When to Buy, Sell, and Hold

A multi-classification model with stock data.

What publicly traded stocks are currently....

Overbought

Overbought defines a period of time where there has been a significant and consistent upward move in price over a period of time without much pullback.

Oversold

The term oversold illustrates a period where there has been a significant and consistent downward move in price over a specified period of time without much pullback.

Neither

The premise is simple, **overbought** markets could lead to a downward move in price.

Oversold markets could lead to an upward move in price.

So neither, is Neither...

Our Methodology: OSEMN

Obtain / Scrub

APIs & Web Scraping

We used some free open sources tools to get information directly from Yahoo finance. The tools took almost 24 hours to get all the info, and afterwards, we had to make sure there were no errors in the data.

Explore / Model

EDA & Modeling

We were able to obtain almost 2000 companies. We had to investigate the relationship between the data points, and get the data ready for modeling.

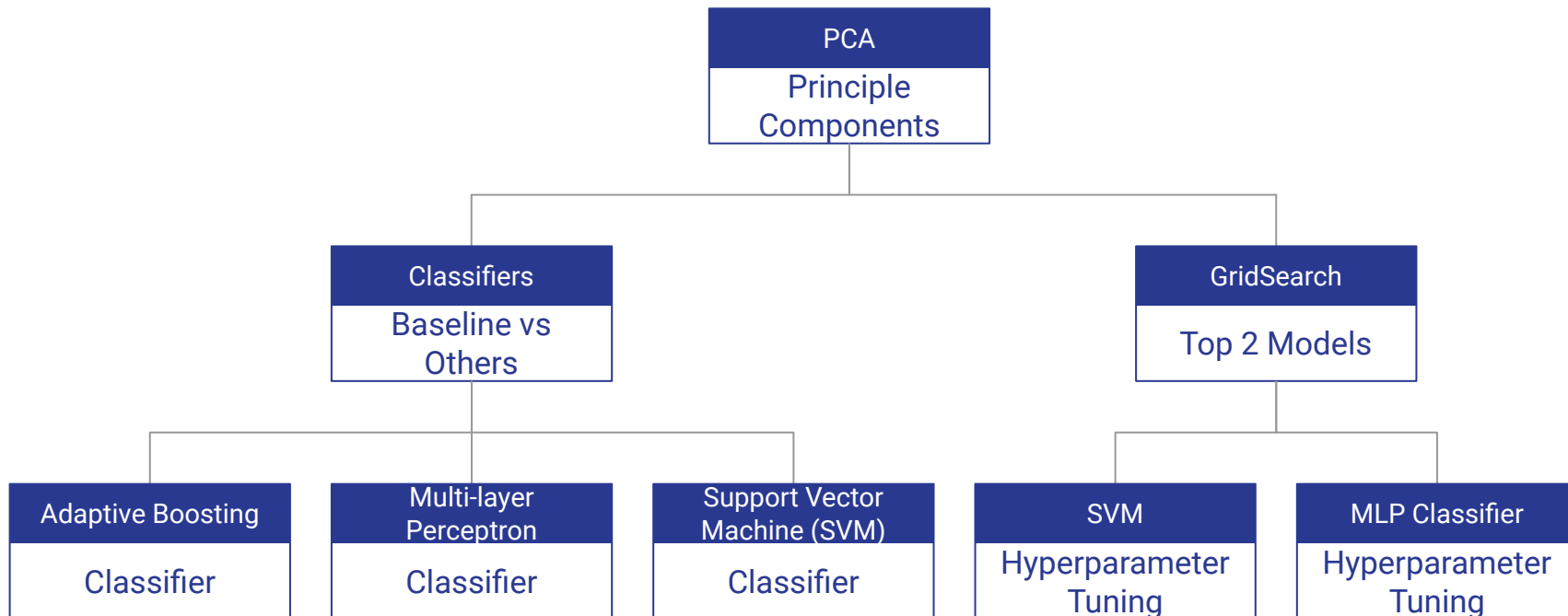- We trained so many models, and scored them accordingly.

Interpret / Results

Baseline to Final

We compared various models assessing each one on accuracy. We tried a combination of accessories to help the better baseline models perform even better! The final two models have a 99.1% accuracy score.
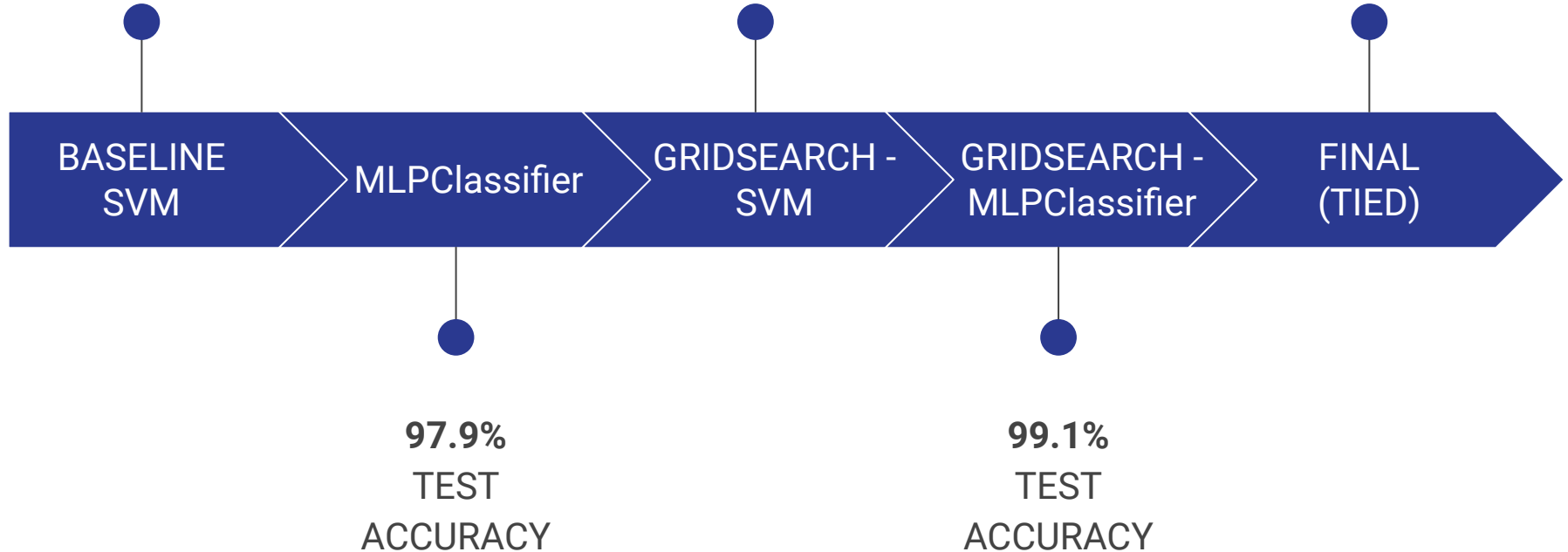
Modeling

Process Map

97.2%
TEST
ACCURACY

99.1%
TEST
ACCURACY

GridsearchCV with
SVM and MLP
Classifiers == **99.1%**

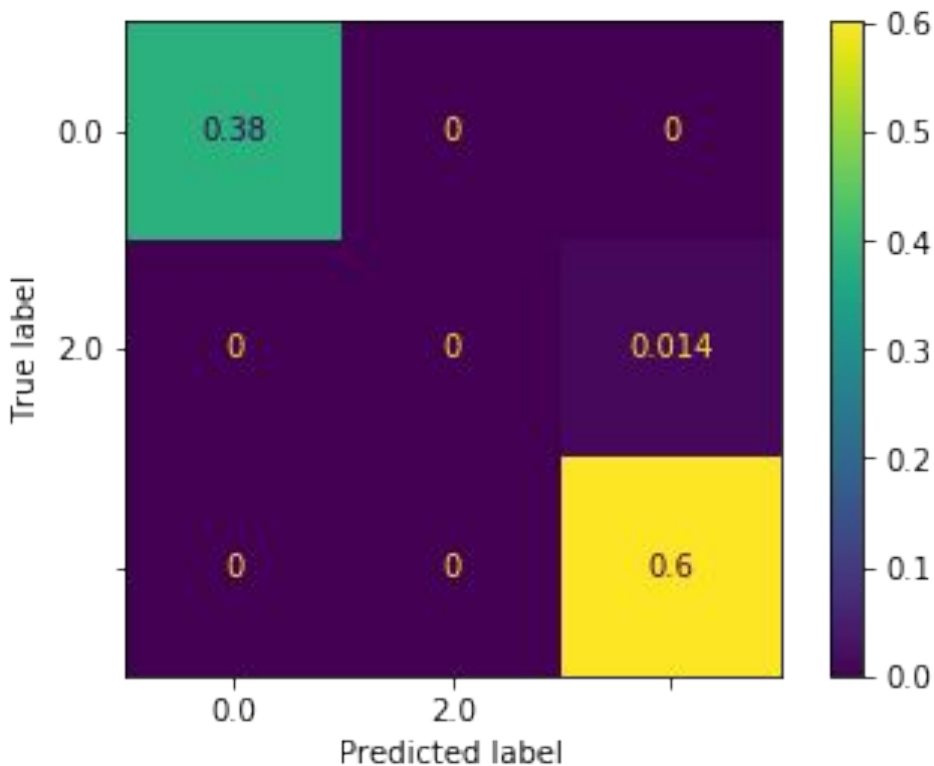| BASELINE SVM | MLPClassifier | GRIDSEARCH - SVM | GRIDSEARCH - MLPClassifier | FINAL (TIED) |

97.9%
TEST
ACCURACY

99.1%
TEST
ACCURACY

MLP Classifier: Confusion Matrix

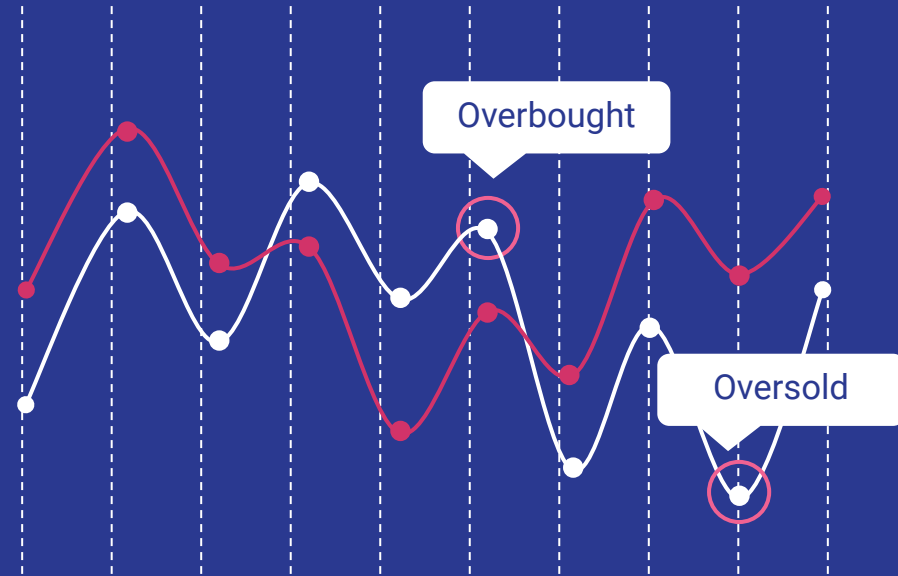~38% of oversold stocks were correctly classified.

~60% of overbought stocks were also classified correctly.

~1.4% error rate of classification.

Overbought
vs
Oversold

Overbought	Oversold
EXC	ROYT
ASML	FLS
BAM	HPE
IRT	

Future Work

Have you ever asked what buy would yield the highest return?

Did you know that we could use the time-series data to build a prediction model for prices?

Would you be interested in seeing us build an ARIMA model to predict which "oversold" stock would have the most potential to increase the most?

Or even, which stock in the sell zone would potentially decrease the most?

Another day, another time, but here is my contact information if you would like to set up some more time to discuss.

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