

National University of Computer and Emerging Sciences, Lahore Campus



Course: Artificial Intelligence
Program: BS(Computer Science)
Duration: 30 Minutes
Paper Date: 08-May-24
Section: D/F/F
Exam: Quiz 4B

Course Code: AI-2002
Semester: Spring 2024
Total Marks: 10
Weight: 3.33%
Page(s): 2
Roll No.

Instruction/Notes:

- Provide your solution on this sheet. You may use an extra page for rough work.

Problem#1 (CLO-4)

10 Points

A medical diagnostic system was deployed to detect 2 distinct type of brain tumors i.e. TypeA and TypeB. The system also recognizes if there is no tumor. 10 tests are performed and the model's prediction are as follows.

Actual	TypeA	Normal	Normal	TypeA	Normal	TypeA	Normal	TypeB	TypeB	TypeA
Predicted	TypeA	TypeA	TypeA	TypeA	TypeA	TypeA	TypeA	Normal	Normal	TypeA

a- Create a confusion matrix for the above data. **3 marks**

	TypeA	TypeB	Normal
TypeA	4	0	4
TypeB	0	0	0
Normal	0	2	0

b- Compute Accuracy, precision and recall for each class. **1+3 marks**

$$\text{Accuracy} = 4/10 = 40\%$$

$$\text{Precision TypeA} = 0.5, \text{Precision TypeB} = 0/0 \text{ undefined}, \text{Precision TypeC} = 0$$

$$\text{Recall TypeA} = 1, \text{Recall TypeB} = 0, \text{Recall TypeC} = 0$$

c- Comment on the model performance based on your scores in part (b). **3 marks**

The model has a worst accuracy as it only classifies 4 instances correctly. The reason behind this behavior is that the model is unable to classify TypeB and Normal classes correctly. It has bias towards TypeA.