CIASSMATE
Date :
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Panel-C, Batch-C2

ROLINO: PC-44

DEC Lab Assignment -7

Puroblem Statement

Your Objective is to perform data classification technique & calculate the performance which as Accuracy, Perecision, Recall & FIScours. Build Classifier models using different techniques, analyze the confusion matrix & compare these models. Also apply cuross validation while pereparing the teraining & testing datasets.

& Objectives:

- · To builds the classifier models using different techniques
 - To calculate the confusion materix
- · To calculate the performance of algorithms.

* Conclusion:

In conclusion, the application of classification techniques on a whitable dataset allows for the evaluation of performance using various metrics

these metrics perovide insights into the effectiveness of the classification model & can guide effectiveness improvements our adjustments. By understanding & utilizing these performance meterics, machine learnings peractitioners can make informed decisions when solving classification perablems.

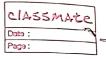
* FAOL

elitterence between a binary classifier & a multidasse classifier

Ans 1) Binary classifier:

- Definition: It classifies input into two distinct categories ou classes.
- · Example: Sparn our not usparn email classification
- 2) Multiclass classifier:
 - · Définition: It classifies input into moure than
 - Example: Image recognition classifying objects like cut, dog, & bivid.
- unat is a Decision Turvee Classifier? What are usome advantage of decision trees?

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Ans	Decision-Ture Classifier
	· Definition: A truee- like model that makes
	decisions based on yeature values to
	classify instances.
	* Advantages of Decision Threes:
	1) Toloronal Livia
	1) Interpretability: Easy to understand & Interpret
	100 Dara Novemalization: No need you data
	DOWNERSHIP
	3) Handles Non-linear Relationships: Can capture non-
	linear vellationships
	in data.
	4) Handles Mixed Data Types: Can handle both
	numerical & categorical
	d dta.
	Handles Mixed Data Types: Can handle both numerical
	C colores A I I
	- recover importance: Powovides information about
	the importance of features.
<i>a</i>	
رقاق	How does a decision tree work?
<u>Ans</u>	1) Splitting: Selects the best yeature to uplit the
	aara based on certain witeria (e.g. Gin:
-1	imported out introverse tion as:->
`~!	2) Recursive Purocess: Condinuous Condinues the splitting
	purocess recursively for each
	buranch until a stopping condition



	Data : Paga :
	is met. 3) Leaf Nodes: Each terminal node (leaf) viopuresonts
	a dass our decision
	4) pecision making: To classify a new instance, follows
	the path from the voot to a
	leaf based on feature values.
<u> </u>	what is the difference between a decision twee &
	a veandon youest duce?
v Ans	'
	decisions based on yeatures
1 1	2) Random Forcest: Ensemble of multiple devoision
(trees, each trained on a random
	subject of data, & combines their
1	predictions for improved accuracy
	1
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