ML 22 - Logistic Regression For Multiclass Classification By Virat Tiwari

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Logistic Regression For Multiclass Classification By Virat Tiwari

[1]:
```
# Make a prediction with a multinomial logistic regression model

from sklearn.datasets import make_classification
from sklearn.linear_model import LogisticRegression
```

[2]:
```
# Now we define the dataset

x,y=make_classification(n_samples=1000,n_features=10,n_informative=5,n_redundant=5,n_classes=3
```

[9]:
```
x
```

[9]:
```
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        -0.27340013,  0.72129251],
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        -2.07750191, -1.75469982],
       …,
       [ 1.98033054,  1.37228804,  1.67376262, …,  2.75687956,
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       [-1.54305631, -0.27530218,  0.38744703, …,  0.72769107,
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       [ 1.17970389, -3.3812155 , -0.1498426 , …,  1.24640268,
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```

[11]:
```
y
```

[11]:
```
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1, 1, 2, 1, 2, 2, 1, 0, 2, 1])
```

[10]:
```
# Define the multinomial logistic regression model for the multiclass␣
↪classification

model=LogisticRegression(multi_class="multinomial",solver="lbfgs")
```

[7]:
```
# Train Test Split
```

```
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.
 ↪20,random_state=42)
```

[13]:
```
# Training Model

model.fit(x_train,y_train)
```

[13]:
```
LogisticRegression(multi_class='multinomial')
```

[14]:
```
y_pred=model.predict(x_test)
```

[15]:
```
y_pred
```

[15]:
```
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       1, 0])
```

[16]:
```
model.predict_proba(x_test)
```

[16]:
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```

[17]:
```
from sklearn.metrics import␣
  ↪confusion_matrix,accuracy_score,classification_report
print(confusion_matrix(y_pred,y_test))
print(accuracy_score(y_pred,y_test))
print(classification_report(y_pred,y_test))
```

```
[[57 13 16]
```

```
 [15 39  6]
 [ 3 12 39]]
0.675
              precision    recall  f1-score   support

           0       0.76      0.66      0.71        86
           1       0.61      0.65      0.63        60
           2       0.64      0.72      0.68        54

    accuracy                           0.68       200
   macro avg       0.67      0.68      0.67       200
weighted avg       0.68      0.68      0.68       200
```

THANK YOU SO MUCH !!

YOURS VIRAT TIWARI :)