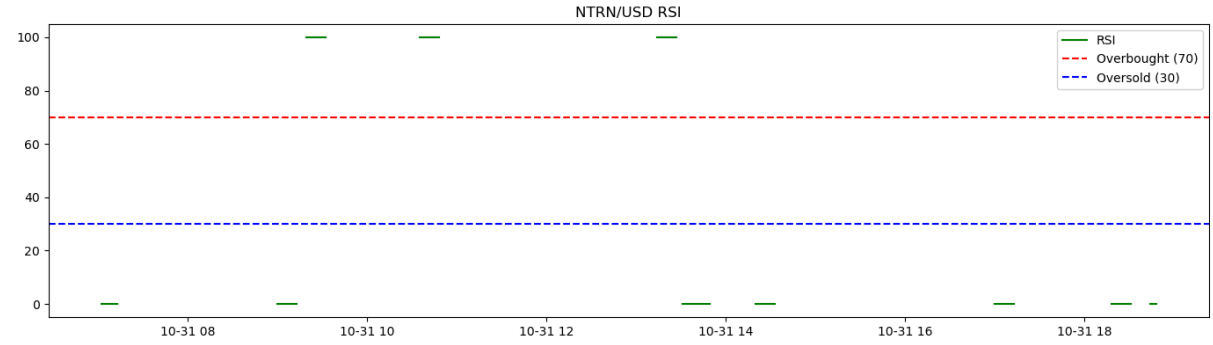

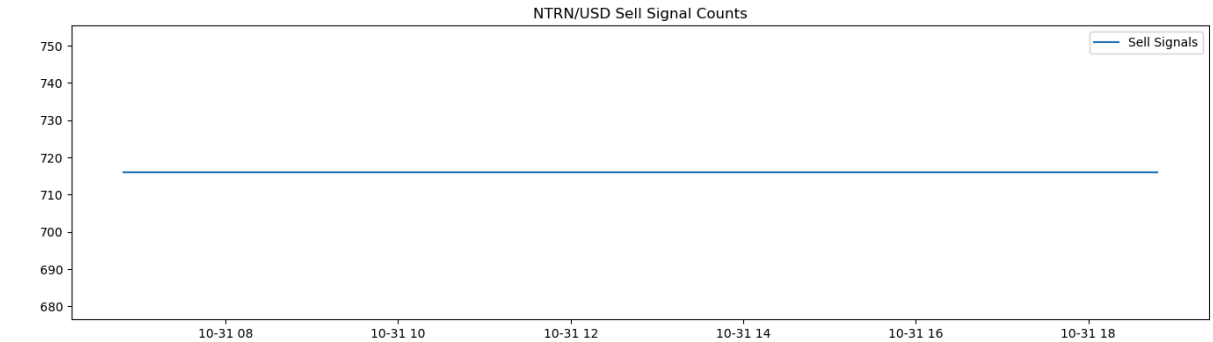

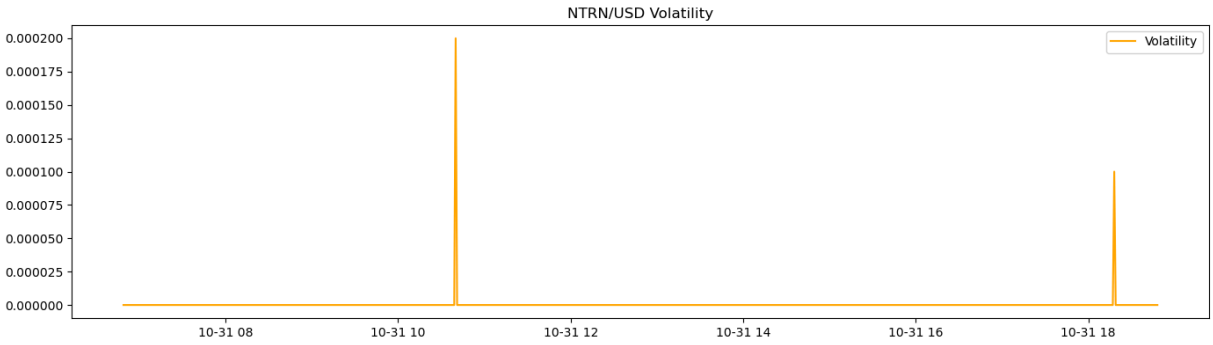


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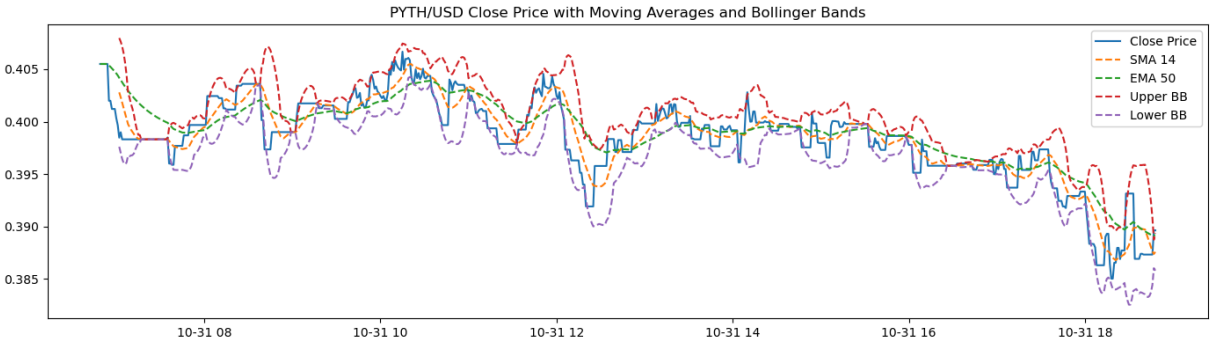

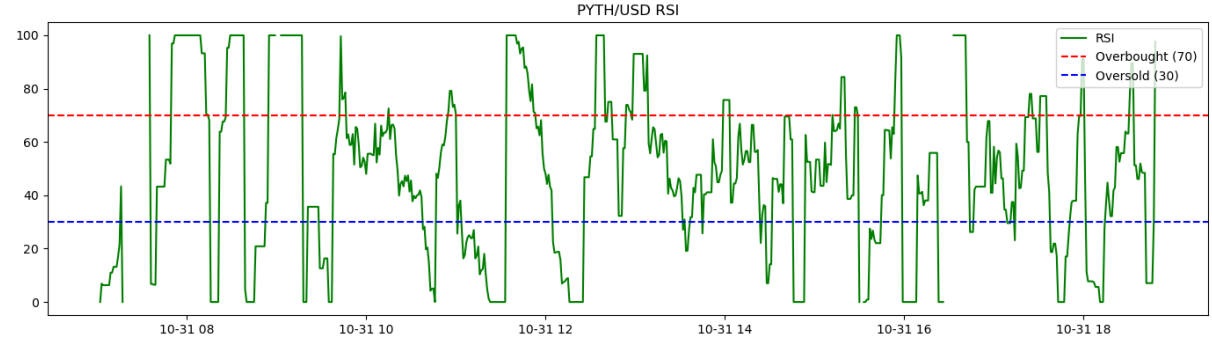

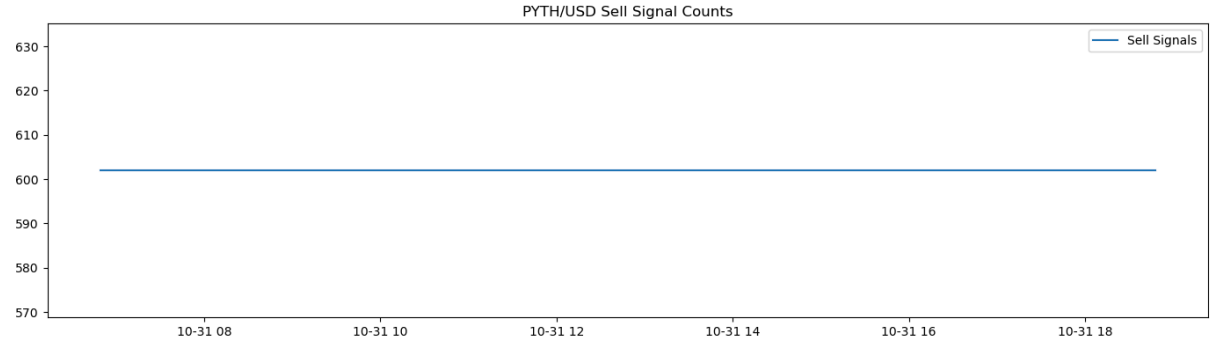

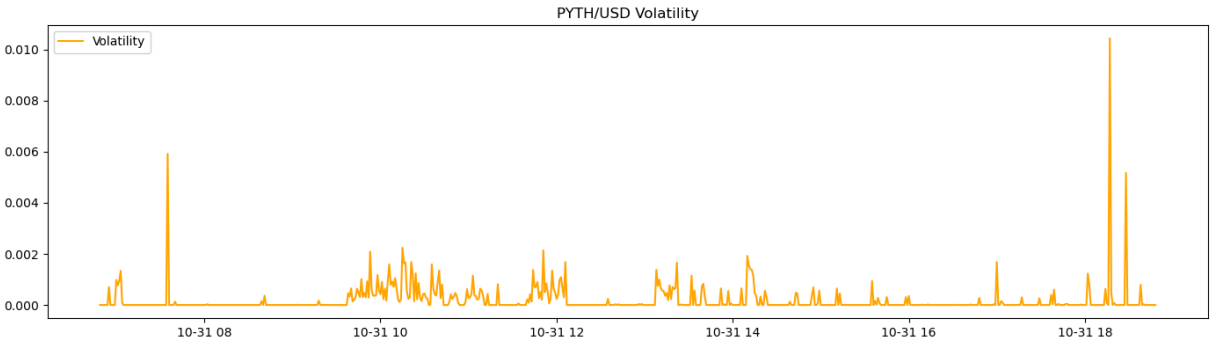


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Data saved to CSV file: RENDER_USD_data.csv
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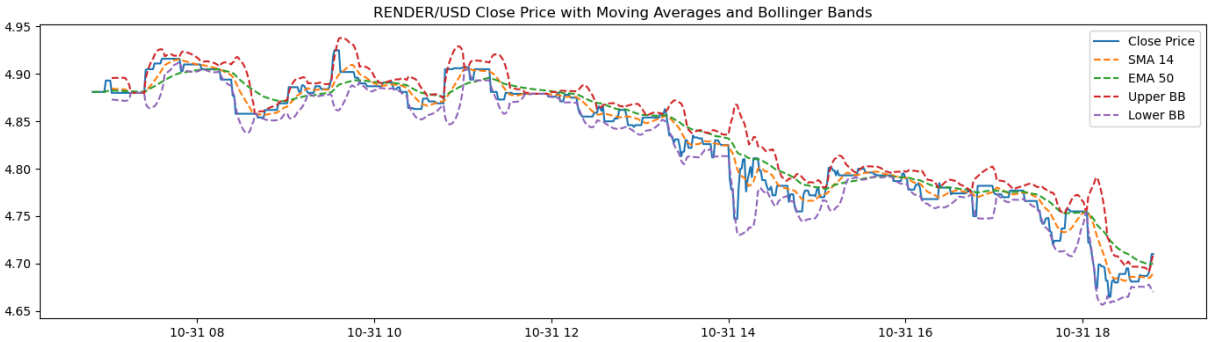

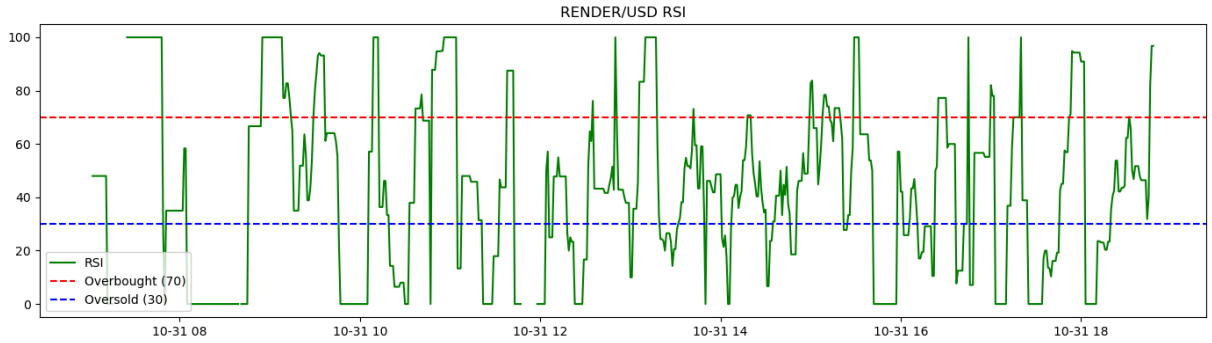

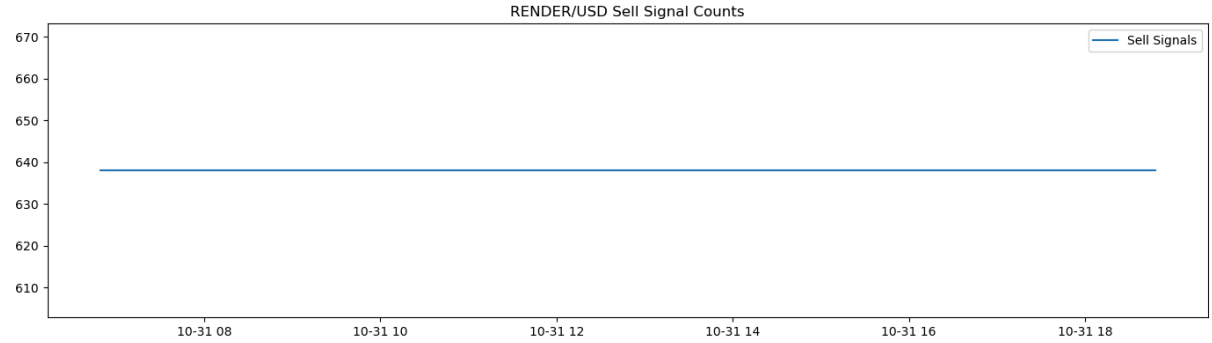

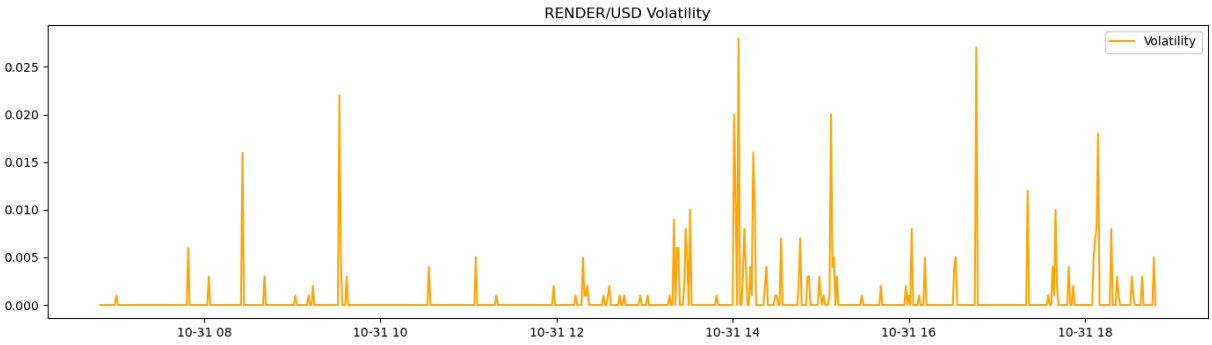


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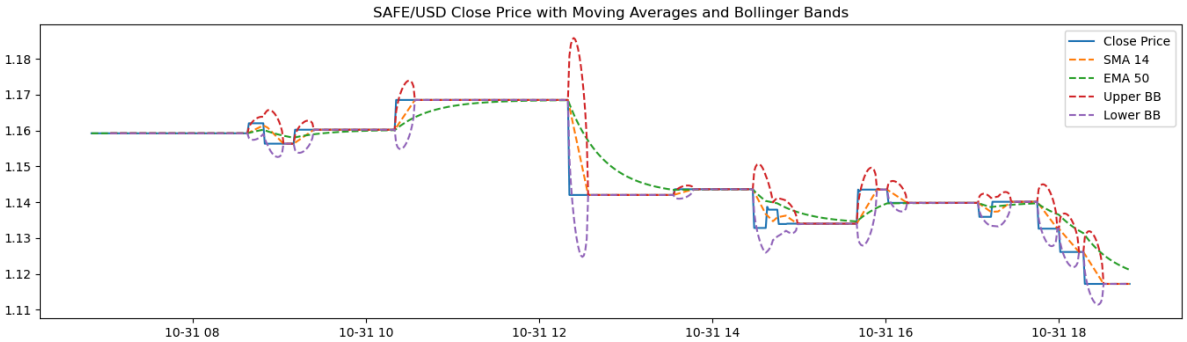

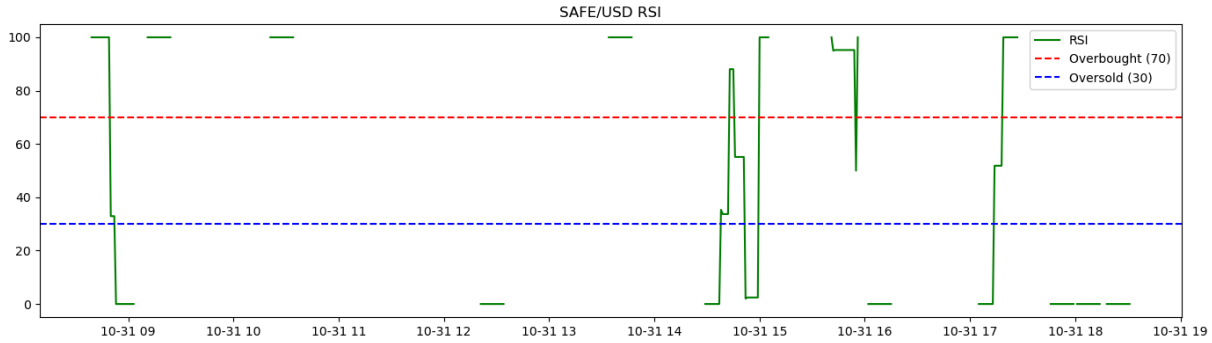

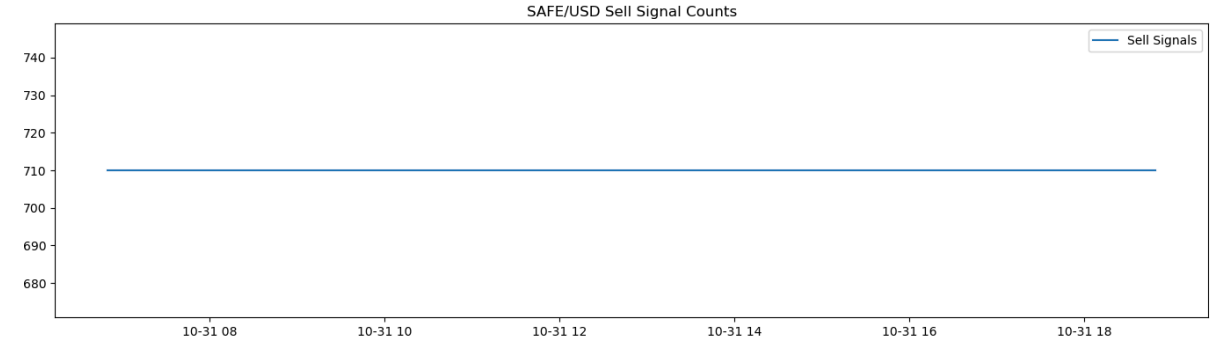

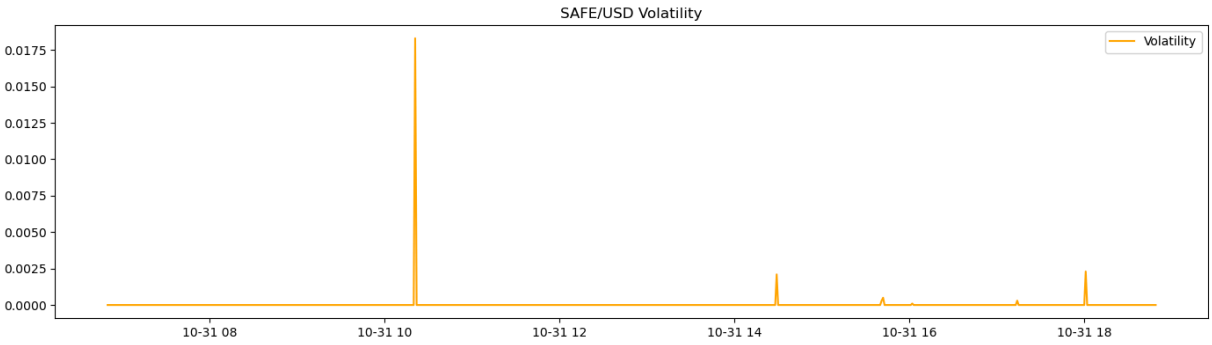


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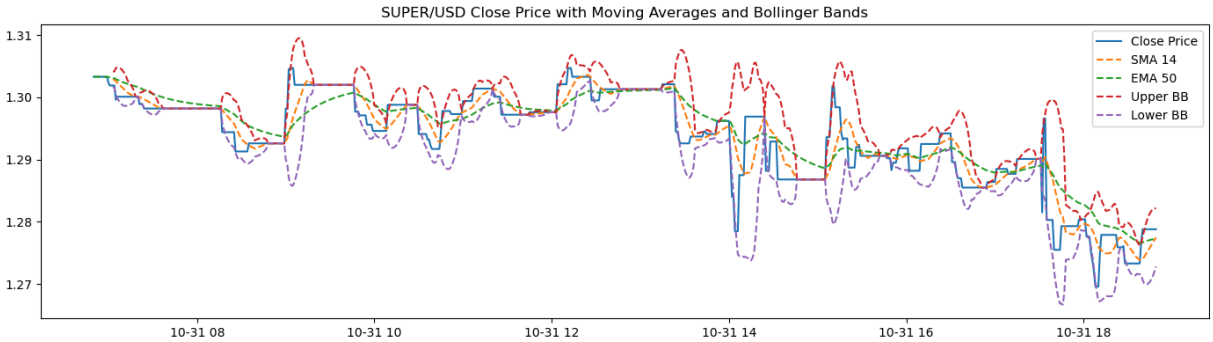

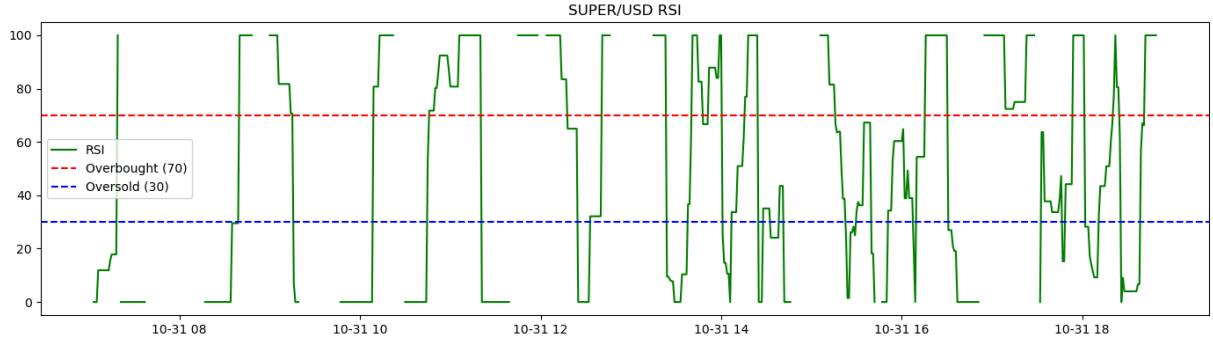

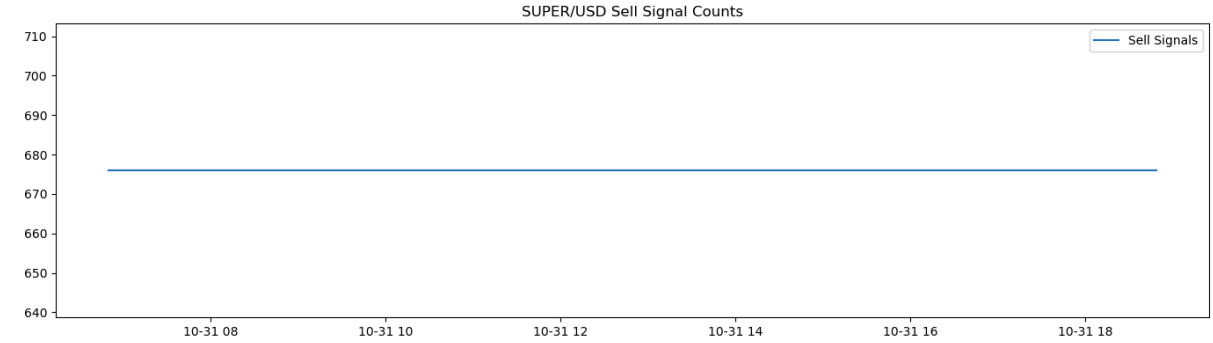

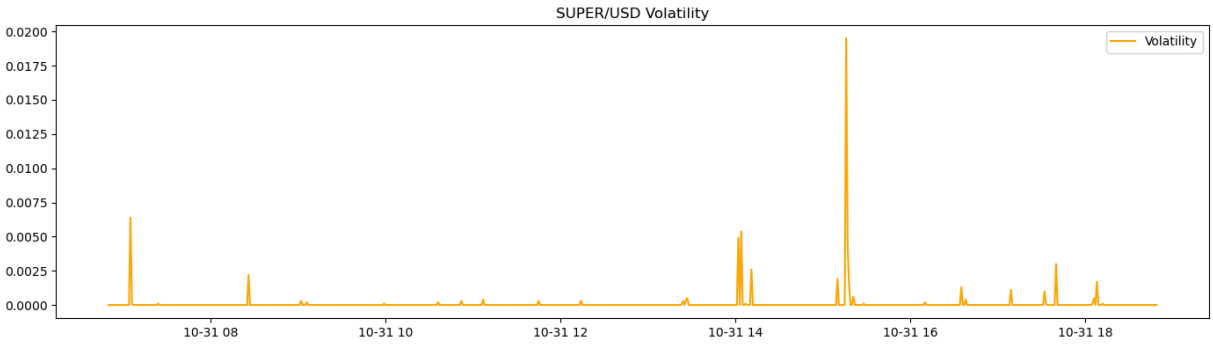


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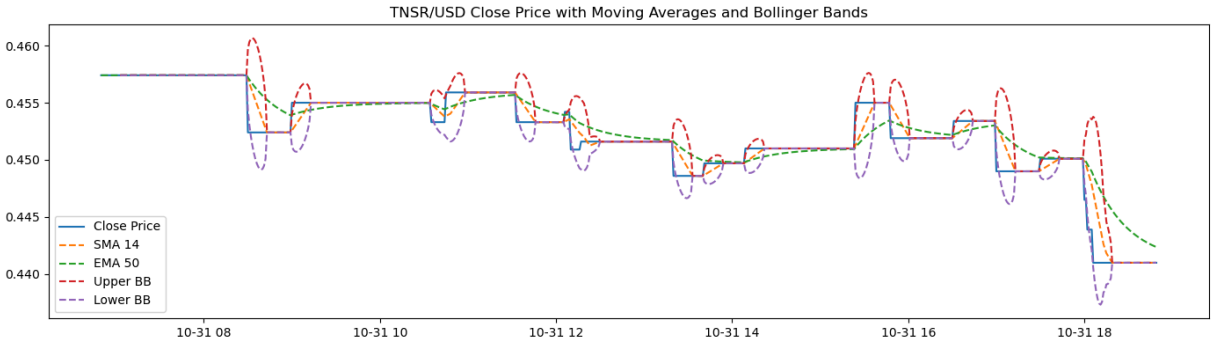

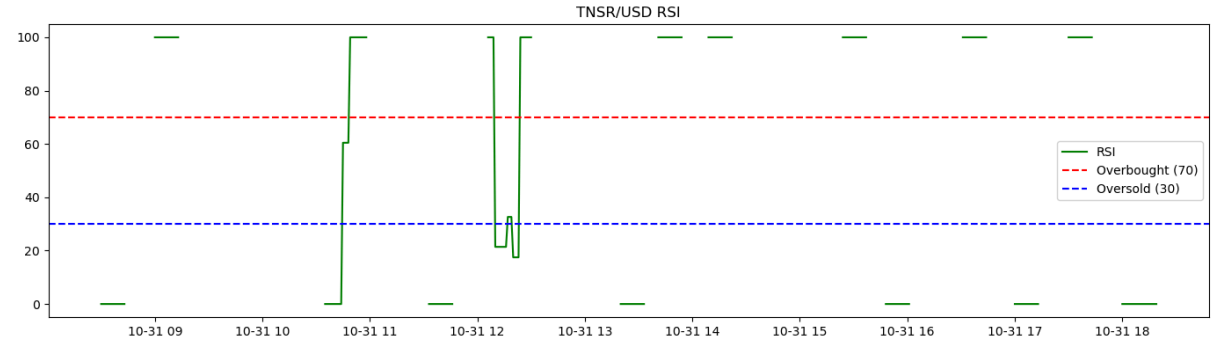

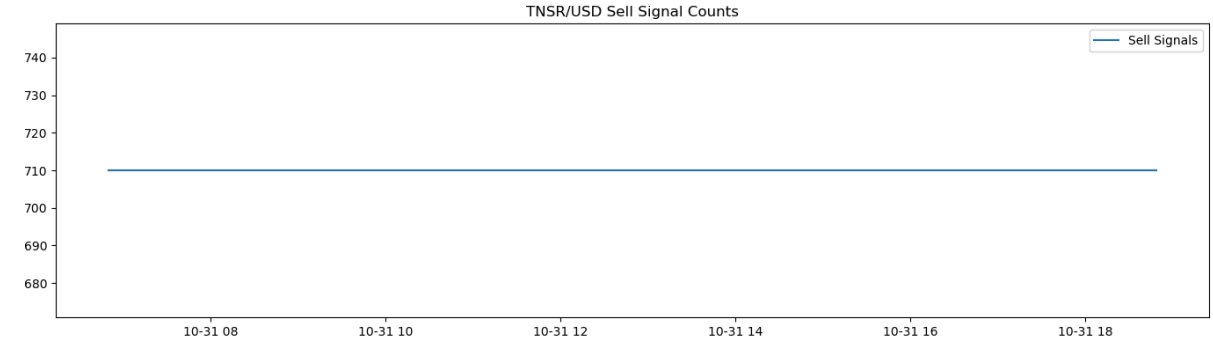

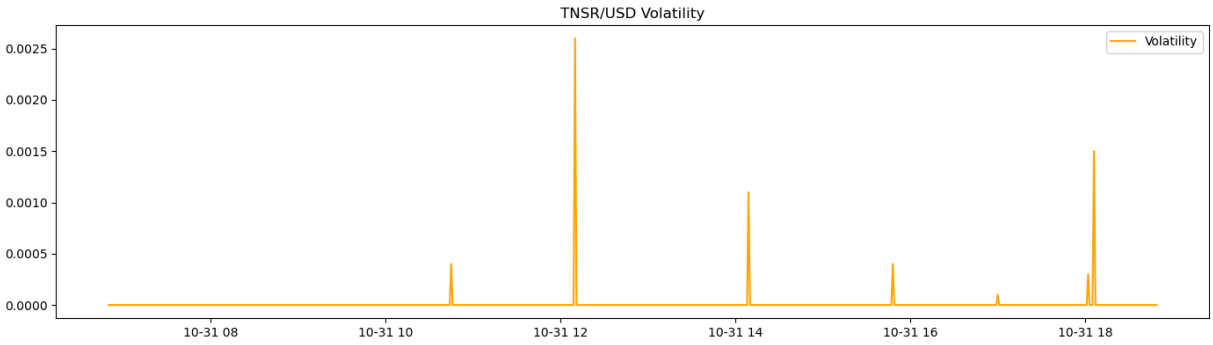


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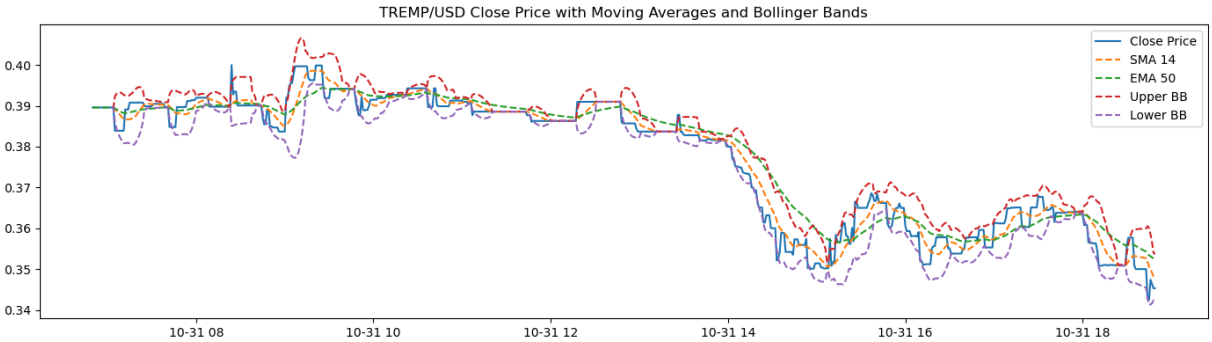

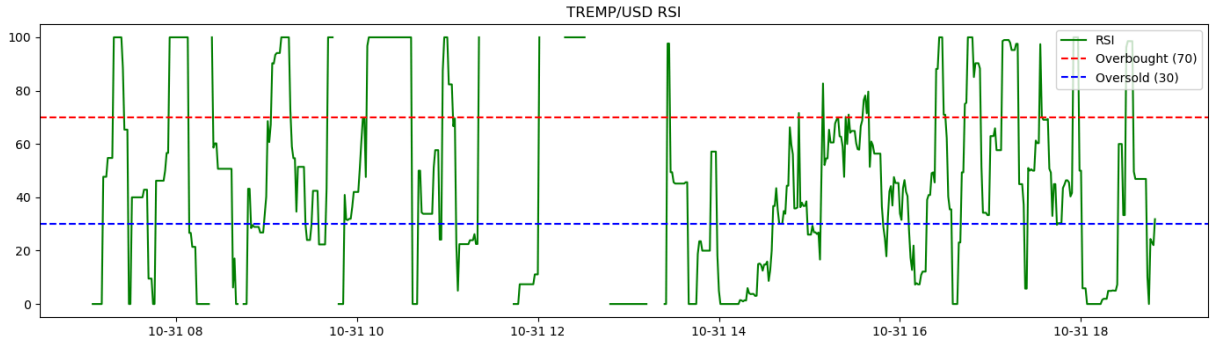

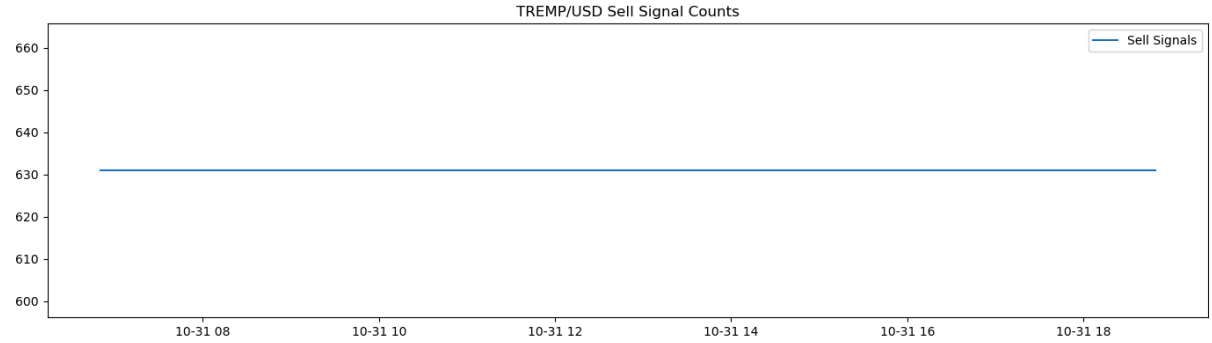

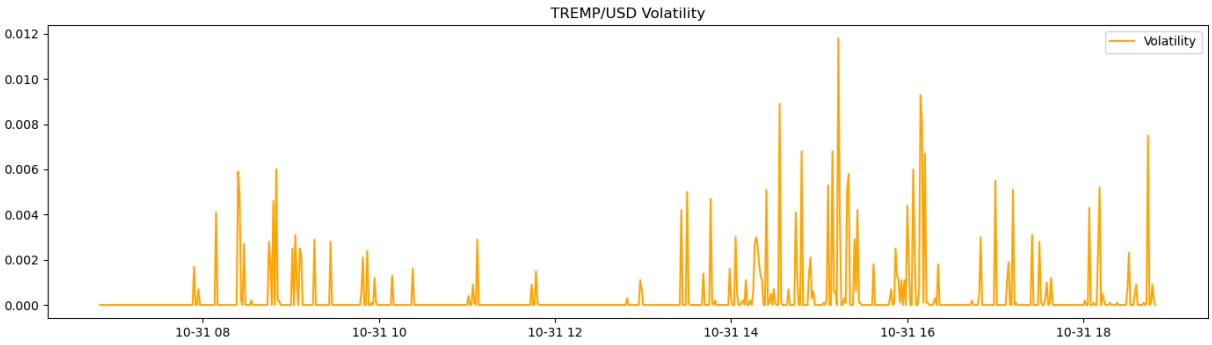


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Data saved to CSV file: XMR_USD_data.csv
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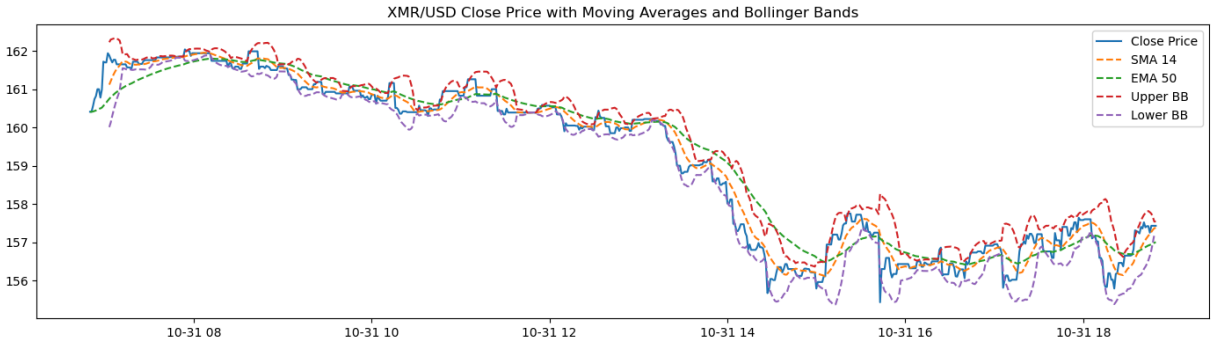

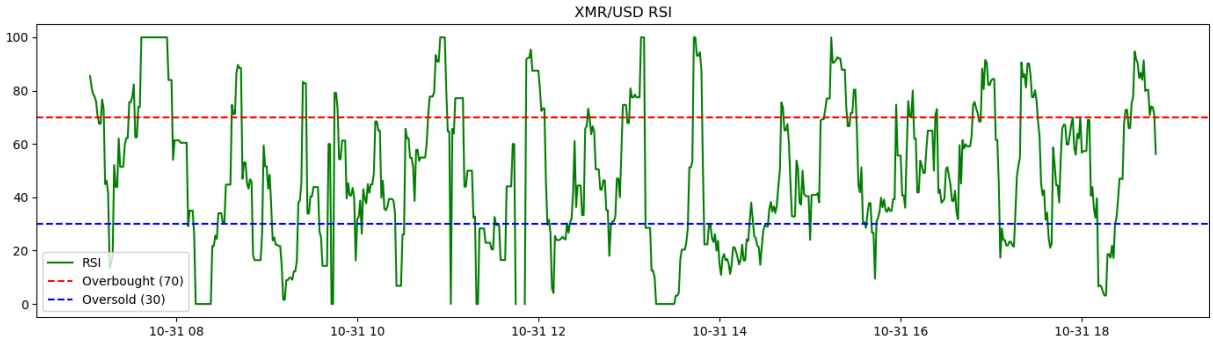

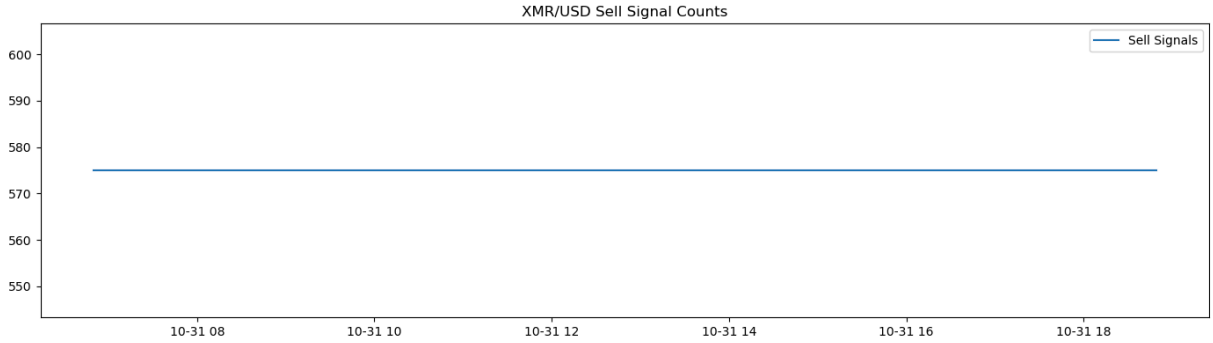

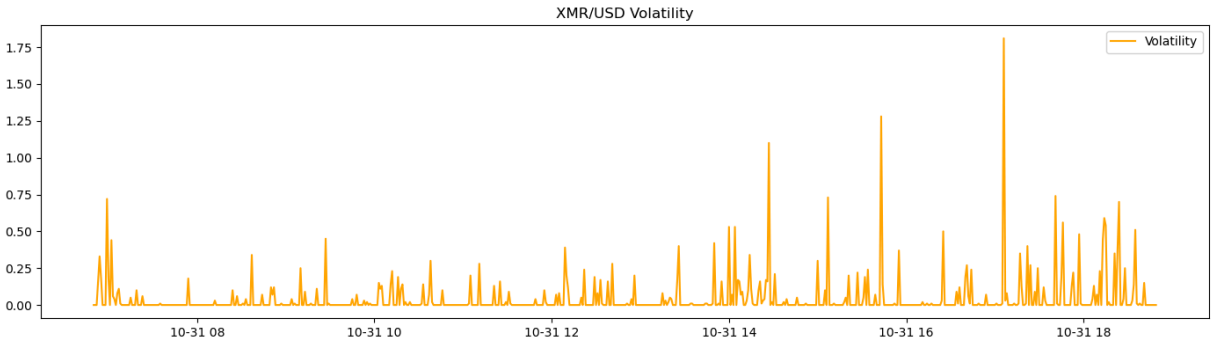


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Data saved to CSV file: ZRX_USD_data.csv
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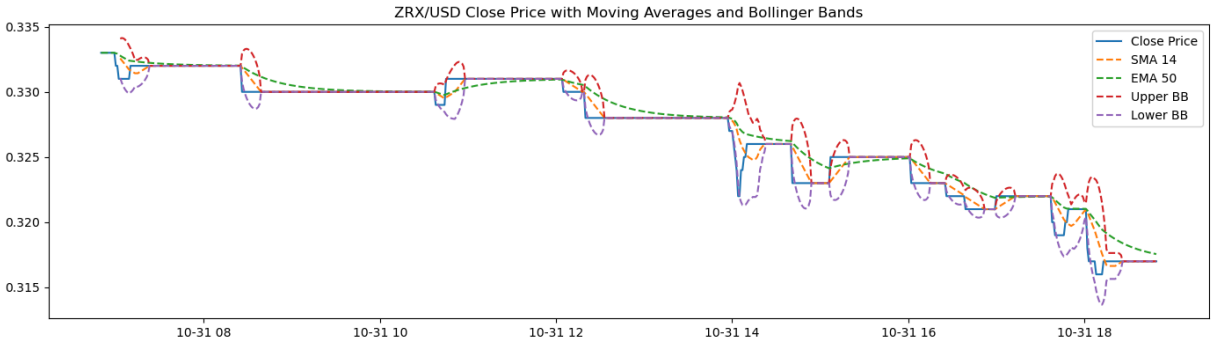

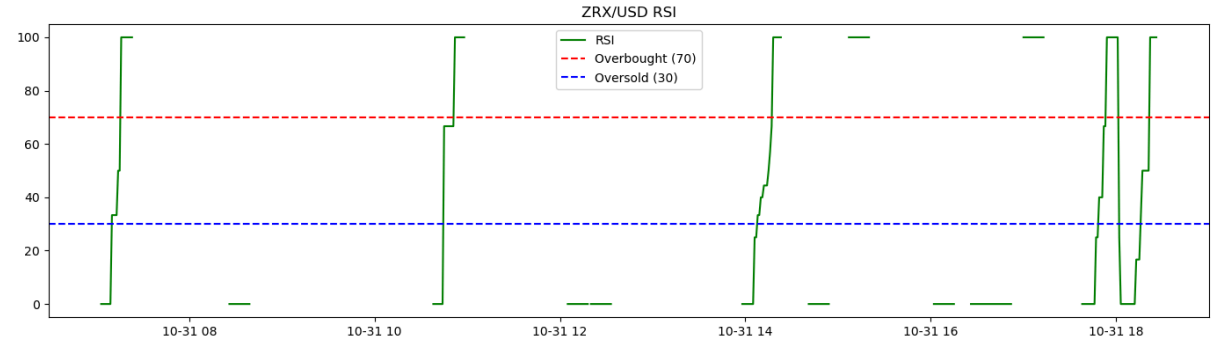

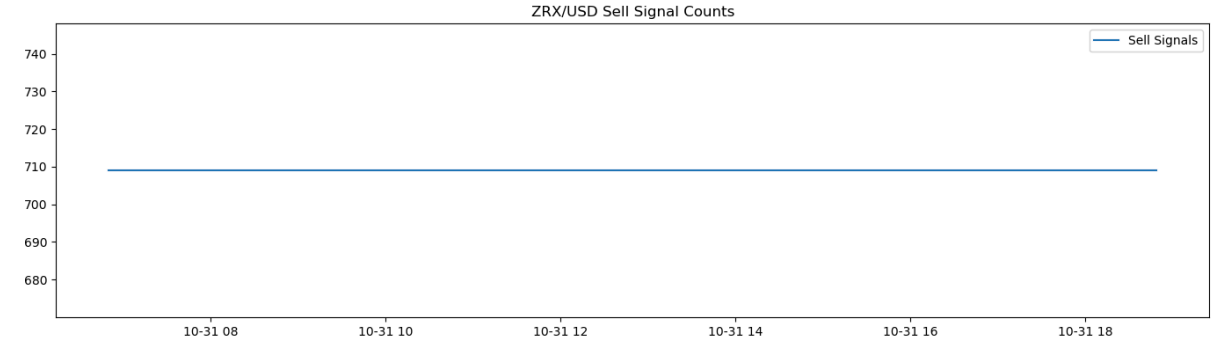

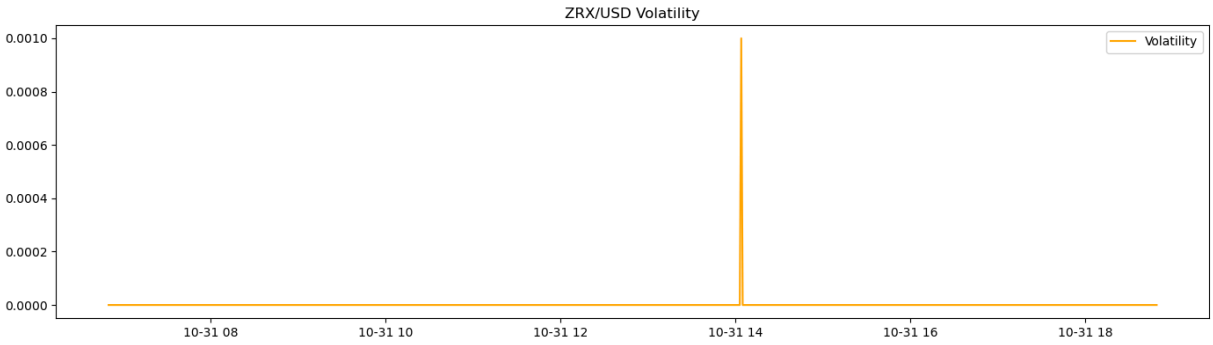


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Data saved to CSV file: LTC_USD_data.csv
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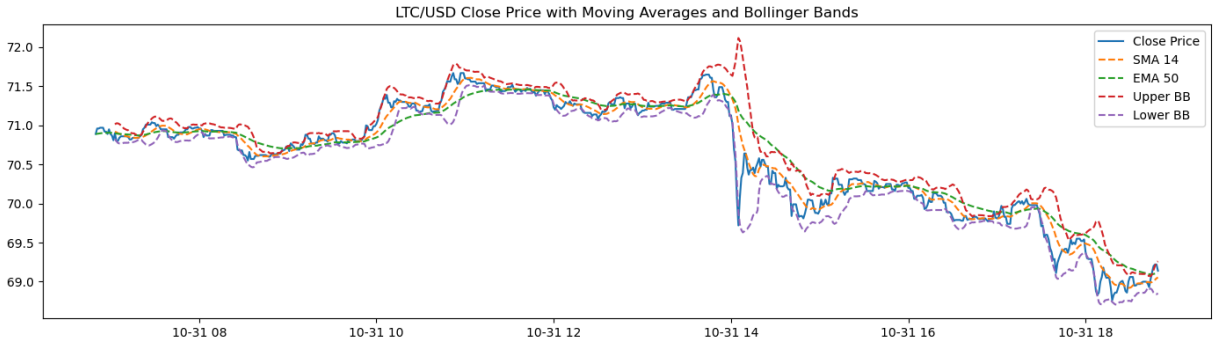

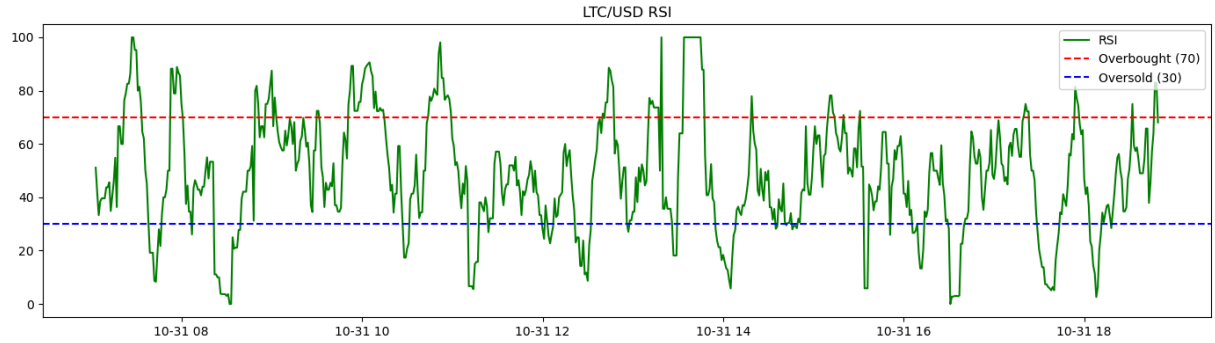

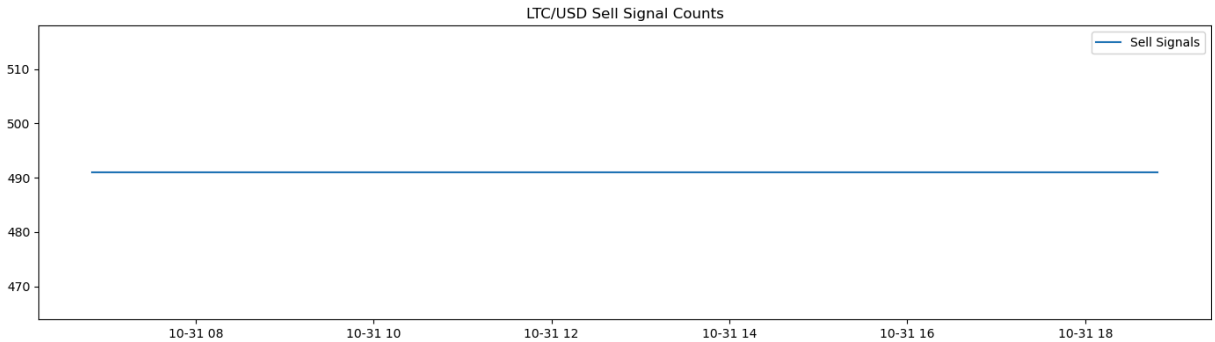

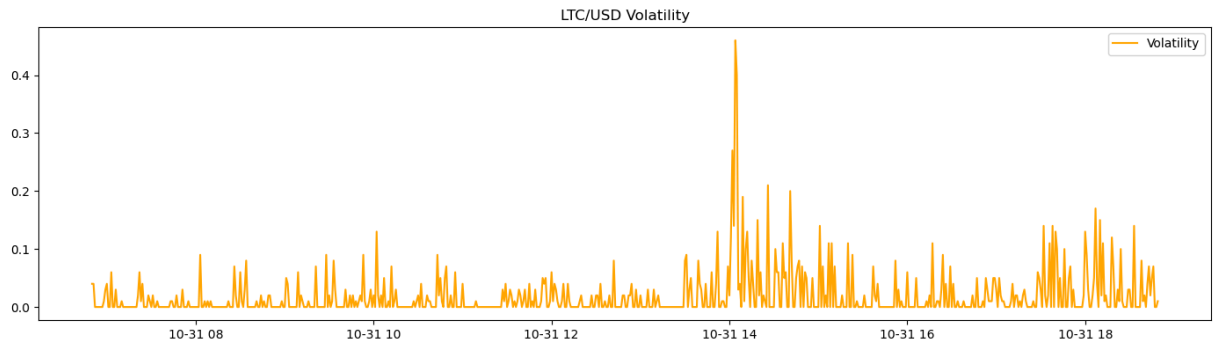


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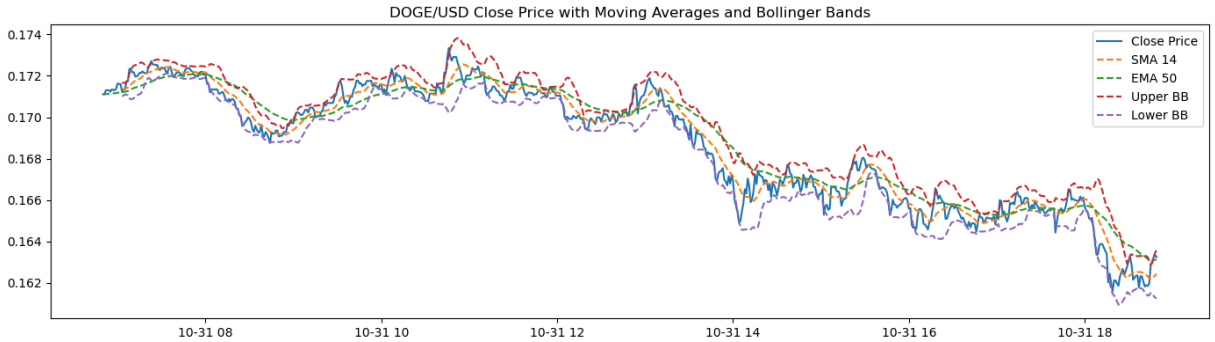
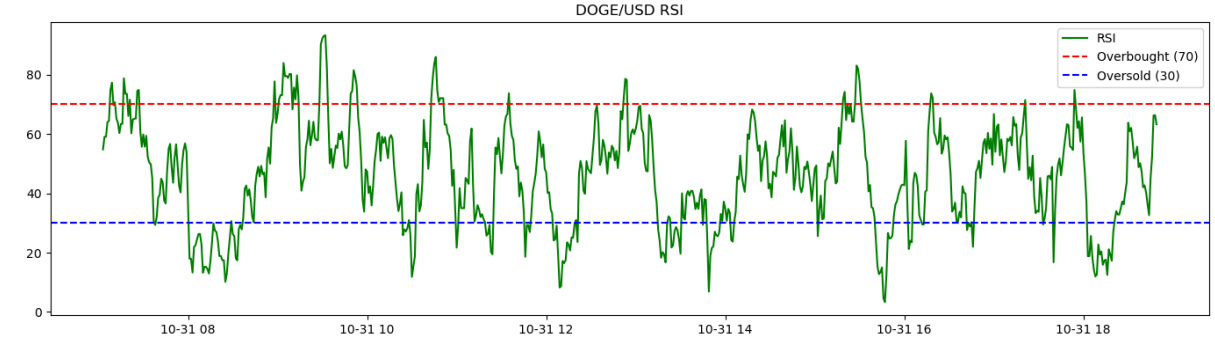
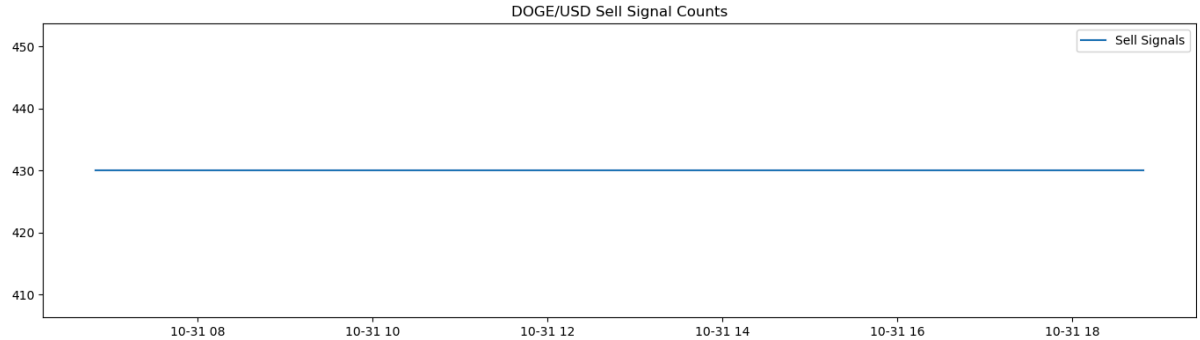
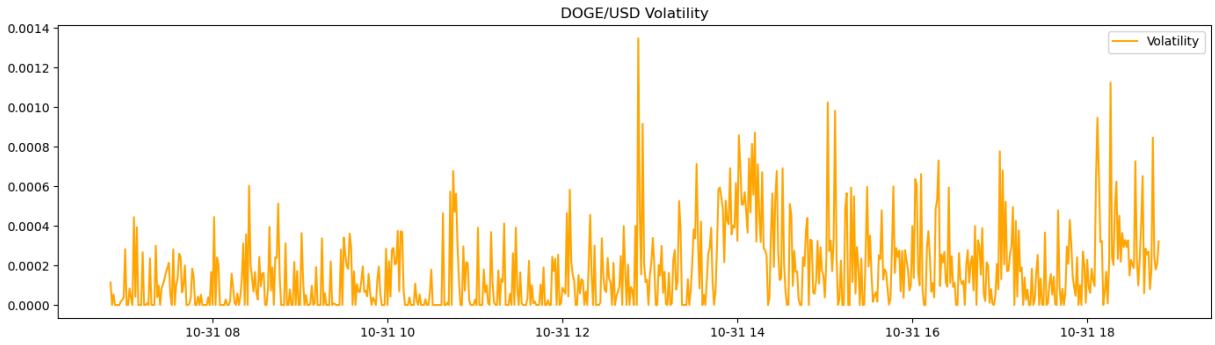

DOGE/USD Close Price with Moving Averages and Bollinger Bands
Close Price
SMA 14
EMA 50
Upper BB
Lower BB
0.174
0.172
0.170
0.168
0.166
0.164
0.162
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


DOGE/USD RSI
RSI
Overbought (70)
Oversold (30)
80
60
40
20
0
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


DOGE/USD Sell Signal Counts
Sell Signals
450
440
430
420
410
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18


DOGE/USD Volatility
Volatility
0.0014
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
10-31 08
10-31 10
10-31 12
10-31 14
10-31 16
10-31 18

```
Top 10 Symbols with Most 'SELL' Signals:
GMT/USD: 718 'SELL' signals
AUCTION/USD: 717 'SELL' signals
NTRN/USD: 716 'SELL' signals
MNT/USD: 715 'SELL' signals
SAFE/USD: 710 'SELL' signals
TNSR/USD: 710 'SELL' signals
ZRX/USD: 709 'SELL' signals
MEME/USD: 704 'SELL' signals
EUL/USD: 703 'SELL' signals
BODEN/USD: 697 'SELL' signals

Risk Classification:
ADA/USD: Low Risk
APE/USD: Low Risk
AUCTION/USD: Unknown Risk
BODEN/USD: Low Risk
BTC/USD: High Risk
CPOOL/USD: Low Risk
ETH/USD: High Risk
EUL/USD: Low Risk
GMT/USD: Low Risk
LINK/USD: Low Risk
USDT/USD: Low Risk
MEME/USD: Low Risk
MNT/USD: Low Risk
MOG/USD: Low Risk
NOS/USD: Low Risk
NTRN/USD: Low Risk
PYTH/USD: Low Risk
RENDER/USD: Low Risk
SAFE/USD: Low Risk
SUPER/USD: Low Risk
TNSR/USD: Low Risk
TREMP/USD: Low Risk
XMR/USD: Low Risk
ZRX/USD: Low Risk
LTC/USD: Low Risk
DOGE/USD: Low Risk
```

In [184…

```python
# Function to calculate volatility (standard deviation of returns)
def calculate_volatility(df):
    df['Returns'] = df['Close'].pct_change()
    return df['Returns'].std()
```

In [185…

```python
# Preprocess data to add volatility, if data is available
for crypto_name, df in all_crypto_data.items():
    if 'Close' in df.columns:  # Ensure 'Close' column exists before calculation
        df['Volatility'] = calculate_volatility(df)

app = dash.Dash(__name__)
```

In [186…

```python
# Check if all_crypto_data is empty and set default value
crypto_names = list(all_crypto_data.keys())
default_crypto = crypto_names[0] if crypto_names else None  # Fallback if no data
```

In [187…

```
# Function to create line chart for selected cryptocurrency's price data
def create_crypto_line_chart(df, crypto_name):
    if df.empty:
        return go.Figure()  # Return an empty figure if there's no data
    return px.line(df, x=df.index, y='Close', title=f'{crypto_name.capitalize()} Pr
```

In [188…

```
# Function to create bar chart for buy/sell counts
def create_buy_sell_chart(df, crypto_name):
    if df.empty:
        return go.Figure()  # Return an empty figure if there's no data
    buy_count = (df['Signal'] == 'BUY').sum()
    sell_count = (df['Signal'] == 'SELL').sum()
    fig = go.Figure(data=[
        go.Bar(name='BUY', x=[crypto_name], y=[buy_count], marker_color='green'),
        go.Bar(name='SELL', x=[crypto_name], y=[sell_count], marker_color='red')
    ])
    fig.update_layout(barmode='group', title=f'{crypto_name.capitalize()} Buy/Sell
    return fig
```

In [189…

```
# Dashboard layout
app.layout = html.Div([
    html.H1("Cryptocurrency Volatility Dashboard"),

    # Dropdown for selecting cryptocurrency
    dcc.Dropdown(id='crypto-selector',
                 options=[{'label': name, 'value': name} for name in crypto_names],
                 value=default_crypto,  # Set default to first symbol or None
                 style={'width': '50%'}),

    # Show a message if no cryptocurrencies are available
    html.Div(id='no-data-message', style={'color': 'red', 'display': 'none'}, child

    # Dropdown for selecting volatility level
    dcc.Dropdown(id='volatility-selector',
                 options=[{'label': 'All', 'value': 'All'},
                          {'label': 'High Volatility', 'value': 'High'},
                          {'label': 'Low Volatility', 'value': 'Low'}],
                 value='All',  # Default value
                 style={'width': '50%', 'margin-top': '10px'}),

    # Graph to display selected cryptocurrency's price data
    dcc.Graph(id='price-chart'),

    # Graph to display Buy/Sell signal count
    dcc.Graph(id='buy-sell-chart')
])
```

In [190…

```
# Callback to update charts based on selected cryptocurrency and volatility level
@app.callback(
    [dash.dependencies.Output('price-chart', 'figure'),
     dash.dependencies.Output('buy-sell-chart', 'figure'),
     dash.dependencies.Output('no-data-message', 'style')],
    [dash.dependencies.Input('crypto-selector', 'value'),
     dash.dependencies.Input('volatility-selector', 'value')]
```

```
)
def update_charts(crypto_name, volatility_level):
    if crypto_name is None:
        return go.Figure(), go.Figure(), {'display': 'block'}  # Show no data messa

    # Filter the DataFrame for the selected cryptocurrency
    df = all_crypto_data.get(crypto_name, pd.DataFrame()).copy()  # Ensure df is a

    # Filter by volatility level if selected
    if volatility_level == 'High':
        df = df[df['Volatility'] > df['Volatility'].median()]
    elif volatility_level == 'Low':
        df = df[df['Volatility'] <= df['Volatility'].median()]
```

In [191…

```
import dash

# Initialize the Dash app and Flask server
app = dash.Dash(__name__)
server = app.server  # Get the underlying Flask server

# Define a placeholder function for chart generation
def create_crypto_line_chart(df, crypto_name):
    # Implementation for creating the line chart
    pass

def create_buy_sell_chart(df, crypto_name):
    # Implementation for creating the buy/sell chart
    pass

# Generate charts (Placeholder function calls)
def generate_charts(df, crypto_name):
    price_chart = create_crypto_line_chart(df, crypto_name)
    buy_sell_chart = create_buy_sell_chart(df, crypto_name)
    return price_chart, buy_sell_chart, {'display': 'none'}  # Hide no data message

if __name__ == '__main__':
    try:
        # Run the Dash server
        app.run_server(debug=True, port=8051)
    except OSError as e:
        print(f"Error: {e}")
    finally:
        # Close the Flask server to release the port
        with server.app_context():
            server.do_teardown_appcontext()
        print("Server has been shut down.")
```

```
---------------------------------------------------------------------------
NoLayoutException                         Traceback (most recent call last)
NoLayoutException: The layout was `None` at the time that `run_server` was called.
Make sure to set the `layout` attribute of your application
before running the server.
```

Server has been shut down.