Train/Test Report

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InvestRight

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GROUP-19

Training objective:

Binary Classification

Multi-Model Approach

Logistic Regression

Considering Binary classification problem Logistic Regression was our first go to model

- Easy to implement
- Fast

XGBoost

Discovering that our data had lot of missing values and was fairly imbalanced, we considered XGB

- handles missing values very well
- gradient boosted trees for imbalanced data

MLP (Keras)

MLP was more sort of a experimental approach that we considered

- Can give exceptional results
- Data heavy

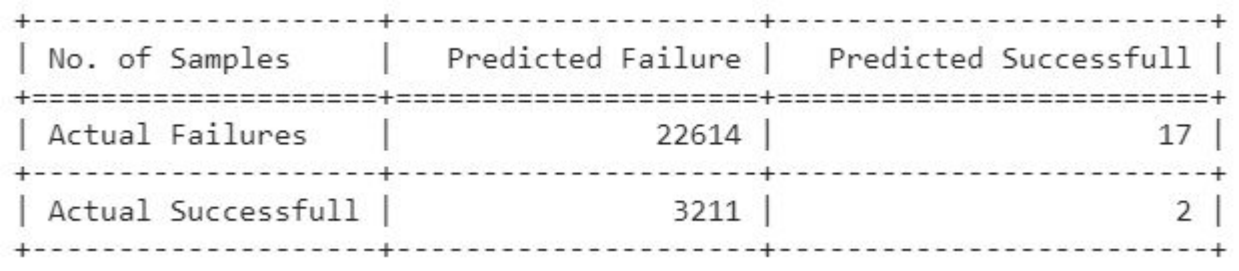
Logistic Regression

Accuracy Score:

Train	:	87.51%
Test	:	86.87%

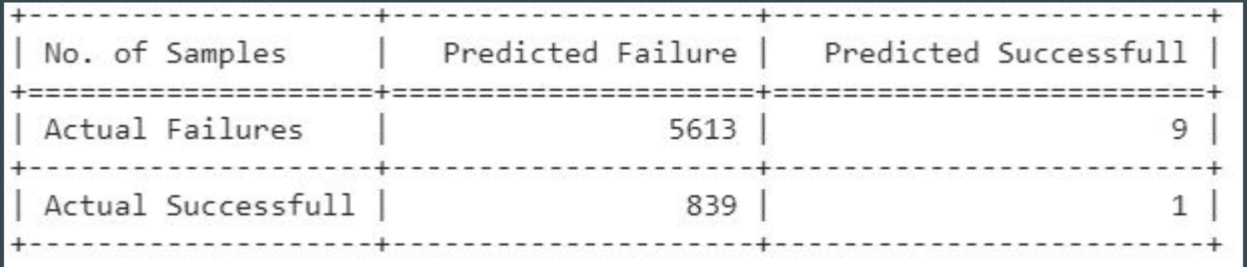
Logistic Regression - Confusion Matrix

Train



```
+--------------------+---------------------+-------------------------+
| No. of Samples     |   Predicted Failure |   Predicted Successfull |
+====================+=====================+=========================+
| Actual Failures    |               22614 |                      17 |
+--------------------+---------------------+-------------------------+
| Actual Successfull |                3211 |                       2 |
+--------------------+---------------------+-------------------------+
```

Test



```
+--------------------+---------------------+-------------------------+
| No. of Samples     |   Predicted Failure |   Predicted Successfull |
+====================+=====================+=========================+
| Actual Failures    |                5613 |                       9 |
+--------------------+---------------------+-------------------------+
| Actual Successfull |                 839 |                       1 |
+--------------------+---------------------+-------------------------+
```

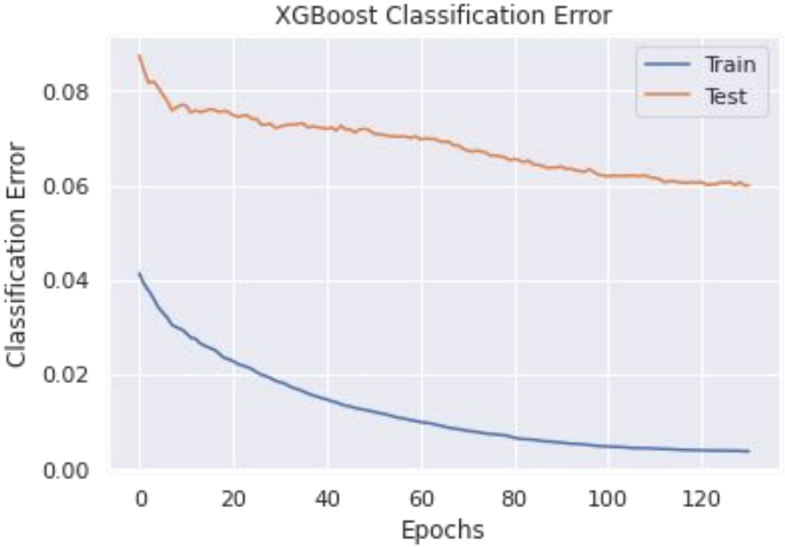
XGBoost Classifier

Accuracy Score:

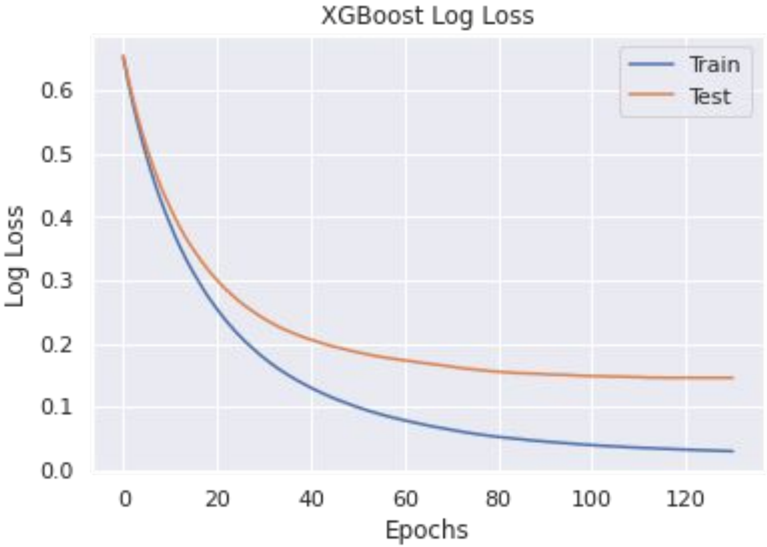
Train	:	99.60%
Test	:	93.94%

XGBoost Classifier - Training Scores

Classification Error

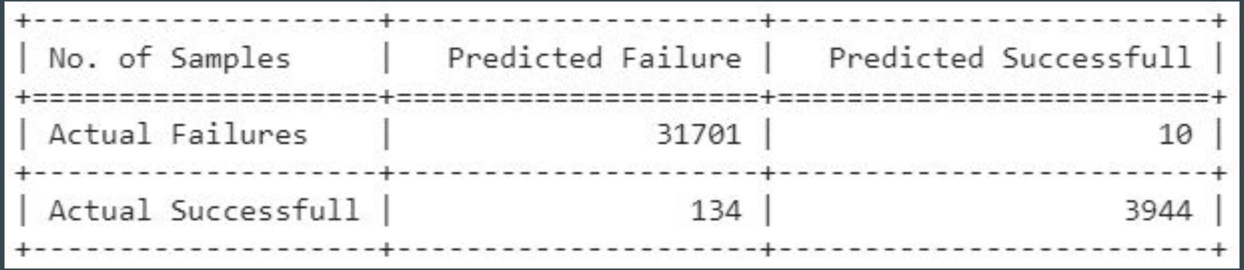


Log Loss



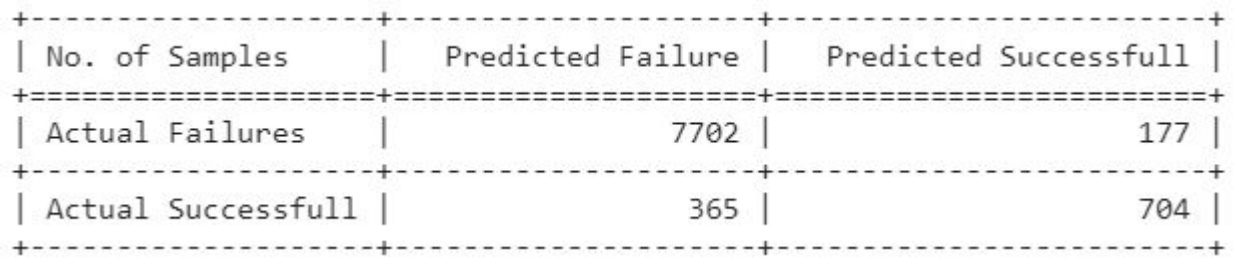
XGBoost Classifier - Confusion Matrix

Train



```
+--------------------+----------------------+--------------------------+
| No. of Samples     |    Predicted Failure |    Predicted Successfull |
+====================+======================+==========================+
| Actual Failures    |                31701 |                       10 |
+--------------------+----------------------+--------------------------+
| Actual Successfull |                  134 |                     3944 |
+--------------------+----------------------+--------------------------+
```

Test



```
+--------------------+----------------------+--------------------------+
| No. of Samples     |    Predicted Failure |    Predicted Successfull |
+====================+======================+==========================+
| Actual Failures    |                 7702 |                      177 |
+--------------------+----------------------+--------------------------+
| Actual Successfull |                  365 |                      704 |
+--------------------+----------------------+--------------------------+
```

MLP Keras Classifier

Accuracy Score:

Baseline Model *(2 Layers)*	:	87.45%
Deep Model *(4 layers)*	:	87.57%

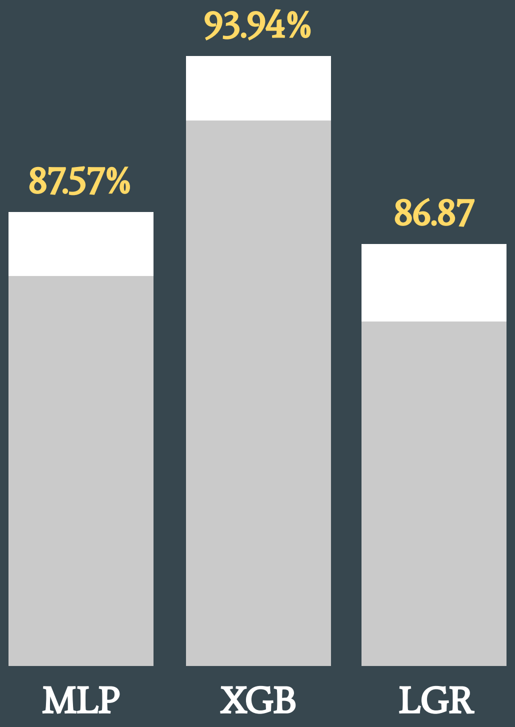
Model Selection

Findings

XGBoost Outperforms Logistic Regression as well as our current MLP model

Conclusions:

- XGBoost to be solely solely for current of InvestRight Predictor
- Work on better Neural Network Models


MLP
XGB
LGR