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Coding Assignment Report

I. Choosing a second indicator

Moving Average (MA) indicator was used as my second signal to supplement RSI. One of the factors that Moving Average may be the most suitable supplementary indicator is because there may be some divergences when only using RSI, which may lead to false trends. For instance, a price may show a continuing trend, while the RSI is indicating a change in trend.

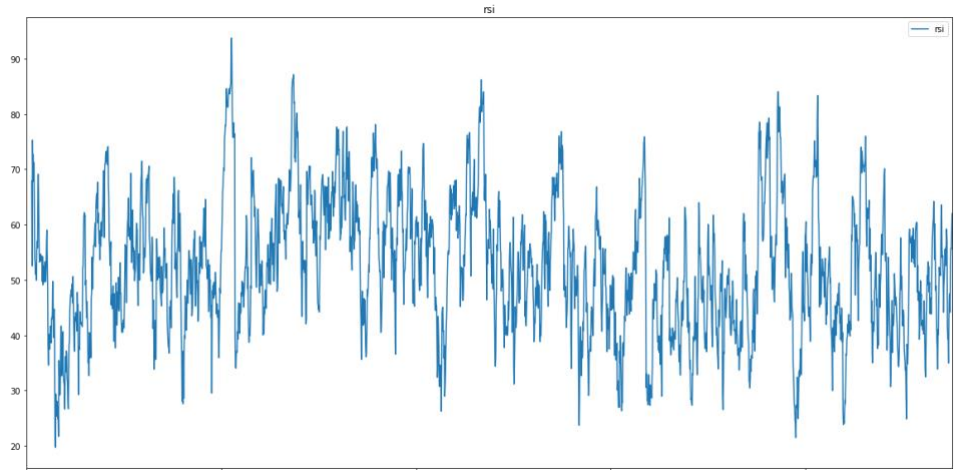


Figure 1: RSI Graph

By using the MA as a secondary indicator, it can add support to detect false trends and smooths out the chart.

$$MA_n = \frac{\sum_{i=1}^{n} D_i}{n}$$

Where,

n = number of periods in the moving average

D_i = demand in period i

Figure 2: Moving average formula

In the two moving average strategy, 5 moving average and 125 moving average were used. Where the condition to buy is when the value of the 5 MA overlaps the 125 MA, while on the other side, the condition to sell is when the 125 MA overlaps the 5 MA. 125 MA is used to support the "choppiness" of the 5 MA.

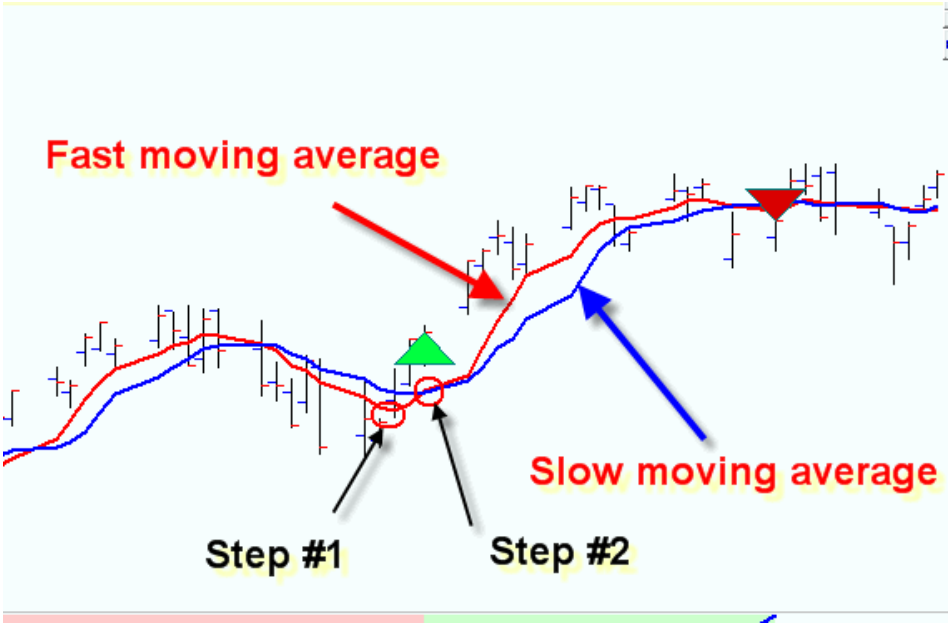


Figure 3: 2 Moving Average strategy

Usually, when a fast-moving average is overlapping the slow-moving average, it indicates an upward trend (outputs a 1 signal in the code), while when a slow moving average is overlapping the fast moving average, it indicates a downward trend (outputs a -1 signal in the code).

```
#define second_signal
def MovingAvg(data):
    data['MA5'] = data['Adj Close'].rolling(5).mean() # Create a new column containing 5 Moving Average values
    data['MA125'] = data['Adj Close'].rolling(125).mean() # Create a new column containing 125 Moving Average values

    data.dropna() # Remove empty data

    shares = []

    for i in data.index:
        if data.loc[i, 'MA5'] > data.loc[i, 'MA125']: # Buy if 20 MA graph value is larger than 50 MA graph
            shares.append(1)
        else:  # Sell if 20 MA graph value is smaller than 50 MA graph
            shares.append(-1)

    return shares
```

II. Trading Strategy

Momentum trading strategy is used.

Momentum *investing seeks to take advantage of market volatility by taking short-term positions in stocks going up and selling them as soon as they show signs of going down (Barone, 2019).*

By using two signals (RSI and MA) as an indicator to buy, sell, or hold. The trading strategy is defined in the following term:

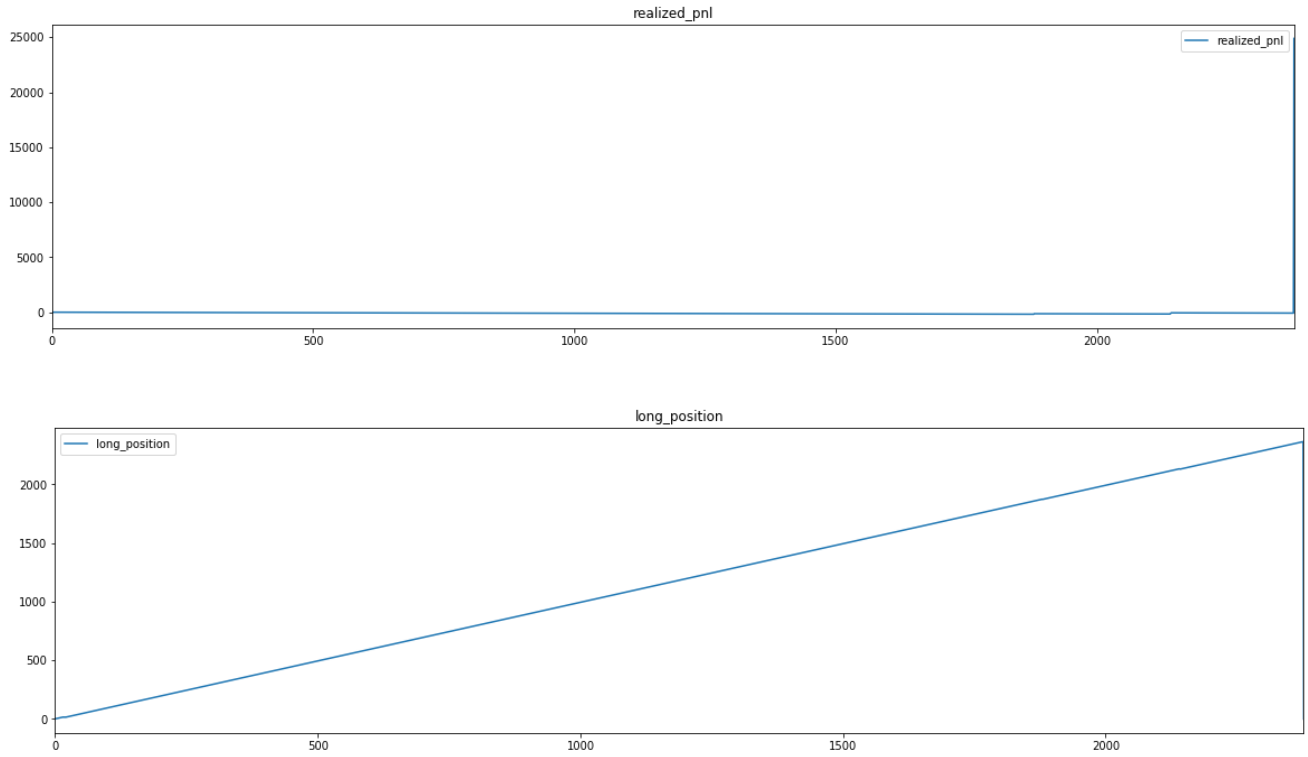
"*Always buy when the 20 MA value is over the 50 MA value or when the RSI indicates an oversold,*
Always sell when the 50 MA value is over the 20 MA value or when the RSI indicates an overbought."

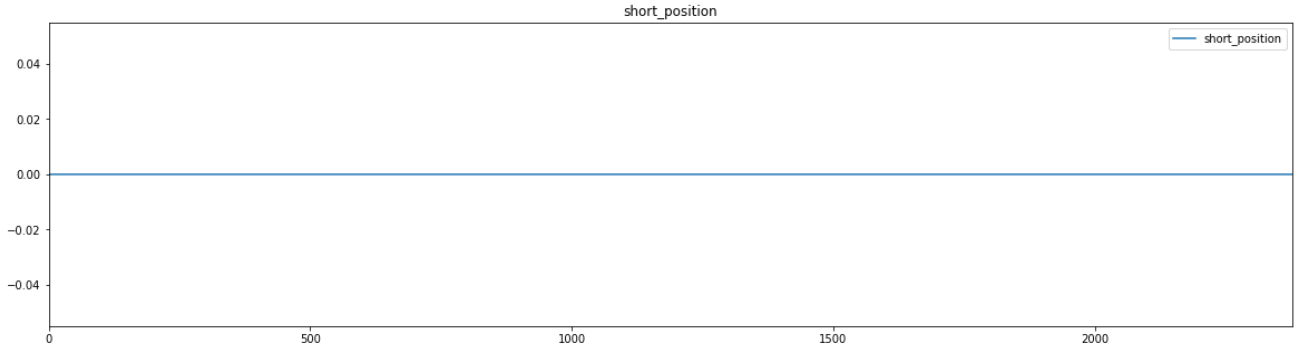
```
signal1 = RSI(data, rsi_period)
signal2 = MovingAvg(data)

trades = []

for ie in data.index:
    if signal1[ie] == 1 or signal2[ie] == 1: # Always buy when one of them is buy
        trades.append(1)
    elif signal1[ie] == -1 or signal1[ie] == -1: #Always sell when one of them is sell
        trades.append(-1)
    else:
        trades.append(1)
```

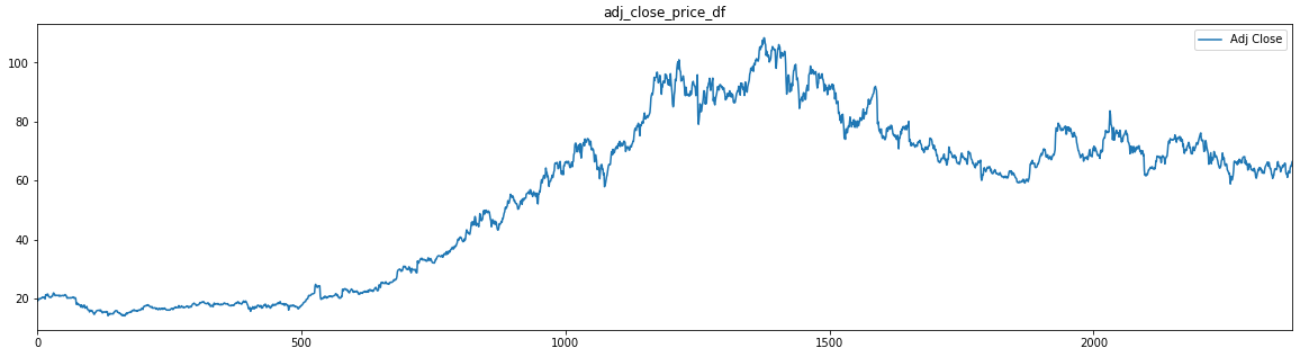
Figure 4: My trading algorithm

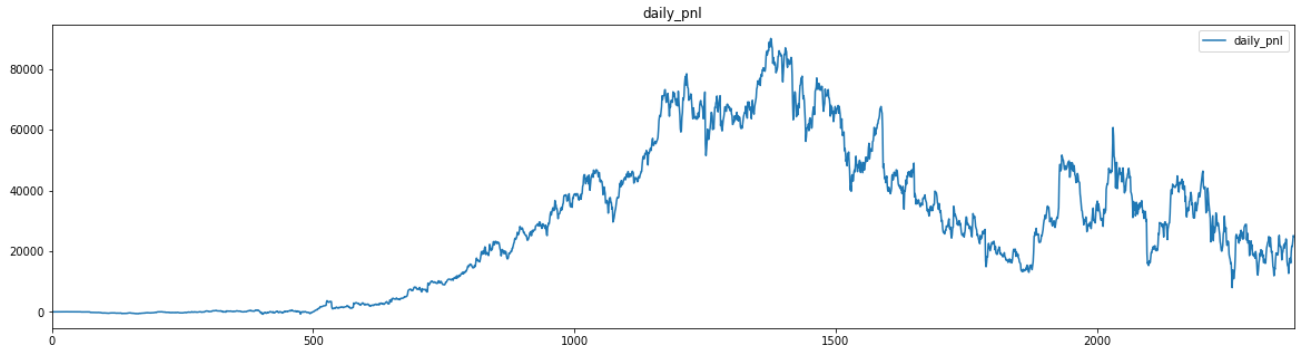
Since the RSI may imply a false trend, MA is used as a support to justify a buy or a sell.

III. Result










```
total earnings 24891.617415003897
stdev: 24118.361439026317
```

Citation:

Barone, A. (2019, June 14). Introduction to Momentum Trading. Retrieved from https://www.investopedia.com/trading/introduction-to-momentum-trading/