Figure 1
Decision Tree

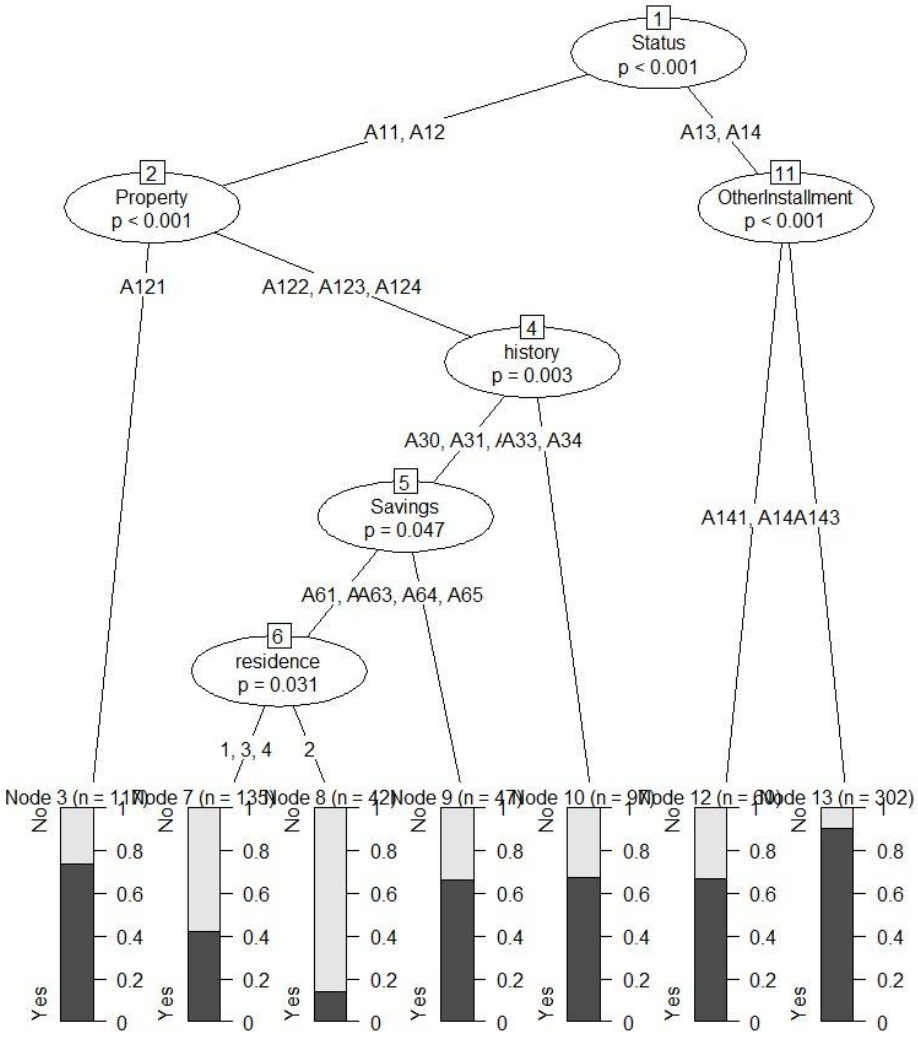
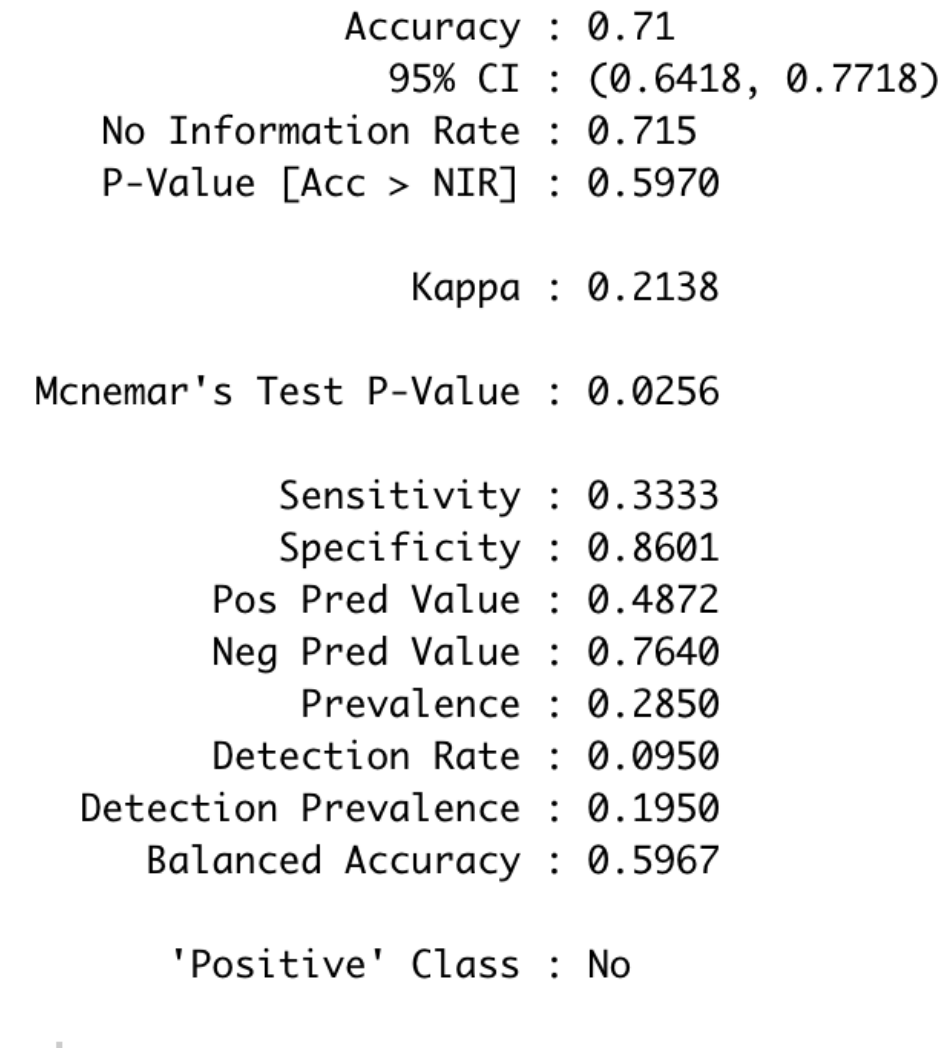


Figure 2
Confusion Matrix

testModel	No	Yes
No	19	20
Yes	38	123

Figure 3
Accuracy Rate



Accuracy Rate Formula:

= (TP+TN)/(TP+TN+FP+FN)
=(123+19)/(123+19+20+38)
=0.71*100
=71

Therefore, the accuracy rate is 71%.

The "CreditData" dataset was used to predict whether the 21st target class of new customers, “approved”, was approved or not approved. The data was split into two sets of data, 80% of the data was used as training data, and 20% was maintained as test data. To run the training data and then the testing data respectively, the cTree model was used. Figure 1 is a drawing of the classification tree, while Figure 2 is a classification tree confusion matrix. Figure 3 and the accuracy formula calculation shows the accuracy of the classification tree model predictions to be 71%.

The first step of the classification tree is to determine the status of the customer. It is either A11(balance=$0),A12(balance<$200K) or A13(balance>$200K), A14(no checking account). If the status is the first option, A11(balance=$0),A12(balance<$200K, then they are asked what type of property they have. If it is A121(real estate), the customer will not be approved, however if it is not A121(real estate), and if it is either A122 (building society savings agreement/life insurance), if not then, A123 (car or other), if not then A125 (Unknown/no property), then the customer is asked about their credit history. If the credit history comes back as A33 (delay in paying off in the past) or A34 (critical account/other credits existing (not at this bank)) then the customer is not approved. If the credit history comes back as either or A30 (no credits taken/all credits paid back duly), A31(all credits at this bank paid back duly), A32(existing credits paid back duly till now) then the customer is asked about their savings value. If the value is either A63($50K ≤ value < $100K), A64 (value ≥ $100K) , A65 (unknown/ no savings account), then the customer is not approved. If the savings value is either A61 (value < $10K) or A62 ($10K ≤ value < $50K) then the customer is asked about the length of their current residency. If it is 2, there is a higher probability of approval, if it is either 1, 3, 4 then the customer will be approved with a lower probability.

If the status is the second option A13(balance>$200K), A14(no checking account), then the customer is asked if they have another instalment plan. If it is either A141 (bank) or A142 (stores) then the customer will be denied with a lower probability. If it is A143 (none) the customer will be denied with a higher probability.