UDACITY

Return to Classroom

DISCUSS ON STUDENT HUB

Trading with Momentum

REVIEW

CODE REVIEW

HISTORY

Meets Specifications

Avid Udacian,

Congratulations 🎉
You have done it.👏
You have done all requirements accurately and outstanding. I really appreciate and satisfied the effort and understanding put into make this project a success. It is a good start of this Nano degree. I believe you can complete this Nano degree as soon as possible. I encourage you to go ahead and discover new things around this area. Keep it up. 👍
Continue learning which you want, Good luck

ideas of previous and look-ahead returns and why we need-

> - If an investor is backtesting the performance of a trading strategy, it is vital that they only use information that would have been available at the time of the trade to avoid a look-ahead bias. For example, if a trade is simulated based on information that was not available at the time of the trade—such as a quarterly earnings number that was released a month later—it will diminish the accuracy of the trading

strategy's true performance and potentially bias the results in favor of the desired outcome.

- Look-ahead bias is when data that was not readily available at the time is used in a simulation of that time period.
  Checkout the following links for further readings around these topics:
  - Look-Ahead Bias
  - Backtesting
  - What is Look-ahead Bias?
  - Backtest Trading Strategies
    You can also gain more knowledges previous and look-ahead returns from next project Breakout strategy. Good luck. 👍

Extra Readings

A Quantitative Approach
Algorithmic Trading Strategies, Paradigms And Modelling Ideas
Why is AI necessary for Momentum Trading

Market Data

The function `resample_prices` computes the monthly prices.

Nice work! Computing the monthly prices using `resample_prices` function correctly. 👍

```
return close_prices.resample(freq).last()
```

The function `compute_log_returns` computes the log returns from the prices.

Good work! Computing the log returns from the prices using `log` function correctly. 👍

```
return np.log(prices) - np.log(prices.shift(1))
```

The function `shift_returns` computes the shifted returns.

Well done! Using `shift` function you have successfully implemented `shift_returns`. 👍

```
return returns.shift(shift_n)
```

Portfolio

The function `get_top_n` selects the `top_n` number of the top performing stocks.

The `get_top_n` selects the `top_n` number of the top performing stocks correctly. The function correctly returns a dataframe where the n stocks with the highest returns for each date have the value 1 (where n = the parameter top_n), and all other stocks have the value 0. 👍

```
top_stocks = pd.DataFrame(np.zeros(prev_returns.shape,dtype=int), index=prev_
returns.index, columns=prev_returns.columns)
for index, row in prev_returns.iterrows():
    top_n_cols = row.nlargest(top_n).index
    #print(top_n_cols)
    for col in top_n_cols:
        top_stocks.loc[index][col] = 1

#print(top_stocks)
return top_stocks
```

The function `portfolio_returns` calculates the projected returns.

Excellent work! Calculating the projected returns using `portfolio_returns` function is correct. Excellent math knowledge 👌

```
df_long_weights = df_long / n_stocks
df_short_weights = -df_short / n_stocks
#print('df_long_weights\n', df_long_weights)
#print('df_short_weights\n', df_short_weights)
```

```
portfolio_returns = (df_long_weights + df_short_weights) * lookahead_returns
#print('portfolio_returns\n', portfolio_returns)

return portfolio_returns
```

Tips

Portfolio return refers to the gain or loss realized by an investment portfolio containing several types of investments. Portfolios aim to deliver returns based on the stated objectives of the investment strategy, as well as the risk tolerance of the type of investors targeted by the portfolio.
Portfolio Return

Statistical Tests

The function `analyze_alpha` calculates the t-value and p-value.

Nice work! Implementing the `analyze_alpha` function using `scipy.stats.ttest_1samp` to perform a t-test on the sample of portfolio returns. 👌

```
t, p = stats.ttest_1samp(expected_portfolio_returns_by_date, 0)
```

Extra Resources

- How to Conduct a Two Sample T-Test
- How to Conduct a Paired Samples T-Test

The student correctly identifies the p-value they got. The student indicates what the p-value indicates about their signal.

Excellent! Identifying the p-value of `0.073359` and providing a good explanation of what it indicates. That's right, because the observed p-value is greater than our alpha of 0.05, the null hypothesis cannot be rejected and we may need a better strategy. 👌

> The $p>\alpha$ so we can not reject the null hypothesis. It means the signals from this trade momentum algorithm is not good enough to generate profit.

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