

## Training Result

Algorithm	Accuracy	Precision	Recall Rate	Specificity	Misclassification Rate
Neural Network	93.68%	84.05%	84.90%	95.91%	6.32%
Decision Tree	93.46%	85.20%	81.95%	96.39%	6.54%
Auto Neural	92.60%	83.82%	78.64%	96.15%	7.40%
Random Forest	92.52%	82.06%	80.67%	95.53%	7.48%
SVM	92.41%	81.16%	81.42%	95.20%	7.59%
Logistic Regression	92.41%	82.86%	78.77%	95.87%	7.59%
Naïve Bayes	87.03%	64.26%	80.96%	88.57%	12.97%

Model	ROC index	Root Mean Squared Error	Gini Coefficient	Kolmogorov-Smirnov Statistic
Neural Network	95.40%	25.96%	90.70%	80.80%
Decision Tree	93.80%	23.06%	87.50%	79.50%
Auto Neural	93.90%	24.12%	87.80%	76.90%
Random Forest	94.90%	24.92%	89.80%	78.30%
SVM	93.20%	36.76%	86.30%	76.60%
Logistic Regression	93.60%	24.44%	87.20%	77.10%
Naïve Bayes	91.20%	32.86%	82.30%	69.80%

Best performed model in the training phase were Decision Tree and Neural Network. Hence, both models undergo scoring and the result are shown in table below.

#### Scoring Result

Result	Neural Network	Decision Tree
True Positive	1444	1410
True Negative	6275	6217
False Positive	382	340
False Negative	382	416
Accuracy	91%	91%
Misclassification Rate	9%	9%
Number of wrong classification	764	756
Sensitivity	94%	95%
Specificity	94%	95%
Precision	79%	81%

#### Conclusion

A total of 7 models were compared in terms of misclassification rate. The results showed that Neural Network has the lowest misclassification rate. Decision Tree also performed well in the 10-fold cross validation. Hence, both models were selected to undergo scoring for the unlabelled data. Both models have similarity in terms of accuracy and misclassification rate. The sensitivity, specificity and precision of Decision Tree is slightly better than Neural Network. In addition to that, the processing time of Decision Tree is shorter as compared to Neural Network. In conclusion, Decision Tree is a better model to be chosen given its high accuracy efficiency.