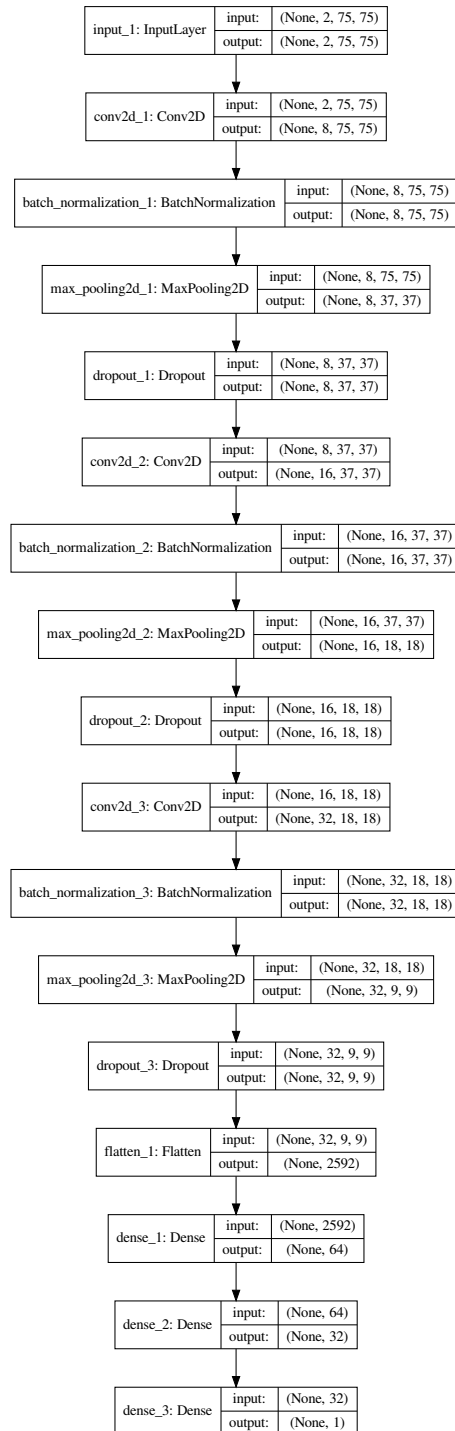


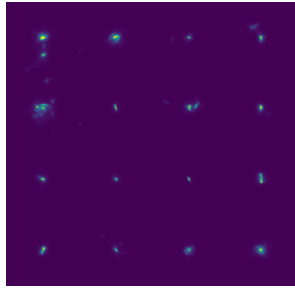
# CLASSIFICATION REPORT

## Architecture of the Neural Network

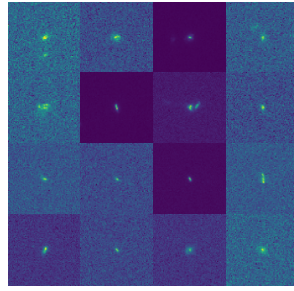


## TP/FP/TN/FN Test Set Examples

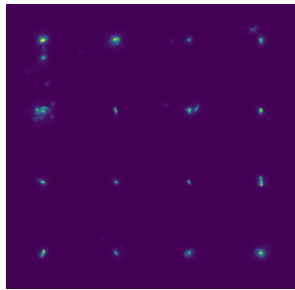
TP - true positives, TN - true negatives, FP - false positives, FN - False negatives



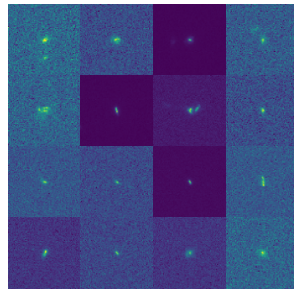
(a) Examples of TP



(b) Examples of FP

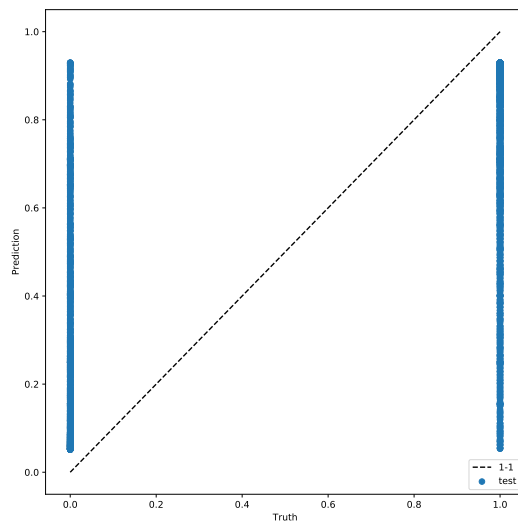


(a) Examples of TN

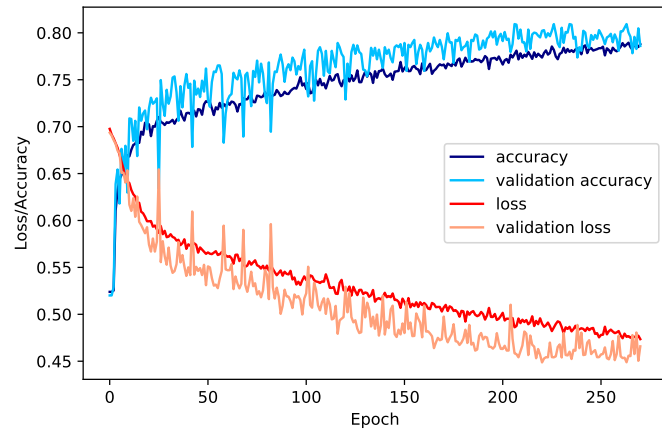


(b) Examples of FN

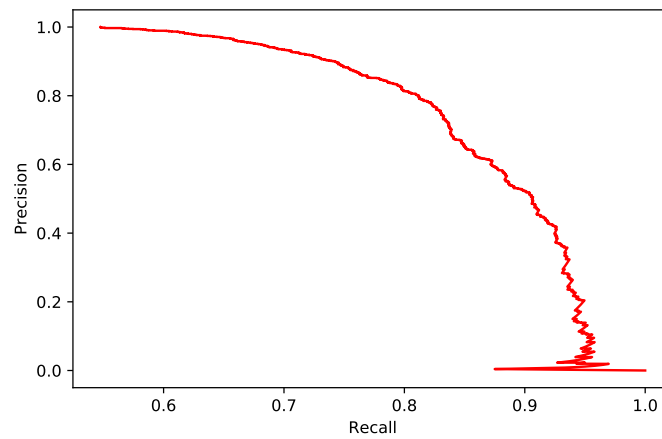
## Comparison of True Labes and Output Values for Test Set:



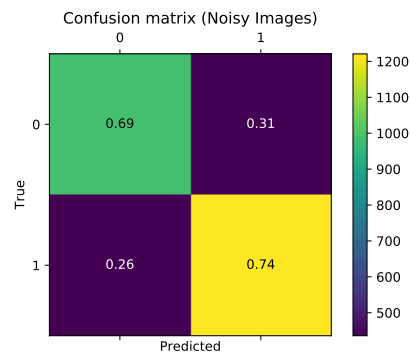
## Training and Validation Loss and Accuracy:



## Test Set Precision and Recall:



## Test Set Confusion Matrix



## Classification Scoring for Test Set

TP - true positives, TN - true negatives, FP - false positives, FN - False negatives

The performance of a classifier can be described by:

**Accuracy** -  $(TP+TN)/(TP+TN+FP+FN)$

**Precision** (Purity, Positive Predictive Value) -  $TP/(TP+FP)$

**Recall** (Completeness, True Positive Rate -  $TP/(TP+FN)$

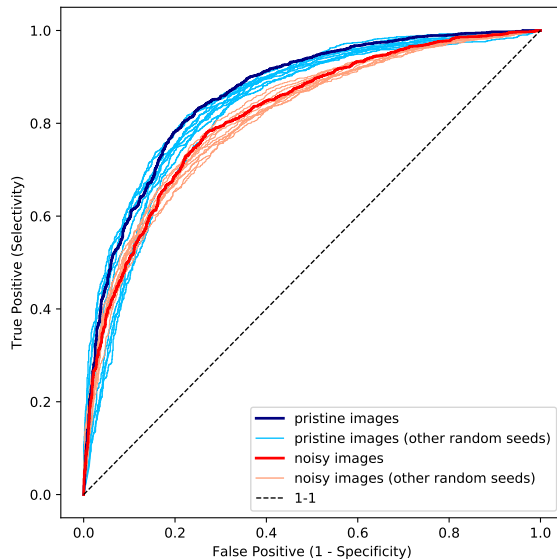
**F1 Score** =  $2 (Precision * Recall)/(Precision + Recall)$ .

**Brier Score** - mean squared error (MSE) between predicted probabilities (between 0 and 1) and the expected values (0 or 1). Brier score summarizes the magnitude of the forecasting error and takes a value between 0 and 1 (with better models having score close to 0).

Metric	Score
Accuracy	0.75
Precision	0.8
Recall	0.85
F1 Score	0.01
Brier Score	0.1

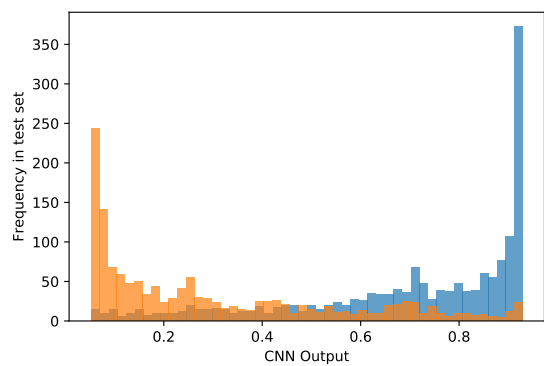
## Reciever Operating Characteristic (ROC) and Area Under the Curve (AUC) for Test Set

The ROC curve graphically shows the trade-off between true-positive rate and false-positive rate. The AUC summarizes the ROC curve - where the AUC is close to unity, classification is successful, while an AUC of 0.5 indicates the model performs as well as a random guess.



AUC = 0.75

Histogram of the Output Probabilities for Test Set



2D Histogram of the Output vs One Object Feature for Test Set

