

# Brain Machine Learning Stock Ranking

## Product Summary

Brain Machine Learning proprietary platform is exploited to generate a daily stock ranking based on the predicted future returns of a universe of 1000 stocks on four time horizons: 2,3, 5 and 10 days (other time horizons could be developed and tested upon request).

The model implements a voting scheme of machine learning classifiers that non linearly combine a variety of features with a series of techniques aimed at mitigating the well-known overfitting problem for financial data with a low signal to noise ratio.

Some example of features are:

1. Time varying stock specific features like price and volume related metrics or fundamentals
2. Time fixed stock specific features like the sector and other database information
3. Market regime features such as volatility and other financial stress indicators
4. Calendar features representing possible anomalies, for example the month of the year

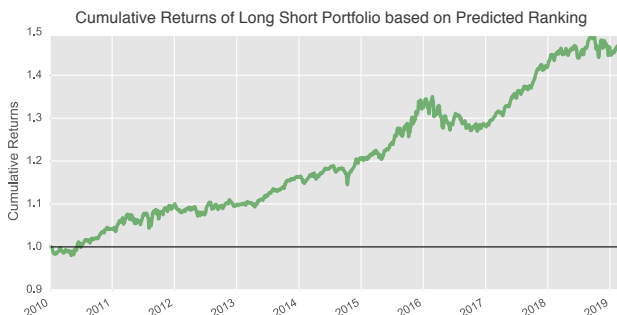
The stock universe is represented by the 1000 US stocks with the largest market cap and it is updated every year.

The model is trained and tested with a walking forward approach.

An history of approximately 10 year is available as Free Trial for testing in the time interval 2010/01/01-2019/02/28.

## Prediction Weighted LS Portfolio

In the following graph we report the cumulative returns of a long-short portfolio with weekly rebalancing based on the out-of-sample predicted ranking related to the future stock returns for next 5 days.



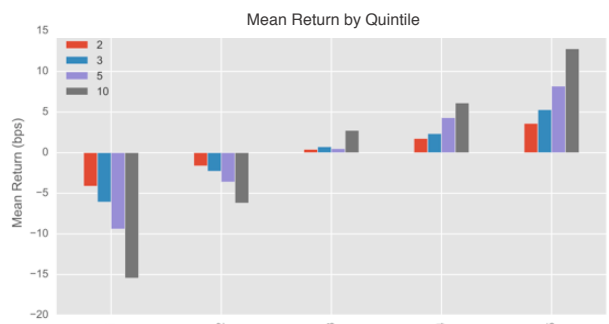
Last update: 12/04/2019

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## Returns Analysis by Prediction Quintiles

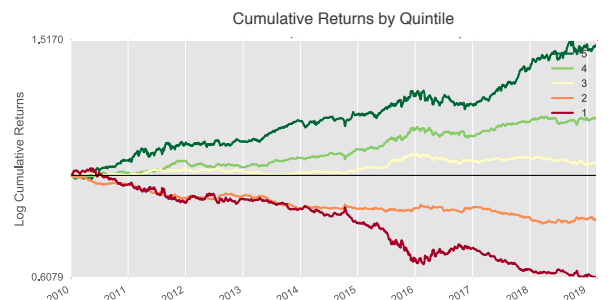
The following graph shows the mean forward returns of the investing universe stocks on different time horizons (with respect to an equally weighted benchmark) as function of the predicted ranking quintile (5 days time horizon).

It clearly appears that the highest predicted ranking quintile corresponds to the highest forward return, and vice versa the lowest prediction quintile corresponds to the most negative forward return following the characteristic "ladder shape".



The following graph shows the return of 5 long-only portfolios built with stocks divided in quintiles determined using the predicted ranking and rebalanced every week.

A portfolio including only the stocks with the most positive prediction (dark green line) provides a cumulative return much larger than a portfolio composed of the most negative stocks (dark red line) and such distance increases with time.



## Contacts

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