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SET-2

1) Aim:- To Classify iris flowers using the Perceptron learning algorithm.

Algorithm:-

1) load iris dataset.
2) Split data into training & testing sets
3) Train perceptron model on training data
4) predict test data & calculate accuracy.

Code:-
```
from sklearn.datasets import load_iris
from sklearn.linear_model import perceptron
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score
 iris = load_iris()
 x, y = iris.data, iris.target

 x_train, x_test, y_train, y_test = train_test_split
   (x, y, test_size=0,3)
 model = perceptron(max_iter=1000)
 model.fit(x_train, y_train)

 y_pred = model.predict(x_test)
 print ("Accuracy:", accuracy_score(y_test, y_pred)
```
Output:- Accuracy: 0.93

Result:- this program was executed Sucessfully By python idle

8) Aim :-

To find the version space using the Candidate elimination algorithm.

Algorithm :-

1) initilaize S with first positive example.
2) initilaize G with most general hypothesis.
3) update S for Positive examples.
4) Specialize G for Negative examples.

Code :-

```
import numpy as np
x = n.p. array([
['sunny', 'warm', 'Normal', 'Strong', 'warm', 'Same'],
['Sunny', 'warm', 'High', 'Strong', 'warm', 'Same'],
['sunny', 'cold', 'High', 'Strong', 'warm' 'change'],
['Rainy', 'warm', 'High', 'Strong', 'cool', 'change']])
 y = np.array(['yes', 'yes', 'No', 'yes'])
 s = x [0]. Copy( )
 for i in range (len(x)):
     if y[i] == 'yes':
         for j in range(len(s)):
             if x[i][j] != s[j]: s[j] = '?'
 Print ("final s :", s)
```

Output :-

```
final s : ['sunny' 'warm' '?' 'strong' '?' '?']
```

Result :-

this program was executed Sucessfully By python IDLE

3) Aim:- To implement logistic regression for classification

Algorithm:-

1) load dataset
2) Split into train & test
3) Train logistic model
4) Evaluate accuracy

Code:-

```
from sklearn.dataset import load_iris
from sklearn.datasetlinearmodel import logistic regression
from sklearn.model_selection import train_test_split
from sklearn.metrics import accuracy_score.

 x,y = load_iris(return_x_y = True)
 xtr, xte, ytr, yte = train_test_split(x,y ,test_size=0.2)
 m = logisticregression(max_iter = 200).fit(xtr, ytr)
 print ("Accuracy:", accuracy_score (yte, m.predict(xte)))
```

Output:-

```
Accuracy: 0.97.
```

Result:-

this program was executed Sucessfully By using python IDLE.

4) Aim :-

To Cluster data using Em algorithm (GMM)

Algorithm:-

1) initilize Gaussian parameters
2) perform Expectation Step
3) perform maximation Step
4) Repeat untill Coverage.

Code :-

```
from Sklearn . mixture import Gaussianmattix
from Sklearn . mixture import load_iris

x = load_iris (). data

gmm = Gaussianmixture(n-Components=3). fit (x)
print (" first 10 labels:" gmm. predict (x)[:10])
```

Output :-

```
first 10 labels:[0 0 0 0 0 0 0 0 0 0]
```

Result:-

Thisprogram was executed Sucessfully By using python idle.