Trading model report

1. Test again for better performance

“Average Profit”=(final\_portfolio\_value - initial\_capital) / initial\_capital \* 100

Data range is 2019-01-01 to 2024-11-01

years\_in\_sample = 3 # Number of years in one sample

n\_samples = 10 # Number of samples

profit\_to\_buy\_options = [-3, -5,-10,-15] # Example list of loss percentages to trigger a buy

profit\_to\_sell\_options = [10,20,30, 40, 50] # Example list of profit percentages to trigger a sell

|  |  |  |  |
| --- | --- | --- | --- |
| **Profit to Buy** | **Profit to Sell** | **Average Profit** | **Profit Volatility** |
| -2 | 50 | 155.0745256 | 69.03464757 |
| -5 | 50 | 150.5855095 | 67.741147 |
| -2 | 40 | 144.8484152 | 56.53055015 |
| -3 | 50 | 138.9242673 | 76.39847247 |
| -2 | 60 | 129.4313958 | 122.5832615 |
| -3 | 40 | 127.0038375 | 39.78832325 |
| -10 | 50 | 124.6737339 | 33.84198632 |
| -5 | 55 | 122.4840616 | 127.2634604 |
| -2 | 55 | 119.2916366 | 132.3814556 |
| -2 | 20 | 117.5216284 | 60.11939092 |
| -2 | 30 | 105.3631736 | 49.88350398 |

In 3 year analysis, seems that (-2,50) is still the best choice. Try to remove sample to be 1 year and more example.

|  |  |  |  |
| --- | --- | --- | --- |
| **Profit to Buy** | **Profit to Sell** | **Average Profit** | **Profit Volatility** |
| -50 | 40 | 54.86731758 | 45.73370333 |
| -5 | 50 | 46.94346405 | 36.78985007 |
| -3 | 50 | 46.18110927 | 36.94388848 |
| -50 | 50 | 44.441885 | 44.34031082 |
| -10 | 60 | 44.38137715 | 29.38988975 |
| -50 | 60 | 43.69931065 | 53.6693223 |
| -5 | 60 | 42.42632523 | 69.1887842 |
| -15 | 60 | 40.49404239 | 38.77423038 |
| -15 | 55 | 39.09824535 | 45.98779596 |
| -15 | 40 | 38.22363802 | 38.85697998 |
| -2 | 55 | 37.53147934 | 31.31302946 |

Include 2024 Nov data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SMA\_1** | **SMA\_2** | **RSI\_Window** | **Daily\_Return\_Window** | **Volatility\_Window** | **Sell\_Precision** |
| 10 | 200 | 14 | 5 | 30 | 1 |

2021.12.1 to 2024.12.1

Use 3 random sample number to do:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SMA\_1** | **SMA\_2** | **RSI\_Window** | **Daily\_Return\_Window** | **Volatility\_Window** | **Sell\_Precision** |
| 40 | 100 | 14 | 1 | 20 | 0.703282828 |
| 20 | 50 | 14 | 5 | 10 | 0.688311688 |
| 10 | 200 | 20 | 2 | 10 | 0.683333333 |

Use 8 sample numbers:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SMA\_1** | **SMA\_2** | **RSI\_Window** | **Daily\_Return\_Window** | **Volatility\_Window** | **Sell\_Precision** |
| 40 | 100 | 10 | 1 | 30 | 0.691188441 |
| 40 | 100 | 10 | 2 | 30 | 0.675907888 |
| 40 | 100 | 10 | 2 | 20 | 0.672045547 |
| 40 | 100 | 14 | 2 | 20 | 0.668711844 |
| 10 | 200 | 20 | 2 | 10 | 0.651984127 |
| 10 | 200 | 10 | 5 | 10 | 0.638888889 |
| 10 | 200 | 14 | 2 | 30 | 0.636904762 |
| 20 | 50 | 14 | 5 | 10 | 0.628142772 |
| 40 | 100 | 14 | 1 | 20 | 0.62773569023569 |
| 10 | 200 | 14 | 2 | 10 | 0.626388889 |
| 10 | 200 | 10 | 2 | 10 | 0.626388889 |

Use 20 sample numbers to get sell\_prediction mean:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SMA\_1** | **SMA\_2** | **RSI\_Window** | **Daily\_Return\_Window** | **Volatility\_Window** | **Sell\_Precision** |
| 40 | 100 | 10 | 2 | 20 | 0.696488095 |
| 40 | 100 | 10 | 1 | 30 | 0.692380952 |
| 40 | 100 | 14 | 5 | 20 | 0.678869048 |
| 40 | 100 | 10 | 2 | 30 | 0.677559524 |
| 40 | 100 | 10 | 1 | 20 | 0.66781746 |
| 40 | 100 | 10 | 5 | 30 | 0.661201299 |
| 40 | 100 | 14 | 1 | 20 | 0.652678571 |

Thinking about the variance of the model prediction, voting strategy is used, as single XGBoost model may have bias. 20 XGBoost models are used to vote if it is buy, sell, or hold signal.