

# Brain Machine Learning Stock Ranking of US Stocks

## 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 US stocks on five time horizons: 2,3, 5, 10 and 21 days (other time horizons can 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 examples 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 using a walking forward approach.

A history starting 1<sup>st</sup> January 2010 is available as Free Trial for testing.

## Prediction Weighted LS Portfolio

In the following graph we show the cumulative returns of a long-short portfolio composed of top/bottom 100 stocks based on the out-of-sample ranking related to the predicted returns for next 5 days (weekly rebalancing).



## Returns Analysis by Prediction Quintiles

The following graph shows the mean forward returns, over the available historical data, 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 average forward return, and vice versa the lowest prediction quintile corresponds to the most negative average forward return following the characteristic “ladder shape”.



A portfolio including the stocks with the most positive prediction (top quintile, dark green line) provides, over the available historical data, a larger cumulative return than a portfolio composed of the stocks with most negative prediction (bottom quintile, red line). The blue line represents the full stock universe with uniform weights.



## Contacts

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