

DECISION TREE

Aim: To implement and design decision tree using weka.

Algorithm:

- Determine root node
- Calculate entropy for classes
- Calculate entropy after split for each attributes.
- Calculate information gain
- Perform split
- Perform further split
- Compute decision tree

Output:

The screenshot displays the Weka Explorer interface. The 'Classify' tab is active, showing the 'Classifier' as 'REPTree -M 2 -V 0.001 -N 3 -S 1 -L 1 -I 0.0'. The 'Test options' section shows 'Cross-validation' selected with 'Folds' set to 10. The 'Result list' on the left shows two results: '20:17:34 - rules.DecisionTable' and '20:18:23 - trees.REPTree', with the latter selected. The 'Classifier output' pane displays the following information:

Time taken to build model: 0.47 seconds

=== Stratified cross-validation ===

=== Summary ===

Metric	Value	Class
Correctly Classified Instances	710	71 %
Incorrectly Classified Instances	290	29 %
Kappa statistic	0.2033	
Mean absolute error	0.3677	
Root mean squared error	0.4321	
Relative absolute error	87.505 %	
Root relative squared error	94.2815 %	
Total Number of Instances	1000	

=== Detailed Accuracy By Class ===

	TP Rate	FP Rate	Precision	Recall	F-Measure	MCC	ROC Area	PRC Area	Class
	0.893	0.717	0.744	0.893	0.812	0.220	0.723	0.854	good
	0.283	0.107	0.531	0.283	0.370	0.220	0.723	0.478	bad
Weighted Avg.	0.710	0.534	0.660	0.710	0.679	0.220	0.723	0.741	

=== Confusion Matrix ===

```
a b <-- classified as
625 75 | a = good
215 85 | b = bad
```

The interface also shows a 'Log' button and a status bar at the bottom indicating '27°C Mostly cloudy' and 'ENG 20:18 05-02-2023'.