da-lab-10-knn

June 11, 2023

[2]:
```
# Package and library import
import numpy as np
from pandas import read_csv
import matplotlib.pyplot as plt
from sklearn.impute import SimpleImputer
from sklearn.metrics import accuracy_score
from sklearn.neighbors import KNeighborsClassifier
from sklearn.model_selection import train_test_split, GridSearchCV
```

[3]:
```
from google.colab import drive
drive.mount('/content/drive')
```

```
Drive already mounted at /content/drive; to attempt to forcibly remount, call
drive.mount("/content/drive", force_remount=True).
```

[36]:
```
def load_dataset(fname):
  data = read_csv(fname,na_values = None)
  data.dropna(inplace=True)
  dataset = data.values

  X = dataset[:,:-1]
  #imputer = SimpleImputer(strategy = 'mean')
  #imputer.fit(X)
  #X = imputer.transform(X)
  y = dataset[:,-1]
  #y = imputer.fit_transform(np.array(y).reshape(-1, 1)).flatten()
  return X,y,dataset
```

[37]:
```
# Dataset importing and splitting
X,y,dataset = load_dataset('/content/drive/MyDrive/Project/amazon(DA).csv')
X_train,X_test,y_train,y_test = train_test_split(X,y,test_size = 0.
 ↪33,random_state = 1)
print('Train',X_train.shape,y_train.shape)
print('Test',X_test.shape,y_test.shape)
```

```
Train (980, 4) (980,)
Test (483, 4) (483,)
```

[38]:
```
X
```

[38]:
```
array([[3.990e+02, 1.099e+03, 8.755e+03, 4.200e+00],
       [1.990e+02, 3.490e+02, 4.300e+03, 4.000e+00],
       [1.990e+02, 1.899e+03, 9.000e+03, 3.900e+00],
       …,
       [2.219e+03, 3.080e+03, 2.800e+03, 3.600e+00],
       [1.399e+03, 1.890e+03, 2.600e+03, 4.000e+00],
       [2.863e+03, 3.690e+03, 2.200e+03, 4.300e+00]])
```

[40]:
```
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
X_train = sc.fit_transform(X_train)
X_test = sc.transform(X_test)
```

[41]:
```
# Model training
from sklearn.neighbors import KNeighborsClassifier
knnclassifier = KNeighborsClassifier(n_neighbors = 5,metric = 'minkowski',␣
 ↪algorithm = 'auto')
knnclassifier.fit(X_train, y_train)
```

[41]:
```
KNeighborsClassifier()
```

[42]:
```
y_pred = knnclassifier.predict(X_test)
```

[43]:
```
from sklearn.metrics import confusion_matrix,accuracy_score
cm = confusion_matrix(y_test,y_pred)
acc = accuracy_score(y_test,y_pred)
```

[44]:
```
print(cm)
print(acc)
```

```
[[0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]
 …
 [0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]]
0.047619047619047616
```

[45]:
```
from sklearn.model_selection import GridSearchCV
# hyperparameter tuning
grid_par = {'n_neighbors':[5,6,7,8,9,10],'weights':['uniform','distance'],
          'metric':['euclidean','manhattan','minkowski']}
```

[46]:
```
gs = GridSearchCV(KNeighborsClassifier(),grid_par,verbose = 1,cv = 5,n_jobs =␣
↪-1)
```

[47]:
```
grid_res = gs.fit(X_train, y_train)
```

```
Fitting 5 folds for each of 36 candidates, totalling 180 fits
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/model_selection/_split.py:700:
UserWarning: The least populated class in y has only 1 members, which is less
than n_splits=5.
  warnings.warn(
```

[48]:
```
grid_res.best_score_
```

[48]:
```
0.15306122448979592
```

[49]:
```
grid_res.best_params_
```

[49]:
```
{'metric': 'manhattan', 'n_neighbors': 6, 'weights': 'distance'}
```

[50]:
```
#using the tuned parameters
knnclassifier = KNeighborsClassifier(n_neighbors=9,metric = 'euclidean',
                                     algorithm='auto')
knnclassifier.fit(X_train, y_train)
```

[50]:
```
KNeighborsClassifier(metric='euclidean', n_neighbors=9)
```

[51]:
```
y_pred = knnclassifier.predict(X_test)
```

[52]:
```
cm = confusion_matrix(y_test,y_pred)
acc = accuracy_score(y_test,y_pred)
```

[53]:
```
print(cm)
print(acc)
```

```
[[0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]
 …
 [0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]
 [0 0 0 … 0 0 0]]
0.039337474120082816
```

[54]:
```
from sklearn.metrics import classification_report
classy_rep = classification_report(y_test,y_pred)
print(classy_rep)
```

	precision	recall	f1-score	support
2.0	0.00	0.00	0.00	1
4.0	0.00	0.00	0.00	1
6.0	0.00	0.00	0.00	0
7.0	0.00	0.00	0.00	1
8.0	0.00	0.00	0.00	0
9.0	0.00	0.00	0.00	0
11.0	0.00	0.00	0.00	0
12.0	0.00	0.00	0.00	0
14.0	0.00	0.00	0.00	1
17.0	0.00	0.00	0.00	1
19.0	0.00	0.00	0.00	0
23.0	0.00	0.00	0.00	1
24.0	0.00	0.00	0.00	1
25.0	0.00	0.00	0.00	1
27.0	0.00	0.00	0.00	0
29.0	0.00	0.00	0.00	1
32.0	0.00	0.00	0.00	0
37.0	0.00	0.00	0.00	0
38.0	0.00	0.00	0.00	0
39.0	0.00	0.00	0.00	0
41.0	0.00	0.00	0.00	1
47.0	0.00	0.00	0.00	1
49.0	0.00	0.00	0.00	1
51.0	0.00	0.00	0.00	0
53.0	0.00	0.00	0.00	1
54.0	0.00	0.00	0.00	0
55.0	0.00	0.00	0.00	1
57.0	0.00	0.00	0.00	2
61.0	0.00	0.00	0.00	1
63.0	0.00	0.00	0.00	2
64.0	0.00	0.00	0.00	0
65.0	0.00	0.00	0.00	0
70.0	0.00	0.00	0.00	1
73.0	0.00	0.00	0.00	1
74.0	0.00	0.00	0.00	1
75.0	0.00	0.00	0.00	1
79.0	0.00	0.00	0.00	0
81.0	0.00	0.00	0.00	1
82.0	0.00	0.00	0.00	1
87.0	0.00	0.00	0.00	1
91.0	0.00	0.00	0.00	1
93.0	0.00	0.00	0.00	0
95.0	0.00	0.00	0.00	0
97.0	0.00	0.00	0.00	0
101.0	0.00	0.00	0.00	0
104.0	0.00	0.00	0.00	1

106.0	0.00	0.00	0.00	0
109.0	0.00	0.00	0.00	1
110.0	0.00	0.00	0.00	1
111.0	0.00	0.00	0.00	1
112.0	0.00	0.00	0.00	0
119.0	0.00	0.00	0.00	2
121.0	0.00	0.00	0.00	1
124.0	0.00	0.00	0.00	2
127.0	0.00	0.00	0.00	2
129.0	0.00	0.00	0.00	0
132.0	0.00	0.00	0.00	1
136.0	0.00	0.00	0.00	0
143.0	0.00	0.00	0.00	1
144.0	0.00	0.00	0.00	1
149.0	0.50	1.00	0.67	1
151.0	0.00	0.00	0.00	1
154.0	0.00	0.00	0.00	1
156.0	0.00	0.00	0.00	1
157.0	0.00	0.00	0.00	0
163.0	0.00	0.00	0.00	1
166.0	0.00	0.00	0.00	0
170.0	0.00	0.00	0.00	0
178.0	0.00	0.00	0.00	0
184.0	0.00	0.00	0.00	1
185.0	0.00	0.00	0.00	1
195.0	0.00	0.00	0.00	0
197.0	0.00	0.00	0.00	0
200.0	0.00	0.00	0.00	0
203.0	0.00	0.00	0.00	0
210.0	0.00	0.00	0.00	0
212.0	0.00	0.00	0.00	0
222.0	0.00	0.00	0.00	0
224.0	0.00	0.00	0.00	1
227.0	0.00	0.00	0.00	0
229.0	0.00	0.00	0.00	1
237.0	0.00	0.00	0.00	1
241.0	0.00	0.00	0.00	0
245.0	0.00	0.00	0.00	1
254.0	0.00	0.00	0.00	1
255.0	0.00	0.00	0.00	0
257.0	0.00	0.00	0.00	0
260.0	0.00	0.00	0.00	0
282.0	0.00	0.00	0.00	1
284.0	0.00	0.00	0.00	0
285.0	0.00	0.00	0.00	1
287.0	0.00	0.00	0.00	1
290.0	0.00	0.00	0.00	1
295.0	0.00	0.00	0.00	1

296.0	0.00	0.00	0.00	1
297.0	0.00	0.00	0.00	0
301.0	0.00	0.00	0.00	0
303.0	0.00	0.00	0.00	0
305.0	0.00	0.00	0.00	1
311.0	0.00	0.00	0.00	1
322.0	0.00	0.00	0.00	1
323.0	0.00	0.00	0.00	1
326.0	0.00	0.00	0.00	0
328.0	0.00	0.00	0.00	1
339.0	0.00	0.00	0.00	0
343.0	0.00	0.00	0.00	1
350.0	0.00	0.00	0.00	1
352.0	0.00	0.00	0.00	0
355.0	0.00	0.00	0.00	1
356.0	0.00	0.00	0.00	1
386.0	0.00	0.00	0.00	1
388.0	0.00	0.00	0.00	1
390.0	0.00	0.00	0.00	1
401.0	0.00	0.00	0.00	1
407.0	0.00	0.00	0.00	1
412.0	0.00	0.00	0.00	1
418.0	0.00	0.00	0.00	1
419.0	0.00	0.00	0.00	1
427.0	0.00	0.00	0.00	0
431.0	0.00	0.00	0.00	1
441.0	0.00	0.00	0.00	1
444.0	0.00	0.00	0.00	0
450.0	0.00	0.00	0.00	0
461.0	0.00	0.00	0.00	1
462.0	0.00	0.00	0.00	0
463.0	0.00	0.00	0.00	1
474.0	0.00	0.00	0.00	0
478.0	0.00	0.00	0.00	1
485.0	0.00	0.00	0.00	0
490.0	0.00	0.00	0.00	1
491.0	0.00	0.00	0.00	1
493.0	0.00	0.00	0.00	1
532.0	0.00	0.00	0.00	1
536.0	0.00	0.00	0.00	1
546.0	0.00	0.00	0.00	0
550.0	0.00	0.00	0.00	1
557.0	0.00	0.00	0.00	1
562.0	0.00	0.00	0.00	1
567.0	0.00	0.00	0.00	0
576.0	0.00	0.00	0.00	1
578.0	0.00	0.00	0.00	1
588.0	0.00	0.00	0.00	1

602.0	0.00	0.00	0.00	1
604.0	0.00	0.00	0.00	1
611.0	0.00	0.00	0.00	1
618.0	0.00	0.00	0.00	0
621.0	0.00	0.00	0.00	1
638.0	0.00	0.00	0.00	1
644.0	0.00	0.00	0.00	0
656.0	0.00	0.00	0.00	1
691.0	0.00	0.00	0.00	1
693.0	0.00	0.00	0.00	1
710.0	0.00	0.00	0.00	1
714.0	0.00	0.00	0.00	1
727.0	0.00	0.00	0.00	1
743.0	0.00	0.00	0.00	0
766.0	0.00	0.00	0.00	1
771.0	0.00	0.00	0.00	1
777.0	0.00	0.00	0.00	0
780.0	0.00	0.00	0.00	1
787.0	0.00	0.00	0.00	0
815.0	0.00	0.00	0.00	0
827.0	0.00	0.00	0.00	0
838.0	0.00	0.00	0.00	0
897.0	0.00	0.00	0.00	1
898.0	0.00	0.00	0.00	1
910.0	0.00	0.00	0.00	1
925.0	0.00	0.00	0.00	1
959.0	0.00	0.00	0.00	1
974.0	0.00	0.00	0.00	1
989.0	0.00	0.00	0.00	1
1021.0	0.00	0.00	0.00	1
1026.0	0.00	0.00	0.00	1
1030.0	0.00	0.00	0.00	1
1034.0	0.00	0.00	0.00	1
1045.0	0.00	0.00	0.00	1
1067.0	0.00	0.00	0.00	1
1075.0	0.00	0.00	0.00	1
1085.0	0.00	0.00	0.00	1
1106.0	0.00	0.00	0.00	0
1127.0	0.00	0.00	0.00	1
1161.0	0.00	0.00	0.00	0
1181.0	0.00	0.00	0.00	1
1191.0	0.00	0.00	0.00	1
1202.0	0.00	0.00	0.00	1
1208.0	0.00	0.00	0.00	1
1236.0	0.00	0.00	0.00	1
1240.0	0.00	0.00	0.00	1
1269.0	0.00	0.00	0.00	1
1271.0	0.00	0.00	0.00	0

1282.0	0.00	0.00	0.00	0
1296.0	0.00	0.00	0.00	0
1313.0	0.50	0.50	0.50	2
1315.0	0.00	0.00	0.00	1
1335.0	0.00	0.00	0.00	0
1376.0	0.00	0.00	0.00	2
1393.0	0.00	0.00	0.00	1
1404.0	0.00	0.00	0.00	1
1408.0	0.00	0.00	0.00	0
1423.0	0.33	1.00	0.50	2
1454.0	0.00	0.00	0.00	2
1462.0	0.00	0.00	0.00	1
1475.0	0.00	0.00	0.00	1
1498.0	0.00	0.00	0.00	0
1508.0	0.00	0.00	0.00	1
1510.0	0.00	0.00	0.00	1
1526.0	0.00	0.00	0.00	2
1527.0	0.00	0.00	0.00	0
1611.0	0.00	0.00	0.00	1
1646.0	0.00	0.00	0.00	0
1657.0	0.00	0.00	0.00	1
1662.0	0.00	0.00	0.00	2
1674.0	0.00	0.00	0.00	0
1690.0	0.00	0.00	0.00	1
1717.0	0.00	0.00	0.00	1
1765.0	0.00	0.00	0.00	0
1780.0	0.00	0.00	0.00	0
1801.0	0.00	0.00	0.00	1
1811.0	0.00	0.00	0.00	1
1868.0	0.00	0.00	0.00	0
1899.0	0.00	0.00	0.00	0
1951.0	0.00	0.00	0.00	1
1964.0	0.00	0.00	0.00	1
1996.0	0.00	0.00	0.00	1
2026.0	0.00	0.00	0.00	1
2043.0	0.00	0.00	0.00	1
2102.0	0.00	0.00	0.00	1
2111.0	0.00	0.00	0.00	1
2138.0	0.00	0.00	0.00	1
2147.0	0.00	0.00	0.00	0
2165.0	0.00	0.00	0.00	1
2180.0	0.00	0.00	0.00	1
2201.0	0.00	0.00	0.00	1
2249.0	0.00	0.00	0.00	1
2262.0	0.00	0.00	0.00	0
2272.0	0.00	0.00	0.00	1
2280.0	0.00	0.00	0.00	0
2301.0	0.00	0.00	0.00	1

2311.0	0.00	0.00	0.00	1
2326.0	0.00	0.00	0.00	1
2352.0	0.00	0.00	0.00	1
2375.0	0.00	0.00	0.00	0
2399.0	0.00	0.00	0.00	1
2449.0	0.00	0.00	0.00	1
2451.0	0.00	0.00	0.00	0
2466.0	0.00	0.00	0.00	1
2523.0	0.00	0.00	0.00	1
2585.0	0.00	0.00	0.00	1
2591.0	0.00	0.00	0.00	1
2593.0	0.00	0.00	0.00	1
2623.0	0.00	0.00	0.00	1
2628.0	0.00	0.00	0.00	1
2640.0	0.00	0.00	0.00	1
2664.0	0.00	0.00	0.00	1
2685.0	0.00	0.00	0.00	2
2686.0	0.00	0.00	0.00	1
2737.0	0.00	0.00	0.00	1
2740.0	0.00	0.00	0.00	1
2766.0	0.00	0.00	0.00	1
2806.0	0.00	0.00	0.00	1
2810.0	0.00	0.00	0.00	1
2832.0	0.00	0.00	0.00	1
2957.0	0.00	0.00	0.00	1
2961.0	0.00	0.00	0.00	1
3025.0	0.00	0.00	0.00	1
3066.0	0.00	0.00	0.00	1
3075.0	0.00	0.00	0.00	1
3095.0	0.00	0.00	0.00	1
3156.0	0.00	0.00	0.00	1
3160.0	0.00	0.00	0.00	1
3233.0	0.00	0.00	0.00	1
3246.0	0.00	0.00	0.00	1
3271.0	0.00	0.00	0.00	0
3382.0	0.00	0.00	0.00	0
3492.0	0.00	0.00	0.00	1
3524.0	0.00	0.00	0.00	1
3578.0	0.00	0.00	0.00	1
3584.0	0.00	0.00	0.00	1
3587.0	0.00	0.00	0.00	2
3606.0	0.00	0.00	0.00	1
3652.0	0.00	0.00	0.00	1
3663.0	0.00	0.00	0.00	1
3688.0	0.00	0.00	0.00	1
3739.0	0.00	0.00	0.00	1
3858.0	0.00	0.00	0.00	1
3964.0	0.00	0.00	0.00	1

4003.0	0.00	0.00	0.00	2
4022.0	0.00	0.00	0.00	0
4049.0	0.00	0.00	0.00	1
4099.0	0.00	0.00	0.00	1
4157.0	0.00	0.00	0.00	1
4219.0	0.00	0.00	0.00	1
4238.0	0.00	0.00	0.00	1
4390.0	0.00	0.00	0.00	1
4415.0	0.33	1.00	0.50	1
4426.0	0.00	0.00	0.00	2
4584.0	0.00	0.00	0.00	1
4642.0	0.00	0.00	0.00	1
4674.0	0.00	0.00	0.00	1
4703.0	0.00	0.00	0.00	0
4736.0	0.00	0.00	0.00	1
4740.0	0.00	0.00	0.00	1
4744.0	0.00	0.00	0.00	1
4768.0	0.00	0.00	0.00	0
4798.0	0.00	0.00	0.00	1
4978.0	0.00	0.00	0.00	1
5057.0	0.00	0.00	0.00	1
5137.0	0.00	0.00	0.00	1
5178.0	0.00	0.00	0.00	1
5179.0	0.00	0.00	0.00	1
5355.0	0.00	0.00	0.00	1
5451.0	0.00	0.00	0.00	1
5626.0	0.00	0.00	0.00	1
5692.0	0.00	0.00	0.00	1
5719.0	0.00	0.00	0.00	1
5736.0	0.00	0.00	0.00	1
5852.0	0.00	0.00	0.00	1
5873.0	0.00	0.00	0.00	1
5911.0	0.00	0.00	0.00	1
5958.0	0.00	0.00	0.00	1
5967.0	0.00	0.00	0.00	1
5985.0	0.00	0.00	0.00	1
5999.0	0.00	0.00	0.00	1
6255.0	0.00	0.00	0.00	1
6301.0	0.00	0.00	0.00	1
6537.0	0.00	0.00	0.00	1
6547.0	0.00	0.00	0.00	1
6550.0	0.00	0.00	0.00	1
6558.0	0.00	0.00	0.00	1
6659.0	0.00	0.00	0.00	1
6662.0	0.00	0.00	0.00	1
6753.0	0.00	0.00	0.00	2
7064.0	0.00	0.00	0.00	0
7109.0	0.00	0.00	0.00	1

7113.0	0.00	0.00	0.00	1
7222.0	0.00	0.00	0.00	2
7229.0	0.00	0.00	0.00	1
7241.0	0.00	0.00	0.00	2
7274.0	0.00	0.00	0.00	1
7298.0	0.00	0.00	0.00	0
7318.0	0.00	0.00	0.00	2
7333.0	0.00	0.00	0.00	1
7429.0	0.00	0.00	0.00	1
7462.0	0.00	0.00	0.00	1
7681.0	0.00	0.00	0.00	1
7689.0	0.00	0.00	0.00	1
7732.0	0.50	1.00	0.67	1
7807.0	0.33	1.00	0.50	1
7928.0	0.00	0.00	0.00	0
7946.0	0.00	0.00	0.00	1
8053.0	0.00	0.00	0.00	1
8131.0	0.00	0.00	0.00	0
8188.0	0.14	1.00	0.25	1
8258.0	0.00	0.00	0.00	1
8372.0	0.00	0.00	0.00	1
8380.0	0.00	0.00	0.00	1
8446.0	0.00	0.00	0.00	1
8610.0	0.00	0.00	0.00	1
8618.0	0.00	0.00	0.00	1
8866.0	0.00	0.00	0.00	1
9019.0	0.00	0.00	0.00	1
9331.0	0.00	0.00	0.00	1
9349.0	0.00	0.00	0.00	1
9377.0	0.00	0.00	0.00	2
9378.0	0.00	0.00	0.00	2
9385.0	0.00	0.00	0.00	1
9427.0	0.00	0.00	0.00	1
9499.0	0.00	0.00	0.00	2
9638.0	0.00	0.00	0.00	1
9792.0	0.00	0.00	0.00	1
9998.0	0.00	0.00	0.00	1
10134.0	0.00	0.00	0.00	1
10174.0	0.00	0.00	0.00	1
10429.0	0.00	0.00	0.00	1
10541.0	0.00	0.00	0.00	1
10576.0	0.00	0.00	0.00	0
10652.0	0.00	0.00	0.00	1
10689.0	0.00	0.00	0.00	1
10725.0	0.00	0.00	0.00	1
10773.0	0.00	0.00	0.00	1
10833.0	0.00	0.00	0.00	1
10962.0	0.00	0.00	0.00	1

11006.0	0.00	0.00	0.00	1
11029.0	0.00	0.00	0.00	1
11213.0	0.00	0.00	0.00	1
11499.0	0.00	0.00	0.00	1
11716.0	0.00	0.00	0.00	1
11827.0	0.00	0.00	0.00	1
11828.0	0.00	0.00	0.00	1
11976.0	0.00	0.00	0.00	1
12091.0	0.00	0.00	0.00	1
12093.0	0.00	0.00	0.00	1
12153.0	0.00	0.00	0.00	1
12185.0	0.00	0.00	0.00	1
12796.0	0.00	0.00	0.00	1
12835.0	0.00	0.00	0.00	1
13029.0	0.00	0.00	0.00	1
13120.0	0.00	0.00	0.00	1
13250.0	0.00	0.00	0.00	1
13300.0	0.00	0.00	0.00	1
13391.0	0.00	0.00	0.00	1
13406.0	0.00	0.00	0.00	1
13552.0	0.22	1.00	0.36	2
13937.0	0.00	0.00	0.00	0
13944.0	0.00	0.00	0.00	1
14120.0	0.00	0.00	0.00	1
14185.0	0.00	0.00	0.00	1
14282.0	0.00	0.00	0.00	1
14391.0	0.00	0.00	0.00	1
14403.0	0.00	0.00	0.00	1
14648.0	0.00	0.00	0.00	1
14947.0	0.00	0.00	0.00	1
14969.0	0.00	0.00	0.00	1
15188.0	0.00	0.00	0.00	1
15189.0	0.00	0.00	0.00	0
15252.0	0.00	0.00	0.00	1
15276.0	0.00	0.00	0.00	1
15453.0	0.00	0.00	0.00	1
15646.0	0.00	0.00	0.00	1
15790.0	0.00	0.00	0.00	1
15867.0	0.00	0.00	0.00	1
16020.0	0.00	0.00	0.00	1
16166.0	0.00	0.00	0.00	1
16182.0	0.00	0.00	0.00	1
16299.0	0.00	0.00	0.00	0
16557.0	0.00	0.00	0.00	2
16905.0	0.00	0.00	0.00	0
17129.0	0.00	0.00	0.00	0
17161.0	0.00	0.00	0.00	1
17218.0	0.00	0.00	0.00	1

17348.0	0.00	0.00	0.00	1
17394.0	0.00	0.00	0.00	1
17415.0	0.00	0.00	0.00	1
17424.0	0.00	0.00	0.00	1
17831.0	0.25	1.00	0.40	1
18331.0	0.00	0.00	0.00	1
18497.0	0.00	0.00	0.00	1
18654.0	0.00	0.00	0.00	1
18678.0	0.00	0.00	0.00	0
18757.0	0.00	0.00	0.00	2
18998.0	0.29	1.00	0.44	2
19252.0	0.00	0.00	0.00	2
19253.0	0.00	0.00	0.00	1
20053.0	0.00	0.00	0.00	1
20218.0	0.00	0.00	0.00	1
20850.0	0.20	1.00	0.33	1
20881.0	0.00	0.00	0.00	1
21252.0	0.00	0.00	0.00	2
21350.0	0.00	0.00	0.00	0
21372.0	0.00	0.00	0.00	1
21796.0	0.00	0.00	0.00	1
21916.0	0.00	0.00	0.00	1
22318.0	0.33	1.00	0.50	1
22375.0	0.00	0.00	0.00	1
22420.0	0.00	0.00	0.00	2
22638.0	0.00	0.00	0.00	0
22860.0	0.00	0.00	0.00	1
23316.0	0.00	0.00	0.00	1
24247.0	0.00	0.00	0.00	1
24269.0	0.14	1.00	0.25	1
24780.0	0.00	0.00	0.00	0
24870.0	0.00	0.00	0.00	3
24871.0	0.00	0.00	0.00	1
25006.0	0.00	0.00	0.00	1
25488.0	0.00	0.00	0.00	1
25771.0	0.00	0.00	0.00	1
25886.0	0.00	0.00	0.00	1
25910.0	0.00	0.00	0.00	1
26164.0	0.00	0.00	0.00	1
26194.0	0.00	0.00	0.00	1
26423.0	0.00	0.00	0.00	1
26543.0	0.00	0.00	0.00	1
26880.0	0.00	0.00	0.00	2
27139.0	0.00	0.00	0.00	1
27151.0	0.00	0.00	0.00	1
27201.0	0.00	0.00	0.00	1
27223.0	0.00	0.00	0.00	1
27696.0	0.00	0.00	0.00	1

27709.0	0.00	0.00	0.00	1
28030.0	0.00	0.00	0.00	1
28324.0	0.00	0.00	0.00	1
28791.0	0.00	0.00	0.00	1
28978.0	0.00	0.00	0.00	0
29746.0	0.00	0.00	0.00	1
30023.0	0.00	0.00	0.00	2
30058.0	0.00	0.00	0.00	1
30254.0	0.00	0.00	0.00	1
30355.0	0.00	0.00	0.00	1
30411.0	0.00	0.00	0.00	0
31305.0	0.00	0.00	0.00	1
31539.0	0.00	0.00	0.00	2
31599.0	0.00	0.00	0.00	1
31783.0	0.00	0.00	0.00	1
32840.0	0.00	0.00	0.00	1
34540.0	0.00	0.00	0.00	1
34899.0	0.00	0.00	0.00	1
35024.0	0.00	0.00	0.00	1
35693.0	0.00	0.00	0.00	1
35877.0	0.00	0.00	0.00	1
36384.0	0.00	0.00	0.00	1
37974.0	0.00	0.00	0.00	1
38879.0	0.00	0.00	0.00	0
40106.0	0.00	0.00	0.00	1
40895.0	0.00	0.00	0.00	1
41349.0	0.00	0.00	0.00	1
43993.0	0.00	0.00	0.00	1
43994.0	0.22	1.00	0.36	2
44054.0	0.00	0.00	0.00	1
45237.0	0.00	0.00	0.00	1
45238.0	0.00	0.00	0.00	0
47521.0	0.00	0.00	0.00	1
48448.0	0.00	0.00	0.00	1
48449.0	0.00	0.00	0.00	1
49551.0	0.00	0.00	0.00	1
50810.0	0.00	0.00	0.00	1
53464.0	0.00	0.00	0.00	1
56098.0	0.00	0.00	0.00	1
61314.0	0.00	0.00	0.00	1
64273.0	0.00	0.00	0.00	1
67259.0	0.00	0.00	0.00	2
67260.0	0.00	0.00	0.00	1
67950.0	0.00	0.00	0.00	1
67951.0	0.00	0.00	0.00	1
68409.0	0.00	0.00	0.00	1
69585.0	0.00	0.00	0.00	1
69619.0	0.00	0.00	0.00	1

```
     74976.0       0.00      0.00      0.00         1
     77027.0       0.00      0.00      0.00         1
     92588.0       0.00      0.00      0.00         0
     92595.0       0.00      0.00      0.00         2
     92995.0       0.00      0.00      0.00         1
     94363.0       0.00      0.00      0.00         2
     94364.0       0.00      0.00      0.00         1
     97174.0       0.00      0.00      0.00         1
     97175.0       0.00      0.00      0.00         1
    103052.0       0.00      0.00      0.00         1
    109864.0       0.00      0.00      0.00         1
    119466.0       0.00      0.00      0.00         1
    128311.0       0.25      1.00      0.40         1
    140035.0       0.00      0.00      0.00         1
    140036.0       0.00      0.00      0.00         1
    141841.0       0.00      0.00      0.00         1
    161679.0       0.00      0.00      0.00         1
    178912.0       0.00      0.00      0.00         1
    179691.0       0.00      0.00      0.00         2
    313832.0       0.00      0.00      0.00         0
    313836.0       0.00      0.00      0.00         1
    363713.0       0.00      0.00      0.00         1
    426972.0       0.00      0.00      0.00         1
    426973.0       0.00      0.00      0.00         3

    accuracy                           0.04       483
   macro avg       0.01      0.03      0.01       483
weighted avg       0.01      0.04      0.02       483


/usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to
0.0 in labels with no predicted samples. Use `zero_division` parameter to
control this behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344:
UndefinedMetricWarning: Recall and F-score are ill-defined and being set to 0.0
in labels with no true samples. Use `zero_division` parameter to control this
behavior.
  _warn_prf(average, modifier, msg_start, len(result))
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in labels with no true samples. Use `zero_division` parameter to control this
```

```
behavior.
  _warn_prf(average, modifier, msg_start, len(result))
/usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344:
UndefinedMetricWarning: Precision and F-score are ill-defined and being set to
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```