**CST8390 - Lab 3**

**Classification by Decision Trees**

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1. a. Number of instances: 768



b. Number of attributes: 8 plus class = 9



c. List of attributes: (all numeric-valued)

1. Number of times pregnant

2. Plasma glucose concentration a 2 hours in an oral glucose tolerance test

3. Diastolic blood pressure (mm Hg)

4. Triceps skin fold thickness (mm)

5. 2-Hour serum insulin (mu U/ml)

6. Body mass index (weight in kg/ (height in m) ^2)

7. Diabetes pedigree function

8. Age (years)

9. Class variable (0 or 1)

d. Class labels and their relabeled values:

0: tested\_negative

1: tested\_positive

e. Number of instances for each class label:

tested\_negative: 500

tested\_positive: 268

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Question** | **Confusion Matrix** | **Number of leaves** | **Size of the tree** | **Correctly classified instances** |
| 4 | a b <-- classified as  405 95 | a = tested\_negative  112 156 | b = tested\_positive | 20 | 39 | 561 |
| 6 | a b <-- classified as  402 98 | a = tested\_negative  107 161 | b = tested\_positive | 7 | 13 | 563 |
| 8 | a b <-- classified as  424 76 | a = tested\_negative  119 149 | b = tested\_positive | 17 | 33 | 573 |
| 9 | a b <-- classified as  416 84 | a = tested\_negative  115 153 | b = tested\_positive | 10 | 19 | 569 |

12.

**Screenshots with Question Number**

**2.**

A screenshot of a computer

Description automatically generated

**5.**

**A screenshot of a computer

Description automatically generated**

**7.**

**A screenshot of a computer

Description automatically generated**

**10.**

**A screenshot of a computer screen

Description automatically generated**

**11.**

**=== Confusion Matrix ===**

**a b <-- classified as**

**427 73 | a = tested\_negative**

**108 160 | b = tested\_positive**

* 1. a. Details of random forest: Bagging with 100 iterations



* 1. b. Time taken to build model: 0.34 seconds



* 1. c. Correctly classified instances: 587 (76.4323%)

