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1] perception Algorithm - Iris Classification

Aim:- To classify iris Flowers Using the preceptionagthm.

Algorithm:-
1. Initialize weights and Biaps.
2. Calculated waghted Sum.
3. Apply setup Activation function.
4. Update weights if error Occurs.
5. Repeat Until coguerence.

Program:-

```
from sklearn.datasets import load_iris
from sklearn.linear_model import preception
iris = load_iris()
x,y = iris.data, iris.target.
model = perceptron()
model.fit(x,y).
Print("Training Accuracy:", model.score(x,y)).
```

Output:-

Training Accuracy : 0.95.

Result:- perceptron Successfully classifys iris flowers with Good Accuracy.

2. **Find - S Algorithm**

Aim:- To find the most Specific Hypothesis Using Find - S Algorithm.

Algorithm:- Initialize Hypothesis with first positive Example

1. Replace mismatched attributes with '?'
2. Output final Hypothesis.

Program:-

```
data = [
['Many', 'Big', 'No', 'Expensive', 'Many', 'Yes'],
['Many', 'Medium', 'No', 'Expensive', 'Few', 'Yes'],
['Many', 'Small', 'No', 'Affordable', 'Many', 'Yes']
hypothesis = data [0][:-1]
    for row in data :
        if row [-1]== Yes:
        for i in range (len(Hypothesis)):
            if hypothesis!= row [i]:
                hypothesis[i]= '?'
print (hypothesis).
```

Output:- ['Many', '?', 'No', '?', '?']

Result:- Find S- Algorithm produces the Most Specific Hypothesis.

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3. Linear vs Logistic Regression.

Aim:- To Compare Linear Regression And Logistic Regression.

Algorithm:-

1. Load datasets
2. Train Linear Regression Model
3. Train Logistic Regression Model
4. Compare Accuracy

Program:-

```
from sklearn.datasets import make_classification
from sklearn.linear_model import LinearRegression, LogisticRegression
from sklearn.metrics import accuracy_score
X, y = make_classification(n_sample = 100)
logr = logistic Regression ()
log.fit(X,y).
log_pred = logr.predict(X).
Print ("Linear:", Accuracy score(y, lr_pred))
Print ("Logistic:", Accuracy_score, logr_pred)).
```

Output:- Linear = 0.76
logistic = 0.90.

Result:- Logistic Regression Performs Better for classification.

4) EM Algorithm

Aim :- To Implement EM Algorithm for clustering.

Algorithm :-
1. Initialize cluster parameters
2. perform Expectation step
3. perform Maximization step
4. Repeat Until Convergence.

Program :-

```
from sklearn.mixture import GaussianMixture
from sklearn.datasets import make_blobs
X, _ = make_blobs(n_sample = 200)
gmm = GaussianMixture(n_components = 2)
gmm.fit(X)
print(gmm.predict(X)[:10])
```

Output :- [0 1 0 1 1 0 0 1 0 1]

Result :-

EM Algorithm Successfully clusters the Given Data