

Manual Strategy Report

Machine Learning for Trading

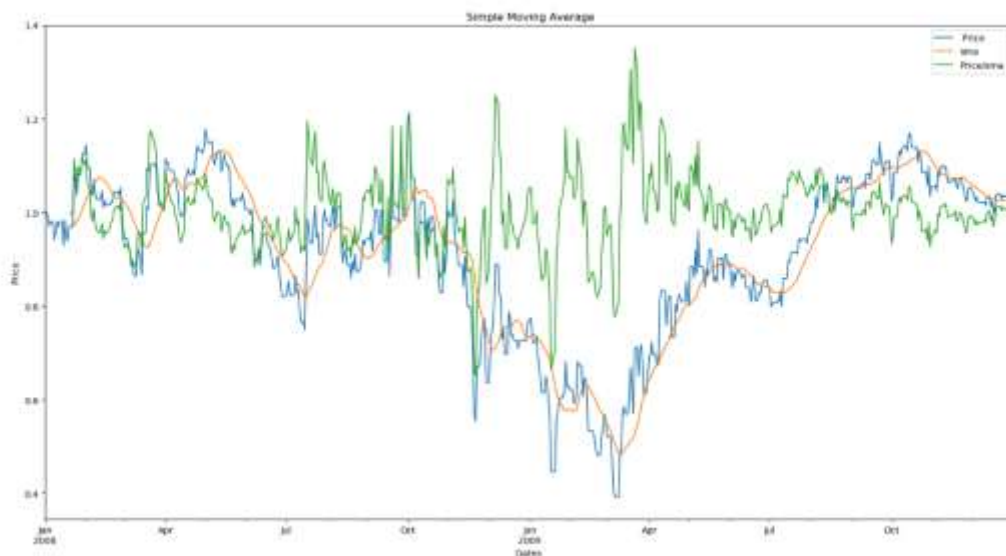
Abstract

This project is to train the stock shares using technical indicators, manual strategy with trial and error limiting points and best possible strategy.

Indicators

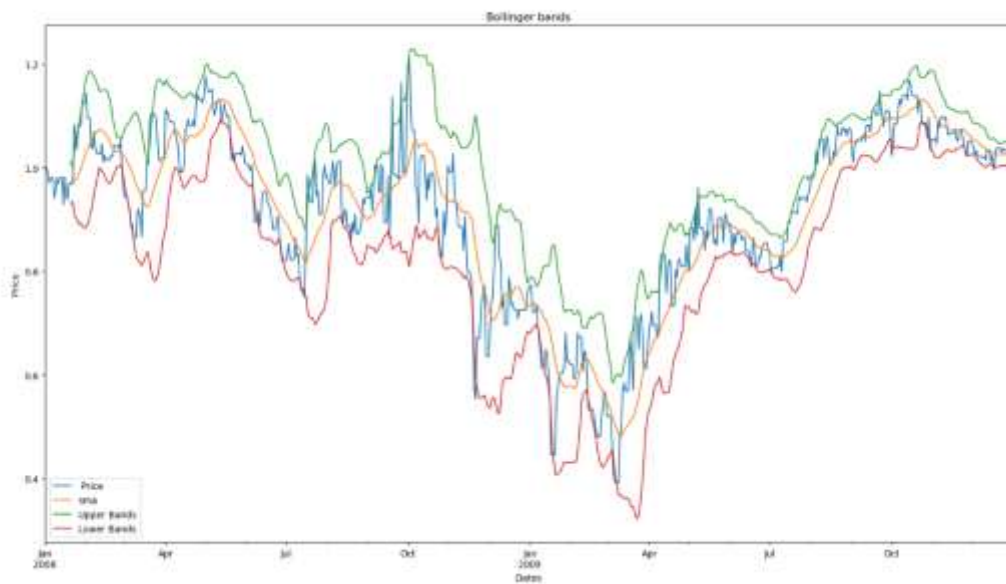
Simple moving average

For technical indicators, simple moving average (SMA), Bollinger Bands (BB) and momentum are selected for this manual strategy assignment. The simple moving average window size is taken into account of 20 days and the mean values are used for simple moving average indicator. The graph is as shown below.



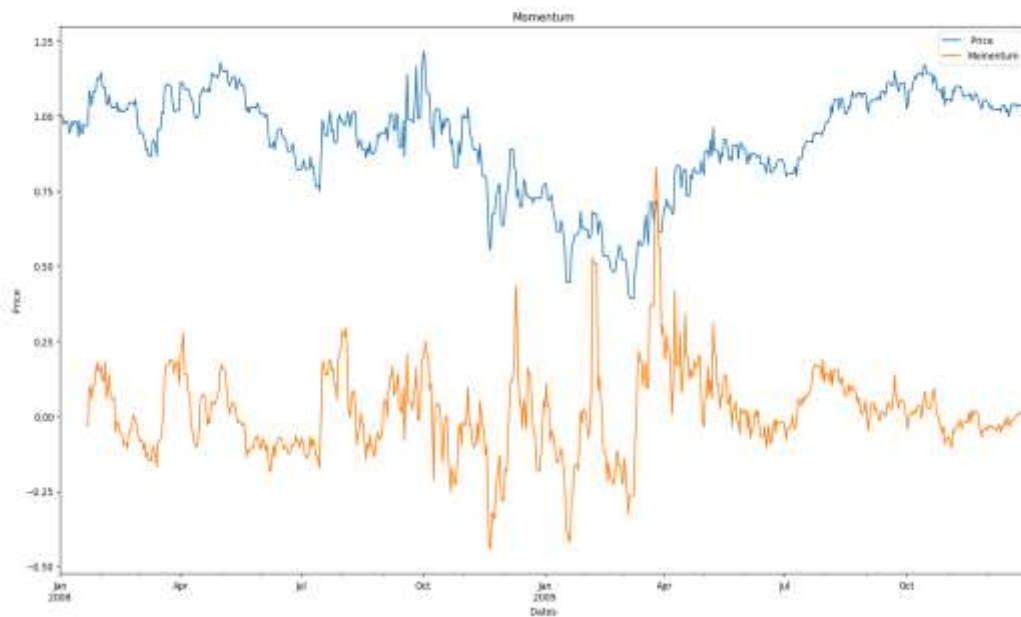
Bollinger Bands

Bollinger band has upper and lower bounds to observe the price going back to its average moving price. The theory states that when the price is out of the bounds, the price would move back to its origin average price. The bands are calculated with the difference between price and simple moving average divided by twice of the standard deviation values.



Momentum

Momentum predicts if the price should keep going up or down with its inertia movement. The momentum is evaluated using $\text{price} / \text{price.shift}$ where price needs to be normalized.



Best possible strategy

To calculate the best profit, the future is peeked with the stock price low or high consideration. The final value of stock holding is 0 or -1000, then the stock should be long assuming the future price is higher than current one. When the future price is lower, the final value of stock holding is 0 or +1000.

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In Sample stats:
Sharpe Ratio of Fund: 11.3126442733
Sharpe Ratio of SPY : -0.137143508209

Cumulative Return of Fund: 4.75451488361
Cumulative Return of SPY : -0.194324631101

Standard Deviation of Fund: 0.00491705718391
Standard Deviation of SPY : 0.0219321223021

Average Daily Return of Fund: 0.00350404051964
Average Daily Return of SPY : -0.000189476626317

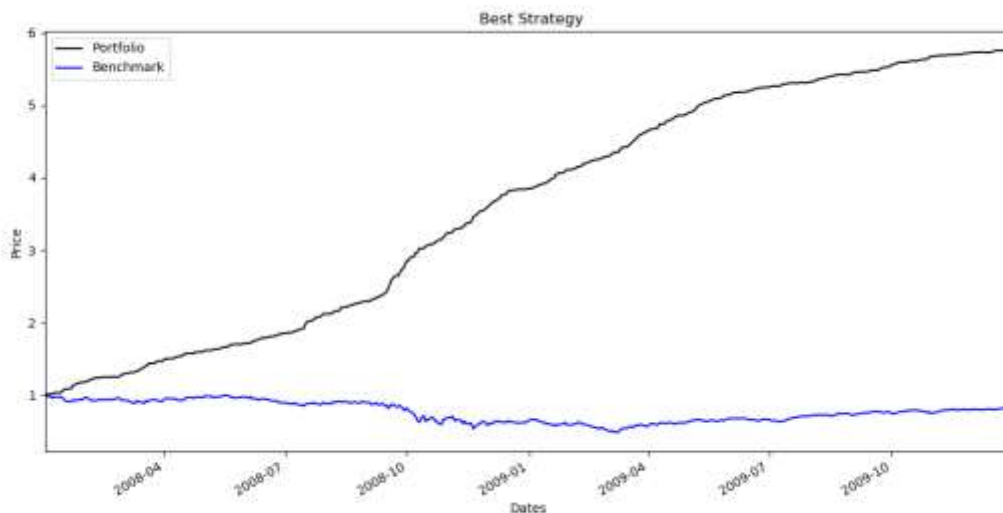
Final Portfolio Value: 574287.35
Out of Sample Stats:
Sharpe Ratio of Fund: 10.8039202048
Sharpe Ratio of SPY : 0.439005682129

Cumulative Return of Fund: 2.04868483159
Cumulative Return of SPY : 0.148148148148

Standard Deviation of Fund: 0.00327413716999
Standard Deviation of SPY : 0.0129849753193

Average Daily Return of Fund: 0.00222832210119
Average Daily Return of SPY : 0.000359096357221

Final Portfolio Value: 304215.15
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Manual Strategy

The manual strategy is calculated taking consideration the weights of the Bollinger Bands (BB) and momentum. The stock should be long when the momentum is lower than 5% , BB is lower than 15% and final value holding is 0/ -1000. The stock should be short if the opposite condition applies.

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In Sample :  
Sharpe Ratio of Fund: 0.126353874267  
Sharpe Ratio of SPY : -0.137143508209  
  
Cumulative Return of Fund: 0.00326889260062  
Cumulative Return of SPY : -0.194324631101  
  
Standard Deviation of Fund: 0.0149774475917  
Standard Deviation of SPY : 0.0219321223021  
  
Average Daily Return of Fund: 0.000119213681821  
Average Daily Return of SPY : -0.000189476626317  
  
Final Portfolio Value: 100100.0  
Out of Sample :  
Sharpe Ratio of Fund: 0.26516570971  
Sharpe Ratio of SPY : 0.439005682129  
  
Cumulative Return of Fund: 0.0450437495992  
Cumulative Return of SPY : 0.148148148148  
  
Standard Deviation of Fund: 0.00784674968903  
Standard Deviation of SPY : 0.0129849753193  
  
Average Daily Return of Fund: 0.00013107108376  
Average Daily Return of SPY : 0.000359096357221
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