Roll No. 41163

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Assignment A2

Execution Pate: 17/02/2021 Submission Pate: 19/05/2021

Title: Decision Tree Classifier

Problem Stulement:

A dutaset collected in cosmetics shop showing details of customers and whether they responded to special other to buy a new lipstick is shown in tube below. Use this dutuset to build a decision tree, with Buys as the turget variable, to help in buying lipsticks in future. Find the post made of decision tree. According to the decision thee you have made from previous training dutaset. What is the decision for test data:

[ Age < 21, Income = Low Gender = Femule, munital status = Mornied]

Objective:

root nove of decision tree

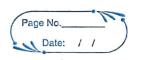
- Make decisions based on decision tree.

Outcome:

implement code for chaping a decision the for given dutuset.



	Software Requirements:	
-	-Jupyker Nokebook	
	- Rymon 3.85	
	- 64 bit operating system	
	Mordware Requirements:	
	Computer with 64 bit processor	
		_
		_
	Theory:	_
-	Pecision tree:	
		_
	A decision the is a flowchurt like structure in which	_
	each internal mode represents a test on an attribute each	_
	brunch represents a class label i.e. outrome of he test.	_
	The path from post to leuf sepresents classification	_
	wles.	_
		_
	A decision tree consists of 3 types of nodes	_
		_
,)	Pecision Nove	_
	- Represented by squares	_
2)	Chance Nove	_
	- Represented by circle	-
		-
3)	End Node	_
	- Represented by triungle.	_
	·	_



Algorithm used:

Here ID3 (Iterative Dichotomiser 3) is used to construct decision tree ID3 iteratively dichotomizes (divides) features into two or more groups at each step. It uses a top-down approach to construct the tree.

Steps:

) (olculate the entropy of every attribute using the dotuse t.

entropy = - 2p: # log (pi); i=1 ton

- 2) Split The set into subsets using the attributes for which entropy is minimum.
- 3) Make a decision thee node containing that attribute.

4) Recurse on subset using remaining armibutes.

node as a leaf node with class as its label.



lest (use:

- 1			
	Pescription	Expected Olp	Actual OIP
)	Use given dotte to	The constructed.	Successful
7	construct decision		
	hee.	* * * * * * * * * * * * * * * * * * * *	***
1	77.5		
,)	lection class for wines	Class correctly	Success h)

predicted

test duta

Conclusion: Thus, we have built decision her for the given data.

and predicted class for given test data.