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Conclusions And Future Work

In order to assess stock market time series predictors quality, we propose a trading system and some metrics that better explain the predictions impact in a real world scenario.

Being able to simulate a real market with its constraints and possibilities, the proposed trading system uses the predictions of boundary prices or spreads to find the recommended times of day when to buy and sell a given stock or when to perform a particular Pair Trading, respectively.

We present three new prediction models for minimum and maximum values forecasting, based on three different regression tools, which are: Artificial Neural Networks, Partial Least Squares Regression and Support Vector Regression.

The proposed predictors perform two forecasting schemes: the usual interday forecasting and an intraday forecasting, which performs a new prediction every hour, including intraday features already known at prediction time.

Connecting predictions to stock market operations, the trading system assesses the forecasting quality. In its evaluation, we consider two metrics: the return on investment and the maximum drawdown.

The system is tested considering assets from BM&FBOVESPA Stock Exchange, the world's third largest stock exchange, in a period of 50 consecutive trading days which falls between March 4th 2010 and May 14th 2010.

We perform several experiments focusing either on buy and sell operations or Pairs Trading. To compare the results, we test four benchmarks and an Oracle that accurately provides all the desired values. The trading system offers exactly the same trading conditions to all tested predictions, regardless of the predictor who conceived it.

Although some benchmarks predictions have presented similar MAPE, when considering the trading system metrics, the three proposed predictors outperformed all benchmarks. The Oracle predictions allow us to analyze how far away our predictors are from the optimal solution.

The results findings indicate the importance of a trading system when

assessing stock market forecasting quality. They also confirm the improvement provided by the inclusion of intraday features in the predictors input, and the effectiveness of more sophisticated techniques, such as PLSR, SVR and ANN, whose predictions yield annual returns on investment of as much as 300%.

As future work, we intend to explore other markets such as the Option Market. Furthermore, aiming to improve the forecasting results even more, we will explore intraday predictions in smaller time intervals.