Abstract:  This dataset is a human heart disease database similar to a database already present in the repository (Heart Disease databases) but in a slightly different form.

I have to find wheather a patient have heart problem or not.To classify this problem I use five classifier.

Classifier 1: Naïve bayes

Scheme: weka.classifiers.bayes.NaiveBayes

Relation: heart

Instances: 270

Attributes: 14

Test mode: 270-fold cross-validation

Correctly Classified Instances 230 85.1852 %

Incorrectly Classified Instances 40 14.8148 %

Kappa statistic 0.698

Mean absolute error 0.1811

Root mean squared error 0.3584

Relative absolute error 36.532 %

Root relative squared error 71.8673 %

Total Number of Instances 270

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.893 0.200 0.848 0.893 0.870 0.699 0.899 0.914 1

0.800 0.107 0.857 0.800 0.828 0.699 0.899 0.880 2

Weighted Avg. 0.852 0.159 0.852 0.852 0.851 0.699 0.899 0.899

=== Confusion Matrix ===

a b <-- classified as

134 16 | a = 1

24 96 | b = 2

Classifier 2: lazy\_IBk

Scheme: weka.classifiers.lazy.IBk -K 1 -W 0 -A "weka.core.neighboursearch.LinearNNSearch -A \"weka.core.EuclideanDistance -R first-last\""

Relation: heart

Instances: 270

Attributes: 14

Test mode: 270-fold cross-validation

Correctly Classified Instances 202 74.8148 %

Incorrectly Classified Instances 68 25.1852 %

Kappa statistic 0.4917

Mean absolute error 0.2537

Root mean squared error 0.5

Relative absolute error 51.1773 %

Root relative squared error 100.2544 %

Total Number of Instances 270

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.760 0.267 0.781 0.760 0.770 0.492 0.747 0.727 1

0.733 0.240 0.710 0.733 0.721 0.492 0.747 0.639 2

Weighted Avg. 0.748 0.255 0.749 0.748 0.749 0.492 0.747 0.688

=== Confusion Matrix ===

a b <-- classified as

114 36 | a = 1

32 88 | b = 2

Classifier 3:Trees\_j48

Scheme: weka.classifiers.trees.J48 -C 0.25 -M 2

Relation: heart

Instances: 270

Attributes: 14

Test mode: 270-fold cross-validation

Number of Leaves : 22

Size of the tree : 38

Correctly Classified Instances 217 80.3704 %

Incorrectly Classified Instances 53 19.6296 %

Kappa statistic 0.6008

Mean absolute error 0.2537

Root mean squared error 0.4294

Relative absolute error 51.1892 %

Root relative squared error 86.092 %

Total Number of Instances 270

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.840 0.242 0.813 0.840 0.826 0.601 0.736 0.769 1

0.758 0.160 0.791 0.758 0.774 0.601 0.736 0.703 2

Weighted Avg. 0.804 0.205 0.803 0.804 0.803 0.601 0.736 0.740

=== Confusion Matrix ===

a b <-- classified as

126 24 | a = 1

29 91 | b = 2

Classifier 4: Trees\_RandomForest

Scheme: weka.classifiers.trees.RandomForest -P 100 -I 100 -num-slots 1 -K 0 -M 1.0 -V 0.001 -S 1

Relation: heart

Instances: 270

Attributes: 14

Test mode: 270-fold cross-validation

=== Summary ===

Correctly Classified Instances 220 81.4815 %

Incorrectly Classified Instances 50 18.5185 %

Kappa statistic 0.6244

Mean absolute error 0.2718

Root mean squared error 0.3622

Relative absolute error 54.8371 %

Root relative squared error 72.6146 %

Total Number of Instances 270

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.840 0.217 0.829 0.840 0.834 0.624 0.894 0.908 1

0.783 0.160 0.797 0.783 0.790 0.624 0.894 0.878 2

Weighted Avg. 0.815 0.191 0.815 0.815 0.815 0.624 0.894 0.895

=== Confusion Matrix ===

a b <-- classified as

126 24 | a = 1

26 94 | b = 2

Classifier 5: Meta\_FilteredClassifier

Scheme: weka.classifiers.meta.FilteredClassifier -F "weka.filters.supervised.attribute.Discretize -R first-last -precision 6" -W weka.classifiers.trees.J48 -- -C 0.25 -M 2

Relation: heart

Instances: 270

Attributes: 14

Test mode: 270-fold cross-validation

Correctly Classified Instances 212 78.5185 %

Incorrectly Classified Instances 58 21.4815 %

Kappa statistic 0.5628

Mean absolute error 0.2958

Root mean squared error 0.4223

Relative absolute error 59.6777 %

Root relative squared error 84.6748 %

Total Number of Instances 270

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.827 0.267 0.795 0.827 0.810 0.563 0.742 0.779 1

0.733 0.173 0.772 0.733 0.752 0.563 0.742 0.769 2

Weighted Avg. 0.785 0.225 0.785 0.785 0.785 0.563 0.742 0.775

=== Confusion Matrix ===

a b <-- classified as

124 26 | a = 1

32 88 | b = 2

Classifier 6: Rules\_PART

Scheme: weka.classifiers.rules.PART -M 2 -C 0.25 -Q 1

Relation: heart

Instances: 270

Attributes: 14

Test mode: 270-fold cross-validation

Number of Rules : 19

Correctly Classified Instances 218 80.7407 %

Incorrectly Classified Instances 52 19.2593 %

Kappa statistic 0.6113

Mean absolute error 0.2193

Root mean squared error 0.4311

Relative absolute error 44.2447 %

Root relative squared error 86.4369 %

Total Number of Instances 270

=== Detailed Accuracy By Class ===

TP Rate FP Rate Precision Recall F-Measure MCC ROC Area PRC Area Class

0.813 0.200 0.836 0.813 0.824 0.612 0.736 0.744 1

0.800 0.187 0.774 0.800 0.787 0.612 0.736 0.669 2

Weighted Avg. 0.807 0.194 0.808 0.807 0.808 0.612 0.736 0.711

=== Confusion Matrix ===

a b <-- classified as

122 28 | a = 1

24 96 | b = 2

Summary:

After implementing 6 classifier ,I have seen that classifier-1: naïve bayes classifier correctly classify 230 instances out of 270 instances with 85.1852 % accuracy.