

Notebook

November 19, 2024

1 Import libraries

```
import os
import sys
import cv2
import math
import json
import joblib
import nbformat
import numpy as np
import pandas as pd
import seaborn as sns
from tqdm import tqdm
from sklearn.svm import SVC
from datetime import datetime
import matplotlib.pyplot as plt
from nbconvert.exporters import PDFExporter
from skimage.feature import hog as skimage_hog
from sklearn.preprocessing import LabelEncoder
from IPython.display import display, Javascript
from sklearn.neighbors import KNeighborsClassifier
from sklearn.model_selection import train_test_split, GridSearchCV
from sklearn.metrics import classification_report, confusion_matrix
from scipy.spatial.distance import cityblock, cosine, correlation, sqeuclidean
```

2 Load data

```
project_dir = os.getcwd()
project_dir = os.path.dirname(project_dir)
```

```
width = 64
height = 64
```

```
data_dir = project_dir + "\\data"

train_path = os.path.join(data_dir, "train")
```

```

test_path = os.path.join(data_dir, "test")

train_images = []
test_images = []

train_labels = []
test_labels = []

for path in (train_path, test_path):
    if (path.split('\\')[-1] == "train"):
        for dir in os.listdir(path):
            label_path = os.path.join(path, dir)
            label = dir.split('\\')[-1]
            for image in os.listdir(label_path):
                image_path = os.path.join(label_path, image)
                image = cv2.imread(image_path)
                image = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
                image = cv2.resize(image, (width, height))
                train_images.append(image)
                train_labels.append(label)
    else:
        for dir in os.listdir(path):
            label_path = os.path.join(path, dir)
            label = dir.split('\\')[-1]
            for image in os.listdir(label_path):
                image_path = os.path.join(label_path, image)
                image = cv2.imread(image_path)
                image = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
                image = cv2.resize(image, (width, height))
                test_images.append(image)
                test_labels.append(label)

```

```

label_encoder = LabelEncoder()
train_labels_encoded = label_encoder.fit_transform(train_labels)
test_labels_encoded = label_encoder.transform(test_labels)

```

```

joblib.dump(train_labels_encoded, project_dir + '\\joblib\\train_labels_encoded.
↪joblib')
joblib.dump(test_labels_encoded, project_dir + '\\joblib\\test_labels_encoded.
↪joblib')
joblib.dump(label_encoder, project_dir + '\\joblib\\label_encoder.joblib')

```

```

['d:\\ASUS\\Deploy-Traffic-Sign-Classification-through-
Images\\joblib\\label_encoder.joblib']

```

```

plt.imshow(test_images[0])

```

<matplotlib.image.AxesImage at 0x2341e4b0c50>



```
plt.imshow(train_images[1])
```

<matplotlib.image.AxesImage at 0x2341f6dd610>



3 Extract features

```
def blur_image(image):  
    blurred_image = cv2.medianBlur(image, 5)  
    return blurred_image
```

```
def color_histogram(image):  
    # image = cv2.cvtColor(image, cv2.COLOR_RGB2LUV)  
    row, column, channel = image.shape[:3]  
    size = row * column  
    feature = []  
    for k in range(channel):  
        histogram = np.squeeze(cv2.calcHist([image], [k], None, [32], [0, 256]))  
        histogram = histogram / size  
        feature.extend(histogram)  
    return feature
```

```
def hog(image):  
    # image = cv2.cvtColor(image, cv2.COLOR_RGB2LUV)
```

```

    hog_features = skimage_hog(image, orientations=9, pixels_per_cell=(8, 8),
    ↪cells_per_block=(2, 2), visualize=False, block_norm='L2-Hys',
    ↪transform_sqrt=True, channel_axis=2)
    return hog_features

```

```

def extract_features(images):
    blurred_images = [blur_image(image) for image in tqdm(images,
    ↪desc="Sharpening Images")]
    color_features = [color_histogram(image) for image in tqdm(blurred_images,
    ↪desc="Extracting Color Features")]
    hog_features = [hog(image) for image in tqdm(blurred_images,
    ↪desc="Extracting HOG Features")]
    combined_features = [np.concatenate((color_feature, hog_feature))
    ↪for color_feature, hog_feature in
    ↪tqdm(zip(color_features, hog_features), desc="Combining Features")]

    return combined_features

```

```

train_features = extract_features(train_images)
joblib.dump(train_features, project_dir + '\joblib\\train_features.joblib')

```

```

Sharpening Images: 100%|      | 1415/1415 [00:00<00:00, 1613.74it/s]
Extracting Color Features: 100%|      | 1415/1415 [00:00<00:00, 9083.55it/s]
Extracting HOG Features: 100%|      | 1415/1415 [00:06<00:00, 212.38it/s]
Combining Features: 1415it [00:00, 28043.81it/s]

```

```

['d:\\ASUS\\Deploy-Traffic-Sign-Classification-through-
Images\\joblib\\train_features.joblib']

```

```

test_features = extract_features(test_images)
joblib.dump(test_features, project_dir + '\joblib\\test_features.joblib')

```

```

Sharpening Images: 100%|      | 150/150 [00:00<00:00, 1248.18it/s]
Extracting Color Features: 100%|      | 150/150 [00:00<00:00, 14898.78it/s]
Extracting HOG Features: 100%|      | 150/150 [00:00<00:00, 198.09it/s]
Combining Features: 150it [00:00, 4178.81it/s]

```

```

['d:\\ASUS\\Deploy-Traffic-Sign-Classification-through-
Images\\joblib\\test_features.joblib']

```

```

X_train, X_val, y_train, y_val = train_test_split(train_features,
    ↪train_labels_encoded, test_size=0.2, random_state=42)

```

4 Distance metrics KNN

```
def chi_square_distance(x, y):
    return cv2.compareHist(np.array(x, dtype=np.float32), np.array(y, dtype=np.
    ↪float32), cv2.HISTCMP_CHISQR)

def bhattacharyya_distance(x, y):
    return cv2.compareHist(np.array(x, dtype=np.float32), np.array(y, dtype=np.
    ↪float32), cv2.HISTCMP_BHATTACHARYYA)

def intersection_distance(x, y):
    return 1 - cv2.compareHist(np.array(x, dtype=np.float32), np.array(y,
    ↪dtype=np.float32), cv2.HISTCMP_INTERSECT)
```

5 Gridsearch KNN

```
param_grid = {
    'n_neighbors': [3, 4, 5, 6, 7, 10],
    'weights': ['uniform', 'distance'],
    'leaf_size': [5, 10, 20, 30, 40, 50],
    'metric': [
        cityblock,
        cosine,
        correlation,
        sqeuclidean,
        chi_square_distance,
        bhattacharyya_distance,
        intersection_distance
    ]
}

knn_model = KNeighborsClassifier()
grid_search_knn = GridSearchCV(
    knn_model,
    param_grid,
    cv=3,
    scoring='f1_macro',
    verbose=3
)

grid_search_knn.fit(X_train, y_train)
```

Fitting 3 folds for each of 504 candidates, totalling 1512 fits

```
[CV 1/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=3, weights=uniform; score=0.841 total time= 3.6s
[CV 2/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
```

[illegible]

```

n_neighbors=7, weights=uniform;; score=0.822 total time= 3.4s
[CV 3/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.835 total time= 4.3s
[CV 1/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.850 total time= 3.5s
[CV 2/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.838 total time= 3.5s
[CV 3/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.862 total time= 3.4s
[CV 1/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.815 total time= 3.3s
[CV 2/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.800 total time= 3.4s
[CV 3/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.827 total time= 3.4s
[CV 1/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.850 total time= 3.3s
[CV 2/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.3s
[CV 3/3] END leaf_size=5, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.846 total time= 3.4s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.821 total time= 9.4s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.843 total time= 8.8s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.837 total time= 8.8s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.846 total time= 8.3s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.860 total time= 8.4s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.847 total time= 8.3s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.816 total time= 8.5s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.816 total time= 8.6s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.803 total time= 8.4s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.853 total time= 9.3s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.855 total time= 8.8s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.843 total time= 8.6s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=uniform;; score=0.815 total time= 8.8s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,

```



```

n_neighbors=5, weights=uniform;; score=0.821 total time= 8.5s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=uniform;; score=0.804 total time= 8.7s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.834 total time= 8.7s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.834 total time= 8.9s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.829 total time= 9.2s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.805 total time= 8.9s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.815 total time= 9.0s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.795 total time= 8.7s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.825 total time= 8.7s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.837 total time= 8.7s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.824 total time= 8.6s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.798 total time= 9.3s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.804 total time= 8.9s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.800 total time= 8.9s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.820 total time= 8.6s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.823 total time= 8.5s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.828 total time= 8.6s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.757 total time= 8.7s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.808 total time= 9.3s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.789 total time= 8.9s
[CV 1/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.817 total time= 8.8s
[CV 2/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.833 total time= 8.6s
[CV 3/3] END leaf_size=5, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.813 total time= 8.8s
[CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 18.5s
[CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,

```

n_neighbors=3, weights=uniform;; score=0.857 total time= 19.3s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=uniform;; score=0.870 total time= 18.5s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=distance;; score=0.846 total time= 18.0s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=distance;; score=0.865 total time= 18.4s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=distance;; score=0.879 total time= 18.5s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=uniform;; score=0.840 total time= 18.1s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=uniform;; score=0.813 total time= 18.8s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=uniform;; score=0.829 total time= 19.5s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.866 total time= 18.6s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.864 total time= 18.6s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.882 total time= 19.1s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.851 total time= 19.0s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.824 total time= 18.7s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.853 total time= 18.2s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.863 total time= 19.2s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.855 total time= 18.6s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.865 total time= 18.6s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.822 total time= 19.1s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.813 total time= 19.1s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.807 total time= 18.7s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.862 total time= 18.5s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.839 total time= 18.7s
 [CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.846 total time= 18.0s
 [CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=uniform;; score=0.828 total time= 18.1s
 [CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,

n_neighbors=7, weights=uniform;; score=0.826 total time= 18.1s
[CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.825 total time= 18.9s
[CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.840 total time= 18.1s
[CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.842 total time= 18.3s
[CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.849 total time= 19.2s
[CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.822 total time= 19.6s
[CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.787 total time= 19.0s
[CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.798 total time= 19.5s
[CV 1/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.828 total time= 19.1s
[CV 2/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.820 total time= 18.2s
[CV 3/3] END leaf_size=5, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.854 total time= 18.2s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.826 total time= 3.7s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.843 total time= 3.4s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 4.0s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.849 total time= 3.6s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.859 total time= 3.3s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.842 total time= 3.6s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.814 total time= 3.4s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.811 total time= 3.5s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.806 total time= 3.7s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.856 total time= 3.6s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.852 total time= 3.4s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.843 total time= 3.8s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.810 total time= 3.5s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,

```

n_neighbors=5, weights=uniform;; score=0.823 total time= 3.7s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.801 total time= 3.9s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.831 total time= 3.4s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.843 total time= 3.6s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.826 total time= 3.7s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.797 total time= 3.4s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.815 total time= 3.6s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.799 total time= 4.2s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.825 total time= 3.5s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.843 total time= 3.5s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.824 total time= 3.7s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.803 total time= 3.4s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.807 total time= 3.7s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.797 total time= 3.7s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.817 total time= 3.5s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.821 total time= 3.6s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.825 total time= 3.5s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.755 total time= 3.5s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.805 total time= 3.8s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.786 total time= 3.5s
[CV 1/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.4s
[CV 2/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.826 total time= 3.7s
[CV 3/3] END leaf_size=5, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.814 total time= 3.5s
[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.717 total time=
4.4s

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[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.701 total time= 4.9s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.693 total time= 4.6s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.749 total time= 4.4s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.707 total time= 4.2s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.693 total time= 4.3s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.731 total time= 4.3s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.662 total time= 4.2s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.716 total time= 3.9s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.748 total time= 4.2s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.704 total time= 4.2s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.720 total time= 4.0s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.742 total time= 4.0s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.669 total time= 4.0s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.704 total time= 4.2s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.761 total time= 4.2s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.711 total time= 4.2s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.729 total time=4.4s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.712 total time=4.2s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.689 total time=4.1s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.702 total time=3.9s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.749 total time=4.2s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.707 total time=4.1s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.721 total time=4.0s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.709 total time=4.2s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.690 total time=4.2s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.692 total time=4.3s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.760 total time=4.4s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.732 total time=4.2s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.717 total time=4.3s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.721 total time=4.4s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.665 total time=4.5s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.692 total time=4.5s

[CV 1/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.746 total time=4.3s

[CV 2/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.720 total time=4.3s

[CV 3/3] END leaf_size=5, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.732 total time=4.3s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.794 total time=4.3s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.803 total time=3.8s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.797 total time=4.0s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.832 total time=3.9s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.822 total time=3.8s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.800 total time=3.8s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.763 total time=3.7s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.783 total time=3.6s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.771 total time=3.9s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.813 total time=3.8s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.811 total time=3.6s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.812 total time=3.9s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.780 total time=4.2s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.783 total time= 3.7s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.773 total time= 3.8s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.795 total time= 3.7s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.794 total time= 3.6s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.786 total time= 3.8s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.774 total time= 3.7s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.782 total time= 3.6s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.769 total time= 3.9s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.821 total time= 3.8s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.783 total time= 3.6s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.794 total time= 3.8s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.795 total time= 3.9s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.791 total time= 3.9s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.764 total time= 3.9s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.809 total time= 4.0s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.794 total time= 4.2s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.785 total time= 4.4s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.750 total time= 4.0s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.752 total time= 3.9s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.771 total time= 4.0s

[CV 1/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.781 total time= 3.8s

[CV 2/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.763 total time= 3.9s

[CV 3/3] END leaf_size=5, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.774 total time= 4.0s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.700 total time= 3.4s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.745 total time= 3.5s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.721 total time= 3.5s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.4s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.5s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.5s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.638 total time= 3.5s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.723 total time= 3.4s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.690 total time= 3.5s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.9s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.5s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.683 total time= 3.5s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.728 total time= 3.5s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.715 total time= 3.6s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.6s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.694 total time= 3.5s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.721 total time= 3.4s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.707 total time= 3.7s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.5s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.701 total time= 3.4s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.724 total time= 3.6s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.684 total time= 3.4s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.2s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.8s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.7s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.700 total time= 3.3s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.713 total time= 3.3s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.695 total time= 3.3s

[CV 1/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=5, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.4s

[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.841 total time= 3.4s

[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.2s

[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.5s

[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.855 total time= 3.3s

[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.888 total time= 3.2s

[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.881 total time= 3.4s

[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.842 total time= 3.2s

[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.842 total time= 3.2s

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n_neighbors=4, weights=uniform;; score=0.827 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=uniform;; score=0.859 total time= 3.4s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.872 total time= 3.3s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.872 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.879 total time= 3.9s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.856 total time= 3.5s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.838 total time= 3.5s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.865 total time= 3.6s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.869 total time= 3.5s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.850 total time= 3.5s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.865 total time= 3.5s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.829 total time= 3.5s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.827 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.847 total time= 3.6s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.869 total time= 3.5s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.853 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 3.5s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.827 total time= 3.4s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.822 total time= 3.3s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.835 total time= 3.4s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.850 total time= 3.2s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.838 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.862 total time= 3.8s
[CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.815 total time= 3.9s
[CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,

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n_neighbors=10, weights=uniform;; score=0.800 total time= 4.8s
 [CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=uniform;; score=0.827 total time= 3.6s
 [CV 1/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=distance;; score=0.850 total time= 3.5s
 [CV 2/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=distance;; score=0.811 total time= 4.3s
 [CV 3/3] END leaf_size=10, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=distance;; score=0.846 total time= 3.7s
 [CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=uniform;; score=0.821 total time= 9.3s
 [CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=uniform;; score=0.843 total time= 10.1s
 [CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=uniform;; score=0.837 total time= 8.7s
 [CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.846 total time= 8.7s
 [CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.860 total time= 9.4s
 [CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.847 total time= 9.0s
 [CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.816 total time= 9.9s
 [CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.816 total time= 9.5s
 [CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.803 total time= 9.2s
 [CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.853 total time= 8.7s
 [CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.855 total time= 8.8s
 [CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.843 total time= 9.8s
 [CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.815 total time= 9.1s
 [CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.821 total time= 12.0s
 [CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.804 total time= 9.6s
 [CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.834 total time= 8.5s
 [CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.834 total time= 8.4s
 [CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.829 total time= 8.4s
 [CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=uniform;; score=0.805 total time= 8.9s
 [CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,

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n_neighbors=6, weights=uniform;; score=0.815 total time= 8.5s
[CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.795 total time= 8.3s
[CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.825 total time= 8.4s
[CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.837 total time= 8.4s
[CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.824 total time= 8.3s
[CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.798 total time= 8.3s
[CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.804 total time= 8.8s
[CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.800 total time= 9.2s
[CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.820 total time= 8.6s
[CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.823 total time= 8.6s
[CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.828 total time= 8.8s
[CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.757 total time= 8.8s
[CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.808 total time= 8.6s
[CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.789 total time= 8.4s
[CV 1/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.817 total time= 9.3s
[CV 2/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.833 total time= 8.2s
[CV 3/3] END leaf_size=10, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.813 total time= 8.4s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 18.3s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.857 total time= 18.0s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.870 total time= 19.1s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.846 total time= 18.4s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.865 total time= 18.4s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.879 total time= 18.4s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.840 total time= 18.6s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,

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n_neighbors=4, weights=uniform;; score=0.813 total time= 18.0s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.829 total time= 18.0s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.866 total time= 18.8s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.864 total time= 17.9s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.882 total time= 17.8s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.851 total time= 18.1s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.824 total time= 19.0s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.853 total time= 18.1s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.863 total time= 18.0s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.855 total time= 19.4s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.865 total time= 18.5s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.822 total time= 18.2s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.813 total time= 18.1s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.807 total time= 18.7s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 17.9s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.839 total time= 18.1s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.846 total time= 19.0s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.828 total time= 18.2s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.826 total time= 18.3s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.825 total time= 18.0s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.840 total time= 18.7s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.842 total time= 17.9s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.849 total time= 18.0s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.822 total time= 18.4s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,

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n_neighbors=10, weights=uniform;; score=0.787 total time= 18.4s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.798 total time= 18.0s
[CV 1/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.828 total time= 17.9s
[CV 2/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.820 total time= 19.5s
[CV 3/3] END leaf_size=10, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.854 total time= 18.2s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.826 total time= 3.7s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.843 total time= 3.7s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 3.4s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.849 total time= 3.4s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.859 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.842 total time= 3.4s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.814 total time= 3.4s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.811 total time= 3.5s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.806 total time= 3.4s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.856 total time= 3.2s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.852 total time= 3.8s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.843 total time= 3.5s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.810 total time= 3.3s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.823 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.801 total time= 3.3s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.831 total time= 3.4s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.843 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.826 total time= 3.3s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.797 total time= 3.2s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,


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n_neighbors=6, weights=uniform;; score=0.815 total time= 3.3s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.799 total time= 3.3s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.825 total time= 3.3s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.843 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.824 total time= 3.2s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.803 total time= 3.3s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.807 total time= 3.5s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.797 total time= 3.3s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.817 total time= 3.3s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.821 total time= 3.3s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.825 total time= 3.7s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.755 total time= 3.7s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.805 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.786 total time= 3.4s
[CV 1/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.4s
[CV 2/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.826 total time= 3.4s
[CV 3/3] END leaf_size=10, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.814 total time= 3.3s
[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.717 total time=
4.1s
[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.701 total time=
4.2s
[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.693 total time=
4.0s
[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.749 total time=
4.0s
[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.707 total time=
4.1s

```

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.693 total time= 4.0s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.731 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.662 total time= 4.1s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.716 total time= 4.0s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.748 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.704 total time= 4.6s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.720 total time= 4.1s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.742 total time= 4.1s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.669 total time= 4.1s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.704 total time= 4.0s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.761 total time= 3.9s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.711 total time= 4.1s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.729 total time= 3.9s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.712 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.689 total time= 4.0s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.702 total time= 4.1s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.749 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.707 total time= 4.0s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.721 total time= 3.9s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.709 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.690 total time= 4.1s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.692 total time= 4.5s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.760 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.732 total time= 4.2s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.717 total time= 4.0s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.721 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.665 total time= 4.1s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.692 total time= 3.9s

[CV 1/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.746 total time= 4.0s

[CV 2/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.720 total time= 4.1s

[CV 3/3] END leaf_size=10, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.732 total time= 4.0s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.794 total time= 3.6s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.803 total time= 3.7s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.797 total time= 3.6s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.832 total time= 3.6s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.822 total time= 3.7s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.800 total time= 3.6s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.763 total time= 4.1s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.783 total time= 3.8s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.771 total time= 3.6s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.813 total time= 3.6s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.811 total time= 3.7s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.812 total time= 3.6s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.780 total time= 3.7s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.783 total time= 4.0s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.773 total time= 3.8s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.795 total time= 3.7s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.794 total time= 3.8s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.786 total time= 3.7s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.774 total time= 3.6s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.782 total time= 3.8s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.769 total time= 3.7s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.821 total time= 3.7s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.783 total time= 3.6s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.794 total time= 4.0s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.795 total time= 3.9s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.791 total time= 3.7s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.764 total time= 3.7s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.809 total time= 3.7s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.794 total time= 3.8s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.785 total time= 3.6s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.750 total time= 3.7s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.752 total time= 3.6s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.771 total time= 3.7s

[CV 1/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;;, score=0.781 total time= 3.7s

[CV 2/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;;, score=0.763 total time= 3.6s

[CV 3/3] END leaf_size=10, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;;, score=0.774 total time= 3.6s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;;, score=0.700 total time= 3.4s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;;, score=0.745 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;;, score=0.721 total time= 3.3s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;;, score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;;, score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;;, score=0.076 total time= 3.5s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;;, score=0.638 total time= 3.4s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;;, score=0.723 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;;, score=0.690 total time= 3.3s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;;, score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;;, score=0.076 total time= 3.2s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;;, score=0.076 total time= 3.2s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;;, score=0.683 total time= 3.3s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.728 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.715 total time= 3.2s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.694 total time= 3.4s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.721 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.707 total time= 3.3s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.4s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.2s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.701 total time= 3.6s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.724 total time= 3.5s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.684 total time= 3.3s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.700 total time= 3.4s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.713 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.695 total time= 3.3s

[CV 1/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.4s

[CV 2/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=10, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.2s

[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.841 total time= 3.4s

[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.3s

[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.855 total time= 3.2s

[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.888 total time= 3.4s

[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.881 total time= 3.6s

[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.842 total time= 3.4s

[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.827 total time= 3.6s

[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.859 total time= 3.5s

[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=distance;; score=0.872 total time= 3.3s

[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=distance;; score=0.872 total time= 3.2s

[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=distance;; score=0.879 total time= 3.2s

[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=uniform;; score=0.856 total time= 3.4s

[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=uniform;; score=0.856 total time= 3.4s


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n_neighbors=5, weights=uniform;; score=0.838 total time= 3.3s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.865 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.869 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.850 total time= 3.2s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.865 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.829 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.827 total time= 3.2s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.847 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.869 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.853 total time= 3.2s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.827 total time= 3.4s
[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.822 total time= 3.3s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.835 total time= 3.4s
[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.850 total time= 3.8s
[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.838 total time= 3.2s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.862 total time= 3.2s
[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.815 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.800 total time= 3.3s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.827 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.850 total time= 3.4s
[CV 2/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.2s
[CV 3/3] END leaf_size=20, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.846 total time= 3.2s
[CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.821 total time= 8.3s
[CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,

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n_neighbors=3, weights=uniform;; score=0.843 total time= 8.4s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=uniform;; score=0.837 total time= 8.9s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.846 total time= 8.9s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.860 total time= 9.1s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.847 total time= 8.9s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.816 total time= 8.7s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.816 total time= 8.7s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.803 total time= 8.8s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.853 total time= 8.7s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.855 total time= 8.4s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.843 total time= 9.0s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.815 total time= 8.5s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.821 total time= 8.4s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.804 total time= 8.3s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.834 total time= 8.3s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.834 total time= 8.4s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.829 total time= 8.5s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=uniform;; score=0.805 total time= 8.4s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=uniform;; score=0.815 total time= 9.4s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=uniform;; score=0.795 total time= 8.6s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=distance;; score=0.825 total time= 8.5s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=distance;; score=0.837 total time= 8.4s
 [CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=distance;; score=0.824 total time= 8.6s
 [CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=7, weights=uniform;; score=0.798 total time= 8.6s
 [CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,

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n_neighbors=7, weights=uniform;; score=0.804 total time= 8.7s
[CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.800 total time= 9.4s
[CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.820 total time= 8.5s
[CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.823 total time= 8.3s
[CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.828 total time= 8.5s
[CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.757 total time= 8.4s
[CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.808 total time= 8.3s
[CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.789 total time= 8.3s
[CV 1/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.817 total time= 8.3s
[CV 2/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.833 total time= 9.2s
[CV 3/3] END leaf_size=20, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.813 total time= 8.3s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 18.6s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.857 total time= 18.1s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.870 total time= 19.1s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.846 total time= 18.2s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.865 total time= 18.8s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.879 total time= 18.4s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.840 total time= 18.9s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.813 total time= 18.1s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.829 total time= 18.3s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.866 total time= 19.0s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.864 total time= 18.2s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.882 total time= 18.1s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.851 total time= 18.7s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,

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n_neighbors=5, weights=uniform;; score=0.824 total time= 19.2s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.853 total time= 18.0s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.863 total time= 18.2s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.855 total time= 18.6s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.865 total time= 18.0s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.822 total time= 18.1s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.813 total time= 18.0s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.807 total time= 19.0s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 18.0s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.839 total time= 18.1s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.846 total time= 18.2s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.828 total time= 19.3s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.826 total time= 18.8s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.825 total time= 18.1s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.840 total time= 19.0s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.842 total time= 18.2s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.849 total time= 18.0s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.822 total time= 18.0s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.787 total time= 18.8s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.798 total time= 18.6s
[CV 1/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.828 total time= 18.5s
[CV 2/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.820 total time= 19.0s
[CV 3/3] END leaf_size=20, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.854 total time= 18.2s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.826 total time= 3.4s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,

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n_neighbors=3, weights=uniform;; score=0.843 total time= 3.5s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 3.4s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.849 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.859 total time= 3.4s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.842 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.814 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.811 total time= 3.3s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.806 total time= 3.4s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.856 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.852 total time= 3.4s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.843 total time= 3.6s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.810 total time= 3.5s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.823 total time= 3.4s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.801 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.831 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.843 total time= 3.3s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.826 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.797 total time= 3.4s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.815 total time= 3.4s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.799 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.825 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.843 total time= 3.3s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.824 total time= 3.2s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.803 total time= 3.2s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,

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```

n_neighbors=7, weights=uniform;; score=0.807 total time= 3.4s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.797 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.817 total time= 3.3s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.821 total time= 3.4s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.825 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.755 total time= 3.7s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.805 total time= 3.6s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.786 total time= 3.4s
[CV 1/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.4s
[CV 2/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.826 total time= 3.4s
[CV 3/3] END leaf_size=20, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.814 total time= 3.3s
[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.717 total time=
3.9s
[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.701 total time=
4.1s
[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.693 total time=
4.1s
[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.749 total time=
4.1s
[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.707 total time=
4.1s
[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.693 total time=
4.1s
[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.731 total time=
4.1s
[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.662 total time=
4.1s
[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.716 total time=
4.1s

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[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.748 total time= 4.1s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.704 total time= 4.2s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.720 total time= 4.6s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.742 total time= 4.0s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.669 total time= 4.2s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.704 total time= 4.0s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.761 total time= 3.9s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.711 total time= 4.2s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.729 total time= 4.5s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.712 total time= 4.8s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.689 total time= 4.8s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.702 total time= 4.1s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.749 total time= 4.1s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.707 total time= 4.0s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.721 total time= 4.1s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.709 total time= 4.3s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.690 total time=4.4s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.692 total time=4.9s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.760 total time=5.0s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.732 total time=4.6s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.717 total time=4.1s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.721 total time=5.5s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.665 total time=5.0s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.692 total time=4.8s

[CV 1/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.746 total time=4.7s

[CV 2/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.720 total time=4.8s

[CV 3/3] END leaf_size=20, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.732 total time=4.9s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.794 total time=4.5s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.803 total time=4.3s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.797 total time=4.1s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.832 total time=4.0s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.822 total time=4.3s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.800 total time= 3.8s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.763 total time= 3.7s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.783 total time= 3.8s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.771 total time= 3.7s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.813 total time= 3.7s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.811 total time= 3.7s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.812 total time= 3.7s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.780 total time= 3.7s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.783 total time= 3.8s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.773 total time= 3.7s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.795 total time= 3.7s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.794 total time= 3.7s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.786 total time= 3.6s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.774 total time= 3.7s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.782 total time= 3.7s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.769 total time= 3.8s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.821 total time= 4.0s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.783 total time= 3.8s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.794 total time= 3.7s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.795 total time= 3.6s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.791 total time= 3.8s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.764 total time= 3.7s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.809 total time= 3.7s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.794 total time= 3.7s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.785 total time= 3.6s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.750 total time= 3.6s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.752 total time= 3.7s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.771 total time= 3.6s

[CV 1/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.781 total time= 3.6s

[CV 2/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.763 total time= 3.6s

[CV 3/3] END leaf_size=20, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.774 total time= 3.6s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.700 total time= 3.2s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.745 total time= 3.4s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.721 total time= 3.7s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.4s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.2s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.638 total time= 3.3s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.723 total time= 3.3s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.690 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.683 total time= 3.4s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.728 total time= 3.7s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.715 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.2s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.5s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.694 total time= 3.3s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.721 total time= 3.6s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.707 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.6s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.5s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.701 total time= 3.3s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.724 total time= 3.4s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.684 total time= 3.3s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.2s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.2s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.700 total time= 3.3s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.713 total time= 3.3s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.695 total time= 3.2s

[CV 1/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.2s

[CV 2/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=20, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.841 total time= 3.3s

[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.5s

[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.3s

[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.855 total time= 3.3s

[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.888 total time= 3.5s

[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.881 total time= 3.6s

[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.842 total time= 3.3s

[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.827 total time= 3.4s

[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.859 total time= 3.3s

[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=distance;; score=0.872 total time= 3.2s

[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=distance;; score=0.872 total time= 3.4s

[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=distance;; score=0.879 total time= 3.3s

[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=uniform;; score=0.856 total time= 3.3s

[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=uniform;; score=0.838 total time= 3.4s

[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=uniform;; score=0.865 total time= 3.3s

[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=distance;; score=0.869 total time= 3.3s

[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=distance;; score=0.850 total time= 3.3s

[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=5, weights=distance;; score=0.865 total time= 3.3s

[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=6, weights=uniform;; score=0.829 total time= 3.3s

[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=6, weights=uniform;; score=0.829 total time= 3.3s

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n_neighbors=6, weights=uniform;; score=0.827 total time= 3.5s
[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.847 total time= 3.4s
[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.869 total time= 3.3s
[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.853 total time= 3.4s
[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 3.6s
[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.827 total time= 3.5s
[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.822 total time= 3.4s
[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.835 total time= 3.3s
[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.850 total time= 3.3s
[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.838 total time= 3.3s
[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.862 total time= 3.4s
[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.815 total time= 3.3s
[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.800 total time= 3.4s
[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.827 total time= 3.4s
[CV 1/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.850 total time= 3.2s
[CV 2/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.3s
[CV 3/3] END leaf_size=30, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.846 total time= 3.3s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.821 total time= 8.6s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.843 total time= 8.5s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.837 total time= 9.2s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.846 total time= 8.7s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.860 total time= 9.0s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.847 total time= 8.9s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.816 total time= 8.7s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,

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n_neighbors=4, weights=uniform;; score=0.816 total time= 8.7s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.803 total time= 8.8s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.853 total time= 9.0s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.855 total time= 8.9s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.843 total time= 8.5s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=uniform;; score=0.815 total time= 8.5s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=uniform;; score=0.821 total time= 8.9s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=uniform;; score=0.804 total time= 8.6s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.834 total time= 8.7s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.834 total time= 8.6s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.829 total time= 9.1s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.805 total time= 8.6s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.815 total time= 8.6s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.795 total time= 8.7s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.825 total time= 8.5s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.837 total time= 8.7s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.824 total time= 8.8s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.798 total time= 8.9s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.804 total time= 9.2s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.800 total time= 8.7s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.820 total time= 8.5s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.823 total time= 8.5s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.828 total time= 8.5s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.757 total time= 8.4s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,

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n_neighbors=10, weights=uniform;; score=0.808 total time= 8.5s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.789 total time= 9.1s
[CV 1/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.817 total time= 8.4s
[CV 2/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.833 total time= 8.7s
[CV 3/3] END leaf_size=30, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.813 total time= 10.0s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 24.6s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.857 total time= 26.6s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.870 total time= 21.5s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.846 total time= 20.1s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.865 total time= 21.6s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.879 total time= 18.8s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.840 total time= 19.9s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.813 total time= 20.3s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.829 total time= 19.2s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.866 total time= 19.7s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.864 total time= 21.0s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=distance;; score=0.882 total time= 19.9s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.851 total time= 19.5s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.824 total time= 19.4s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=uniform;; score=0.853 total time= 23.0s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.863 total time= 26.2s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.855 total time= 22.7s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=5, weights=distance;; score=0.865 total time= 22.4s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.822 total time= 22.3s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,

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n_neighbors=6, weights=uniform;; score=0.813 total time= 22.6s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=uniform;; score=0.807 total time= 21.7s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 21.9s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.839 total time= 23.1s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=6, weights=distance;; score=0.846 total time= 21.1s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.828 total time= 20.8s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.826 total time= 25.1s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=uniform;; score=0.825 total time= 22.5s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.840 total time= 22.1s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.842 total time= 21.8s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=7, weights=distance;; score=0.849 total time= 21.0s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.822 total time= 19.9s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.787 total time= 19.2s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.798 total time= 18.8s
[CV 1/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.828 total time= 19.1s
[CV 2/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.820 total time= 18.7s
[CV 3/3] END leaf_size=30, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.854 total time= 19.3s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.826 total time= 3.3s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.843 total time= 3.3s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 3.3s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.849 total time= 3.4s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.859 total time= 3.3s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.842 total time= 3.6s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.814 total time= 3.6s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,

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n_neighbors=4, weights=uniform;; score=0.811 total time= 3.3s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.806 total time= 3.5s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.856 total time= 3.5s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.852 total time= 3.8s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.843 total time= 4.3s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.810 total time= 3.8s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.823 total time= 4.3s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.801 total time= 4.1s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.831 total time= 3.3s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.843 total time= 3.4s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.826 total time= 3.7s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.797 total time= 3.4s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.815 total time= 3.5s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.799 total time= 3.5s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.825 total time= 3.5s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.843 total time= 3.3s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.824 total time= 3.4s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.803 total time= 3.5s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.807 total time= 3.4s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.797 total time= 3.4s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.817 total time= 3.4s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.821 total time= 3.5s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.825 total time= 3.5s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.755 total time= 3.6s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,

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n_neighbors=10, weights=uniform;; score=0.805 total time= 3.8s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.786 total time= 3.7s
[CV 1/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.3s
[CV 2/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.826 total time= 3.4s
[CV 3/3] END leaf_size=30, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.814 total time= 3.4s
[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.717 total time=
4.4s
[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.701 total time=
4.1s
[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.693 total time=
4.2s
[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.749 total time=
4.0s
[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.707 total time=
4.2s
[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.693 total time=
4.1s
[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.731 total time=
4.1s
[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.662 total time=
4.0s
[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.716 total time=
4.3s
[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.748 total time=
4.0s
[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.704 total time=
4.1s
[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.720 total time=
4.7s
[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.742 total time=
4.6s

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[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.669 total time= 4.7s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.704 total time= 4.4s

[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.761 total time= 4.4s

[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.711 total time= 4.7s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.729 total time= 4.2s

[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.712 total time= 4.0s

[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.689 total time= 4.1s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.702 total time= 4.3s

[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.749 total time= 4.6s

[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.707 total time= 4.2s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.721 total time= 4.2s

[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.709 total time= 4.7s

[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.690 total time= 4.6s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.692 total time= 5.0s

[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.760 total time= 4.1s

[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.732 total time= 4.4s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.717 total time= 4.6s

[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.721 total time= 6.1s

[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.665 total time= 5.7s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.692 total time= 8.2s

[CV 1/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.746 total time= 4.8s

[CV 2/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.720 total time= 4.5s

[CV 3/3] END leaf_size=30, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.732 total time= 6.4s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.794 total time= 5.6s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.803 total time= 4.9s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.797 total time= 5.0s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.832 total time= 4.1s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.822 total time= 3.9s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.800 total time= 3.9s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.763 total time= 4.1s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.783 total time= 3.7s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.771 total time= 3.9s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.813 total time= 4.3s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.811 total time= 3.9s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.812 total time= 3.7s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.780 total time= 4.1s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.783 total time= 3.7s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.773 total time= 3.7s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.795 total time= 3.6s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.794 total time= 3.8s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.786 total time= 3.8s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.774 total time= 4.0s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.782 total time= 3.7s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.769 total time= 3.6s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.821 total time= 3.6s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.783 total time= 3.7s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.794 total time= 3.6s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.795 total time= 3.7s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.791 total time= 3.7s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.764 total time= 3.6s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.809 total time= 3.6s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.794 total time= 3.7s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.785 total time= 3.6s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.750 total time= 3.6s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.752 total time= 3.8s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.771 total time= 3.6s

[CV 1/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.781 total time= 3.8s

[CV 2/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.763 total time= 3.7s

[CV 3/3] END leaf_size=30, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.774 total time= 4.0s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.700 total time= 3.5s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.745 total time= 3.3s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.721 total time= 3.6s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 4.6s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 5.2s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.638 total time= 5.3s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.723 total time= 3.4s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.690 total time= 3.5s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 4.3s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.683 total time= 3.4s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.728 total time= 4.9s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.715 total time= 5.9s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 7.0s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 4.6s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 5.7s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.694 total time= 4.7s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.721 total time= 5.2s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.707 total time= 4.2s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.701 total time= 4.2s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.724 total time= 6.6s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.684 total time= 4.6s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.6s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.6s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 5.9s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.700 total time= 3.5s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.713 total time= 4.8s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.695 total time= 4.1s

[CV 1/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 4.8s

[CV 2/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 4.6s

[CV 3/3] END leaf_size=30, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 4.2s

[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.841 total time= 3.5s

[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,

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n_neighbors=3, weights=uniform;; score=0.879 total time= 3.5s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=3, weights=uniform;; score=0.879 total time= 3.9s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=3, weights=distance;; score=0.855 total time= 4.1s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=3, weights=distance;; score=0.888 total time= 3.5s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=3, weights=distance;; score=0.881 total time= 4.0s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=uniform;; score=0.842 total time= 3.6s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=uniform;; score=0.827 total time= 4.4s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=uniform;; score=0.859 total time= 4.6s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.872 total time= 4.5s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.872 total time= 4.2s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.879 total time= 3.7s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.856 total time= 3.5s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.838 total time= 3.9s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.865 total time= 3.7s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.869 total time= 3.8s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.850 total time= 3.8s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.865 total time= 3.9s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.829 total time= 3.4s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.827 total time= 3.6s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.847 total time= 4.1s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.869 total time= 3.8s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.853 total time= 3.4s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 4.0s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.827 total time= 3.7s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,

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n_neighbors=7, weights=uniform;; score=0.822 total time= 4.4s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.835 total time= 5.2s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.850 total time= 5.9s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.838 total time= 3.7s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.862 total time= 3.4s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.815 total time= 3.6s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.800 total time= 4.3s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.827 total time= 4.3s
[CV 1/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.850 total time= 3.3s
[CV 2/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.8s
[CV 3/3] END leaf_size=40, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=distance;; score=0.846 total time= 3.9s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.821 total time= 9.9s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.843 total time= 9.2s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=uniform;; score=0.837 total time= 14.8s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.846 total time= 10.1s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.860 total time= 9.6s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=3, weights=distance;; score=0.847 total time= 10.5s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.816 total time= 8.1s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.816 total time= 8.4s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=uniform;; score=0.803 total time= 8.8s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.853 total time= 8.6s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.855 total time= 9.0s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=4, weights=distance;; score=0.843 total time= 8.5s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=uniform;; score=0.815 total time= 9.1s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,

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n_neighbors=5, weights=uniform;; score=0.821 total time= 8.7s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=uniform;; score=0.804 total time= 8.4s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.834 total time= 11.2s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.834 total time= 8.9s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=5, weights=distance;; score=0.829 total time= 8.9s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.805 total time= 10.8s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.815 total time= 10.3s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.795 total time= 8.6s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.825 total time= 8.2s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.837 total time= 8.5s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.824 total time= 8.6s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.798 total time= 8.4s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.804 total time= 10.0s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.800 total time= 10.2s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.820 total time= 9.8s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.823 total time= 9.7s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.828 total time= 10.7s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.757 total time= 9.8s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.808 total time= 10.0s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.789 total time= 9.8s
[CV 1/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.817 total time= 9.5s
[CV 2/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.833 total time= 9.5s
[CV 3/3] END leaf_size=40, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.813 total time= 9.5s
[CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 21.3s
[CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,

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n_neighbors=3, weights=uniform;; score=0.857 total time= 20.5s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=uniform;; score=0.870 total time= 20.5s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=distance;; score=0.846 total time= 21.9s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=distance;; score=0.865 total time= 20.8s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=3, weights=distance;; score=0.879 total time= 21.2s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=uniform;; score=0.840 total time= 23.1s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=uniform;; score=0.813 total time= 22.7s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=uniform;; score=0.829 total time= 23.9s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.866 total time= 24.0s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.864 total time= 20.7s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.882 total time= 23.0s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.851 total time= 21.8s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.824 total time= 21.2s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.853 total time= 21.1s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.863 total time= 22.8s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.855 total time= 20.3s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.865 total time= 18.9s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.822 total time= 20.6s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.813 total time= 20.3s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.807 total time= 20.7s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.862 total time= 21.4s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.839 total time= 19.7s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.846 total time= 19.9s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=uniform;; score=0.828 total time= 20.0s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,

n_neighbors=7, weights=uniform;; score=0.826 total time= 17.9s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=uniform;; score=0.825 total time= 19.3s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=distance;; score=0.840 total time= 20.1s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=distance;; score=0.842 total time= 19.1s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=distance;; score=0.849 total time= 18.5s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=10, weights=uniform;; score=0.822 total time= 21.3s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=10, weights=uniform;; score=0.787 total time= 20.3s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=10, weights=uniform;; score=0.798 total time= 26.4s
 [CV 1/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=10, weights=distance;; score=0.828 total time= 25.7s
 [CV 2/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=10, weights=distance;; score=0.820 total time= 20.4s
 [CV 3/3] END leaf_size=40, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=10, weights=distance;; score=0.854 total time= 18.8s
 [CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=3, weights=uniform;; score=0.826 total time= 3.3s
 [CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=3, weights=uniform;; score=0.843 total time= 3.3s
 [CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=3, weights=uniform;; score=0.832 total time= 3.3s
 [CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=3, weights=distance;; score=0.849 total time= 3.3s
 [CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=3, weights=distance;; score=0.859 total time= 3.2s
 [CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=3, weights=distance;; score=0.842 total time= 3.3s
 [CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=4, weights=uniform;; score=0.814 total time= 3.2s
 [CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=4, weights=uniform;; score=0.811 total time= 3.3s
 [CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=4, weights=uniform;; score=0.806 total time= 3.7s
 [CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=4, weights=distance;; score=0.856 total time= 3.5s
 [CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=4, weights=distance;; score=0.852 total time= 3.2s
 [CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=4, weights=distance;; score=0.843 total time= 3.3s
 [CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
 n_neighbors=5, weights=uniform;; score=0.810 total time= 3.3s
 [CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,

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n_neighbors=5, weights=uniform;; score=0.823 total time= 3.2s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.801 total time= 3.3s
[CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.831 total time= 3.2s
[CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.843 total time= 3.2s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.826 total time= 3.3s
[CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.797 total time= 3.3s
[CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.815 total time= 3.3s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.799 total time= 3.4s
[CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.825 total time= 3.5s
[CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.843 total time= 3.5s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.824 total time= 3.9s
[CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.803 total time= 4.0s
[CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.807 total time= 4.1s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.797 total time= 4.1s
[CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.817 total time= 4.3s
[CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.821 total time= 3.9s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.825 total time= 3.8s
[CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.755 total time= 4.0s
[CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.805 total time= 4.2s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.786 total time= 3.5s
[CV 1/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.811 total time= 4.2s
[CV 2/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.826 total time= 3.8s
[CV 3/3] END leaf_size=40, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.814 total time= 3.4s
[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.717 total time=
4.2s

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[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.701 total time= 4.2s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.693 total time= 4.6s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.749 total time= 6.4s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.707 total time= 5.6s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.693 total time= 5.3s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.731 total time= 4.6s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.662 total time= 4.3s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.716 total time= 4.4s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.748 total time= 4.1s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.704 total time= 4.1s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.720 total time= 4.1s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.742 total time= 4.1s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.669 total time= 4.1s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.704 total time= 4.0s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.761 total time= 4.0s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.711 total time= 4.1s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.729 total time=4.1s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.712 total time=4.4s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.689 total time=4.8s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.702 total time=4.5s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.749 total time=4.4s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.707 total time=4.2s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.721 total time=4.2s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.709 total time=4.5s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.690 total time=4.4s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.692 total time=4.3s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.760 total time=4.6s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.732 total time=4.2s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.717 total time=4.3s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.721 total time=4.3s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.665 total time=4.3s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.692 total time=4.4s

[CV 1/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.746 total time=4.1s

[CV 2/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.720 total time=4.2s

[CV 3/3] END leaf_size=40, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.732 total time=4.4s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.794 total time=4.2s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.803 total time=4.1s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.797 total time=3.8s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.832 total time=3.7s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.822 total time=4.0s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.800 total time=3.8s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.763 total time=4.2s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.783 total time=4.0s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.771 total time=4.1s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.813 total time=3.8s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.811 total time=3.7s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.812 total time=3.9s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.780 total time=4.0s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.783 total time= 4.0s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.773 total time= 3.9s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.795 total time= 4.0s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.794 total time= 3.9s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.786 total time= 3.7s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.774 total time= 3.7s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.782 total time= 3.8s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.769 total time= 3.7s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.821 total time= 3.7s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.783 total time= 3.7s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.794 total time= 3.6s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.795 total time= 3.8s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.791 total time= 3.7s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.764 total time= 3.6s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.809 total time= 3.7s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.794 total time= 3.7s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.785 total time= 3.7s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.750 total time= 3.8s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.752 total time= 3.7s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.771 total time= 3.9s

[CV 1/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.781 total time= 4.1s

[CV 2/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.763 total time= 3.7s

[CV 3/3] END leaf_size=40, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;; score=0.774 total time= 3.8s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.700 total time= 3.4s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.745 total time= 3.5s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;; score=0.721 total time= 3.4s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.3s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.5s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;; score=0.076 total time= 3.4s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.638 total time= 3.5s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.723 total time= 3.4s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;; score=0.690 total time= 3.4s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.4s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;; score=0.076 total time= 3.4s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.683 total time= 3.4s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.728 total time= 3.4s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.715 total time= 3.4s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.7s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.4s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.694 total time= 3.5s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.721 total time= 3.7s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.707 total time= 3.4s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.5s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.8s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.701 total time= 3.6s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.724 total time= 3.4s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.684 total time= 3.5s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.4s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.3s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.3s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.700 total time= 3.3s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.713 total time= 3.4s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.695 total time= 3.3s

[CV 1/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.6s

[CV 3/3] END leaf_size=40, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time= 3.2s

[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.841 total time= 3.3s

[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.3s

[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=uniform;; score=0.879 total time= 3.4s

[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.855 total time= 3.4s

[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.888 total time= 3.7s

[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=3, weights=distance;; score=0.881 total time= 3.6s

[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>, n_neighbors=4, weights=uniform;; score=0.842 total time= 3.9s

[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,

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n_neighbors=4, weights=uniform;; score=0.827 total time= 3.9s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=uniform;; score=0.859 total time= 3.9s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.872 total time= 3.5s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.872 total time= 3.6s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=4, weights=distance;; score=0.879 total time= 3.6s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.856 total time= 3.7s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.838 total time= 3.6s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=uniform;; score=0.865 total time= 3.7s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.869 total time= 3.9s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.850 total time= 3.6s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=5, weights=distance;; score=0.865 total time= 3.4s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.829 total time= 3.8s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.827 total time= 3.6s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=uniform;; score=0.847 total time= 3.9s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.869 total time= 3.7s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.853 total time= 3.6s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=6, weights=distance;; score=0.862 total time= 3.4s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.827 total time= 3.6s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.822 total time= 3.9s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=uniform;; score=0.835 total time= 3.6s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.850 total time= 3.7s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.838 total time= 3.6s
[CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=7, weights=distance;; score=0.862 total time= 3.6s
[CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
n_neighbors=10, weights=uniform;; score=0.815 total time= 3.8s
[CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,

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n_neighbors=10, weights=uniform;; score=0.800 total time= 3.7s
 [CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=uniform;; score=0.827 total time= 3.7s
 [CV 1/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=distance;; score=0.850 total time= 3.8s
 [CV 2/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=distance;; score=0.811 total time= 3.8s
 [CV 3/3] END leaf_size=50, metric=<function cityblock at 0x000002341ACCF1A0>,
 n_neighbors=10, weights=distance;; score=0.846 total time= 3.6s
 [CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=uniform;; score=0.821 total time= 9.5s
 [CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=uniform;; score=0.843 total time= 9.2s
 [CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=uniform;; score=0.837 total time= 8.8s
 [CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.846 total time= 8.7s
 [CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.860 total time= 9.2s
 [CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=3, weights=distance;; score=0.847 total time= 9.4s
 [CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.816 total time= 10.6s
 [CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.816 total time= 10.1s
 [CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=uniform;; score=0.803 total time= 9.7s
 [CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.853 total time= 8.9s
 [CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.855 total time= 8.7s
 [CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=4, weights=distance;; score=0.843 total time= 9.2s
 [CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.815 total time= 9.0s
 [CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.821 total time= 8.5s
 [CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=uniform;; score=0.804 total time= 8.7s
 [CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.834 total time= 9.6s
 [CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.834 total time= 10.4s
 [CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=5, weights=distance;; score=0.829 total time= 10.7s
 [CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
 n_neighbors=6, weights=uniform;; score=0.805 total time= 10.7s
 [CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,


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n_neighbors=6, weights=uniform;; score=0.815 total time= 10.6s
[CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=uniform;; score=0.795 total time= 9.9s
[CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.825 total time= 9.8s
[CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.837 total time= 8.2s
[CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=6, weights=distance;; score=0.824 total time= 8.1s
[CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.798 total time= 8.4s
[CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.804 total time= 8.3s
[CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=uniform;; score=0.800 total time= 9.1s
[CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.820 total time= 8.6s
[CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.823 total time= 9.6s
[CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=7, weights=distance;; score=0.828 total time= 10.2s
[CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.757 total time= 10.9s
[CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.808 total time= 10.2s
[CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=uniform;; score=0.789 total time= 9.4s
[CV 1/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.817 total time= 9.7s
[CV 2/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.833 total time= 8.4s
[CV 3/3] END leaf_size=50, metric=<function cosine at 0x000002341ACCEE80>,
n_neighbors=10, weights=distance;; score=0.813 total time= 8.4s
[CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 18.4s
[CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.857 total time= 18.7s
[CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=uniform;; score=0.870 total time= 20.8s
[CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.846 total time= 21.2s
[CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.865 total time= 21.8s
[CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=3, weights=distance;; score=0.879 total time= 18.9s
[CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=4, weights=uniform;; score=0.840 total time= 18.3s
[CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,

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n_neighbors=4, weights=uniform;; score=0.813 total time= 18.3s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=uniform;; score=0.829 total time= 18.7s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.866 total time= 18.1s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.864 total time= 18.1s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=4, weights=distance;; score=0.882 total time= 17.7s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.851 total time= 18.4s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.824 total time= 18.3s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=uniform;; score=0.853 total time= 19.7s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.863 total time= 19.3s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.855 total time= 18.5s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=5, weights=distance;; score=0.865 total time= 18.1s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.822 total time= 18.3s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.813 total time= 18.8s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=uniform;; score=0.807 total time= 18.0s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.862 total time= 18.3s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.839 total time= 19.8s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=6, weights=distance;; score=0.846 total time= 24.7s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=uniform;; score=0.828 total time= 22.8s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=uniform;; score=0.826 total time= 22.4s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=uniform;; score=0.825 total time= 18.4s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=distance;; score=0.840 total time= 18.1s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=distance;; score=0.842 total time= 18.0s
 [CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=7, weights=distance;; score=0.849 total time= 18.6s
 [CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
 n_neighbors=10, weights=uniform;; score=0.822 total time= 17.9s
 [CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,

n_neighbors=10, weights=uniform;; score=0.787 total time= 17.7s
[CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=uniform;; score=0.798 total time= 18.7s
[CV 1/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.828 total time= 18.3s
[CV 2/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.820 total time= 18.3s
[CV 3/3] END leaf_size=50, metric=<function correlation at 0x000002341ACCEDE0>,
n_neighbors=10, weights=distance;; score=0.854 total time= 18.2s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.826 total time= 3.4s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.843 total time= 3.5s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=uniform;; score=0.832 total time= 3.8s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.849 total time= 3.4s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.859 total time= 3.3s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=3, weights=distance;; score=0.842 total time= 3.3s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.814 total time= 3.6s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.811 total time= 3.4s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=uniform;; score=0.806 total time= 3.4s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.856 total time= 3.7s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.852 total time= 3.8s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=4, weights=distance;; score=0.843 total time= 3.5s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.810 total time= 3.6s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.823 total time= 3.5s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=uniform;; score=0.801 total time= 3.4s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.831 total time= 3.3s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.843 total time= 3.5s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=5, weights=distance;; score=0.826 total time= 3.5s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.797 total time= 3.4s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,

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n_neighbors=6, weights=uniform;; score=0.815 total time= 3.6s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=uniform;; score=0.799 total time= 4.3s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.825 total time= 3.8s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.843 total time= 3.4s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=6, weights=distance;; score=0.824 total time= 4.0s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.803 total time= 3.5s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.807 total time= 3.8s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=uniform;; score=0.797 total time= 4.6s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.817 total time= 3.9s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.821 total time= 4.1s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=7, weights=distance;; score=0.825 total time= 5.1s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.755 total time= 4.7s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.805 total time= 3.5s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=uniform;; score=0.786 total time= 3.3s
[CV 1/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.811 total time= 3.2s
[CV 2/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.826 total time= 3.5s
[CV 3/3] END leaf_size=50, metric=<function sqeuclidean at 0x000002341ACCED40>,
n_neighbors=10, weights=distance;; score=0.814 total time= 3.5s
[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.717 total time=
5.5s
[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.701 total time=
4.3s
[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=uniform;; score=0.693 total time=
4.1s
[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.749 total time=
4.4s
[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at
0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.707 total time=
4.5s

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[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=3, weights=distance;; score=0.693 total time= 4.7s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.731 total time= 4.3s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.662 total time= 5.6s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=uniform;; score=0.716 total time= 5.3s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.748 total time= 4.4s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.704 total time= 4.3s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=4, weights=distance;; score=0.720 total time= 5.2s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.742 total time= 4.4s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.669 total time= 6.0s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=uniform;; score=0.704 total time= 6.5s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.761 total time= 6.2s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.711 total time= 6.6s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=5, weights=distance;; score=0.729 total time= 6.5s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.712 total time= 5.7s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.689 total time= 5.2s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=uniform;; score=0.702 total time= 5.0s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.749 total time= 5.3s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.707 total time= 5.0s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=6, weights=distance;; score=0.721 total time= 5.2s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.709 total time= 4.8s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.690 total time= 4.9s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=uniform;; score=0.692 total time= 5.0s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.760 total time= 4.9s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.732 total time= 5.0s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=7, weights=distance;; score=0.717 total time= 5.0s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.721 total time= 5.4s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.665 total time= 5.2s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=uniform;; score=0.692 total time= 4.5s

[CV 1/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.746 total time= 4.2s

[CV 2/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.720 total time= 4.1s

[CV 3/3] END leaf_size=50, metric=<function chi_square_distance at 0x000002341F7AF100>, n_neighbors=10, weights=distance;; score=0.732 total time= 4.2s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.794 total time= 4.4s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.803 total time= 3.7s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=uniform;; score=0.797 total time= 4.0s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.832 total time= 4.0s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.822 total time= 3.9s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=3, weights=distance;; score=0.800 total time= 3.8s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.763 total time= 3.7s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.783 total time= 4.0s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=uniform;; score=0.771 total time= 3.8s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.813 total time= 4.0s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.811 total time= 4.1s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=4, weights=distance;; score=0.812 total time= 5.0s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.780 total time= 4.3s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.783 total time= 4.4s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=uniform;; score=0.773 total time= 4.2s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.795 total time= 4.4s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.794 total time= 4.5s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=5, weights=distance;; score=0.786 total time= 4.1s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.774 total time= 4.2s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.782 total time= 4.5s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=uniform;; score=0.769 total time= 4.0s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.821 total time= 4.0s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.783 total time= 4.1s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=6, weights=distance;; score=0.794 total time= 3.9s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.795 total time= 4.1s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.791 total time= 4.0s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=uniform;; score=0.764 total time= 4.0s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.809 total time= 4.1s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.794 total time= 4.2s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=7, weights=distance;; score=0.785 total time= 4.1s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.750 total time= 4.0s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.752 total time= 4.1s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=uniform;; score=0.771 total time= 4.0s

[CV 1/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;;, score=0.781 total time= 3.9s

[CV 2/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;;, score=0.763 total time= 4.1s

[CV 3/3] END leaf_size=50, metric=<function bhattacharyya_distance at 0x000002341F7AFF60>, n_neighbors=10, weights=distance;;, score=0.774 total time= 4.3s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;;, score=0.700 total time= 3.7s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;;, score=0.745 total time= 3.7s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=uniform;;, score=0.721 total time= 3.5s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;;, score=0.076 total time= 3.5s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;;, score=0.076 total time= 3.7s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=3, weights=distance;;, score=0.076 total time= 3.7s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;;, score=0.638 total time= 3.7s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;;, score=0.723 total time= 3.8s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=uniform;;, score=0.690 total time= 3.8s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;;, score=0.076 total time= 3.7s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;;, score=0.076 total time= 3.7s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=4, weights=distance;;, score=0.076 total time= 3.7s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;;, score=0.683 total time= 3.7s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.728 total time= 3.8s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=uniform;; score=0.715 total time= 3.6s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.9s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 4.1s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=5, weights=distance;; score=0.076 total time= 3.6s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.694 total time= 3.6s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.721 total time= 3.6s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=uniform;; score=0.707 total time= 3.6s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.6s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.6s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=6, weights=distance;; score=0.076 total time= 3.7s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.701 total time= 3.8s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.724 total time= 3.6s

[CV 3/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=uniform;; score=0.684 total time= 3.6s

[CV 1/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.7s

[CV 2/3] END leaf_size=50, metric=<function intersection_distance at 0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time= 3.7s

```
[CV 3/3] END leaf_size=50, metric=<function intersection_distance at
0x000002341F7AFA60>, n_neighbors=7, weights=distance;; score=0.076 total time=
3.8s
[CV 1/3] END leaf_size=50, metric=<function intersection_distance at
0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.700 total time=
3.7s
[CV 2/3] END leaf_size=50, metric=<function intersection_distance at
0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.713 total time=
3.8s
[CV 3/3] END leaf_size=50, metric=<function intersection_distance at
0x000002341F7AFA60>, n_neighbors=10, weights=uniform;; score=0.695 total time=
3.7s
[CV 1/3] END leaf_size=50, metric=<function intersection_distance at
0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time=
3.8s
[CV 2/3] END leaf_size=50, metric=<function intersection_distance at
0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time=
3.8s
[CV 3/3] END leaf_size=50, metric=<function intersection_distance at
0x000002341F7AFA60>, n_neighbors=10, weights=distance;; score=0.076 total time=
3.7s
```

```
GridSearchCV(cv=3, estimator=KNeighborsClassifier(),
             param_grid={'leaf_size': [5, 10, 20, 30, 40, 50],
                          'metric': [<function cityblock at 0x000002341ACCF1A0>,
                                     <function cosine at 0x000002341ACCEE80>,
                                     <function correlation at
0x000002341ACCEDE0>,
                                     <function sqeuclidean at
0x000002341ACCED40>,
                                     <function chi_square_distance at
0x000002341F7AF100>,
                                     <function bhattacharyya_distance at
0x000002341F7AFF60>,
                                     <function intersection_distance at
0x000002341F7AFA60>],
                          'n_neighbors': [3, 4, 5, 6, 7, 10],
                          'weights': ['uniform', 'distance']},
             scoring='f1_macro', verbose=3)
```

```
best_knn = grid_search_knn.best_estimator_
print(f"Best Params: {grid_search_knn.best_params_}")

best_knn.fit(train_features, train_labels_encoded)

y_pred_knn = best_knn.predict(test_features)
```

```
joblib.dump(best_knn, project_dir + '\\joblib\\best_knn_model.joblib')
```

Best Params: {'leaf_size': 5, 'metric': <function cityblock at 0x000002341ACCF1A0>, 'n_neighbors': 3, 'weights': 'distance'}

```
['d:\\ASUS\\Deploy-Traffic-Sign-Classification-through-  
Images\\joblib\\best_knn_model.joblib']
```

6 Gridsearch SVM

```
param_grid = {  
    'C': [0.1, 1, 10, 100],  
    'kernel': ['rbf', 'linear', 'poly', 'sigmoid'],  
    'gamma': ['scale', 'auto', 0.1, 0.01, 0.001],  
    'degree': [2, 3, 4],  
}  
  
svm_model = SVC(random_state=42)  
  
grid_search_svm = GridSearchCV(  
    estimator=svm_model,  
    param_grid=param_grid,  
    cv=3,  
    scoring='f1_macro',  
    verbose=3,  
)  
  
grid_search_svm.fit(X_train, y_train)
```

Fitting 3 folds for each of 240 candidates, totalling 720 fits

[CV 1/3] END C=0.1, degree=2, gamma=scale, kernel=rbf;; score=0.471 total time=1.5s

[CV 2/3] END C=0.1, degree=2, gamma=scale, kernel=rbf;; score=0.481 total time=1.3s

[CV 3/3] END C=0.1, degree=2, gamma=scale, kernel=rbf;; score=0.476 total time=1.3s

[CV 1/3] END C=0.1, degree=2, gamma=scale, kernel=linear;; score=0.842 total time= 0.6s

[CV 2/3] END C=0.1, degree=2, gamma=scale, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=2, gamma=scale, kernel=linear;; score=0.850 total time= 0.5s

[CV 1/3] END C=0.1, degree=2, gamma=scale, kernel=poly;; score=0.736 total time=0.9s

[CV 2/3] END C=0.1, degree=2, gamma=scale, kernel=poly;; score=0.690 total time=0.8s

[CV 3/3] END C=0.1, degree=2, gamma=scale, kernel=poly;; score=0.701 total time=

0.9s

[CV 1/3] END C=0.1, degree=2, gamma=scale, kernel=sigmoid;; score=0.494 total time= 0.9s

[CV 2/3] END C=0.1, degree=2, gamma=scale, kernel=sigmoid;; score=0.485 total time= 1.0s

[CV 3/3] END C=0.1, degree=2, gamma=scale, kernel=sigmoid;; score=0.500 total time= 1.1s

[CV 1/3] END C=0.1, degree=2, gamma=auto, kernel=rbf;; score=0.076 total time= 1.5s

[CV 2/3] END C=0.1, degree=2, gamma=auto, kernel=rbf;; score=0.076 total time= 1.6s

[CV 3/3] END C=0.1, degree=2, gamma=auto, kernel=rbf;; score=0.076 total time= 1.7s

[CV 1/3] END C=0.1, degree=2, gamma=auto, kernel=linear;; score=0.842 total time= 0.5s

[CV 2/3] END C=0.1, degree=2, gamma=auto, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=2, gamma=auto, kernel=linear;; score=0.850 total time= 0.4s

[CV 1/3] END C=0.1, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s

[CV 2/3] END C=0.1, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s

[CV 3/3] END C=0.1, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s

[CV 1/3] END C=0.1, degree=2, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.1s

[CV 2/3] END C=0.1, degree=2, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.2s

[CV 3/3] END C=0.1, degree=2, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.0s

[CV 1/3] END C=0.1, degree=2, gamma=0.1, kernel=rbf;; score=0.249 total time= 1.5s

[CV 2/3] END C=0.1, degree=2, gamma=0.1, kernel=rbf;; score=0.226 total time= 1.5s

[CV 3/3] END C=0.1, degree=2, gamma=0.1, kernel=rbf;; score=0.224 total time= 1.4s

[CV 1/3] END C=0.1, degree=2, gamma=0.1, kernel=linear;; score=0.842 total time= 0.6s

[CV 2/3] END C=0.1, degree=2, gamma=0.1, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=2, gamma=0.1, kernel=linear;; score=0.850 total time= 0.5s

[CV 1/3] END C=0.1, degree=2, gamma=0.1, kernel=poly;; score=0.858 total time= 0.8s

[CV 2/3] END C=0.1, degree=2, gamma=0.1, kernel=poly;; score=0.877 total time= 0.7s

[CV 3/3] END C=0.1, degree=2, gamma=0.1, kernel=poly;; score=0.888 total time=

0.8s

[CV 1/3] END C=0.1, degree=2, gamma=0.1, kernel=sigmoid;; score=0.208 total time= 1.2s

[CV 2/3] END C=0.1, degree=2, gamma=0.1, kernel=sigmoid;; score=0.264 total time= 1.3s

[CV 3/3] END C=0.1, degree=2, gamma=0.1, kernel=sigmoid;; score=0.246 total time= 1.1s

[CV 1/3] END C=0.1, degree=2, gamma=0.01, kernel=rbf;; score=0.459 total time= 1.4s

[CV 2/3] END C=0.1, degree=2, gamma=0.01, kernel=rbf;; score=0.460 total time= 1.3s

[CV 3/3] END C=0.1, degree=2, gamma=0.01, kernel=rbf;; score=0.454 total time= 1.5s

[CV 1/3] END C=0.1, degree=2, gamma=0.01, kernel=linear;; score=0.842 total time= 0.5s

[CV 2/3] END C=0.1, degree=2, gamma=0.01, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=2, gamma=0.01, kernel=linear;; score=0.850 total time= 0.6s

[CV 1/3] END C=0.1, degree=2, gamma=0.01, kernel=poly;; score=0.398 total time= 1.2s

[CV 2/3] END C=0.1, degree=2, gamma=0.01, kernel=poly;; score=0.386 total time= 1.1s

[CV 3/3] END C=0.1, degree=2, gamma=0.01, kernel=poly;; score=0.389 total time= 1.1s

[CV 1/3] END C=0.1, degree=2, gamma=0.01, kernel=sigmoid;; score=0.443 total time= 1.1s

[CV 2/3] END C=0.1, degree=2, gamma=0.01, kernel=sigmoid;; score=0.451 total time= 1.3s

[CV 3/3] END C=0.1, degree=2, gamma=0.01, kernel=sigmoid;; score=0.449 total time= 1.1s

[CV 1/3] END C=0.1, degree=2, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.6s

[CV 2/3] END C=0.1, degree=2, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.5s

[CV 3/3] END C=0.1, degree=2, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.5s

[CV 1/3] END C=0.1, degree=2, gamma=0.001, kernel=linear;; score=0.842 total time= 0.5s

[CV 2/3] END C=0.1, degree=2, gamma=0.001, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=2, gamma=0.001, kernel=linear;; score=0.850 total time= 0.6s

[CV 1/3] END C=0.1, degree=2, gamma=0.001, kernel=poly;; score=0.076 total time= 1.1s

[CV 2/3] END C=0.1, degree=2, gamma=0.001, kernel=poly;; score=0.076 total time= 1.1s

[CV 3/3] END C=0.1, degree=2, gamma=0.001, kernel=poly;; score=0.076 total time=

```

1.1s
[CV 1/3] END C=0.1, degree=2, gamma=0.001, kernel=sigmoid;; score=0.076 total
time= 1.2s
[CV 2/3] END C=0.1, degree=2, gamma=0.001, kernel=sigmoid;; score=0.076 total
time= 1.1s
[CV 3/3] END C=0.1, degree=2, gamma=0.001, kernel=sigmoid;; score=0.076 total
time= 1.1s
[CV 1/3] END C=0.1, degree=3, gamma=scale, kernel=rbf;; score=0.471 total time=
1.3s
[CV 2/3] END C=0.1, degree=3, gamma=scale, kernel=rbf;; score=0.481 total time=
1.4s
[CV 3/3] END C=0.1, degree=3, gamma=scale, kernel=rbf;; score=0.476 total time=
1.4s
[CV 1/3] END C=0.1, degree=3, gamma=scale, kernel=linear;; score=0.842 total
time= 0.6s
[CV 2/3] END C=0.1, degree=3, gamma=scale, kernel=linear;; score=0.838 total
time= 0.7s
[CV 3/3] END C=0.1, degree=3, gamma=scale, kernel=linear;; score=0.850 total
time= 0.6s
[CV 1/3] END C=0.1, degree=3, gamma=scale, kernel=poly;; score=0.774 total time=
0.9s
[CV 2/3] END C=0.1, degree=3, gamma=scale, kernel=poly;; score=0.782 total time=
0.8s
[CV 3/3] END C=0.1, degree=3, gamma=scale, kernel=poly;; score=0.758 total time=
1.1s
[CV 1/3] END C=0.1, degree=3, gamma=scale, kernel=sigmoid;; score=0.494 total
time= 1.3s
[CV 2/3] END C=0.1, degree=3, gamma=scale, kernel=sigmoid;; score=0.485 total
time= 1.4s
[CV 3/3] END C=0.1, degree=3, gamma=scale, kernel=sigmoid;; score=0.500 total
time= 1.0s
[CV 1/3] END C=0.1, degree=3, gamma=auto, kernel=rbf;; score=0.076 total time=
1.5s
[CV 2/3] END C=0.1, degree=3, gamma=auto, kernel=rbf;; score=0.076 total time=
1.5s
[CV 3/3] END C=0.1, degree=3, gamma=auto, kernel=rbf;; score=0.076 total time=
1.6s
[CV 1/3] END C=0.1, degree=3, gamma=auto, kernel=linear;; score=0.842 total
time= 0.6s
[CV 2/3] END C=0.1, degree=3, gamma=auto, kernel=linear;; score=0.838 total
time= 0.6s
[CV 3/3] END C=0.1, degree=3, gamma=auto, kernel=linear;; score=0.850 total
time= 0.6s
[CV 1/3] END C=0.1, degree=3, gamma=auto, kernel=poly;; score=0.076 total time=
1.4s
[CV 2/3] END C=0.1, degree=3, gamma=auto, kernel=poly;; score=0.076 total time=
1.2s
[CV 3/3] END C=0.1, degree=3, gamma=auto, kernel=poly;; score=0.076 total time=

```

1.2s
[CV 1/3] END C=0.1, degree=3, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.1s
[CV 2/3] END C=0.1, degree=3, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.3s
[CV 3/3] END C=0.1, degree=3, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.3s
[CV 1/3] END C=0.1, degree=3, gamma=0.1, kernel=rbf;; score=0.249 total time= 1.7s
[CV 2/3] END C=0.1, degree=3, gamma=0.1, kernel=rbf;; score=0.226 total time= 1.5s
[CV 3/3] END C=0.1, degree=3, gamma=0.1, kernel=rbf;; score=0.224 total time= 1.5s
[CV 1/3] END C=0.1, degree=3, gamma=0.1, kernel=linear;; score=0.842 total time= 0.5s
[CV 2/3] END C=0.1, degree=3, gamma=0.1, kernel=linear;; score=0.838 total time= 0.6s
[CV 3/3] END C=0.1, degree=3, gamma=0.1, kernel=linear;; score=0.850 total time= 0.6s
[CV 1/3] END C=0.1, degree=3, gamma=0.1, kernel=poly;; score=0.851 total time= 0.9s
[CV 2/3] END C=0.1, degree=3, gamma=0.1, kernel=poly;; score=0.901 total time= 0.9s
[CV 3/3] END C=0.1, degree=3, gamma=0.1, kernel=poly;; score=0.897 total time= 0.9s
[CV 1/3] END C=0.1, degree=3, gamma=0.1, kernel=sigmoid;; score=0.208 total time= 1.3s
[CV 2/3] END C=0.1, degree=3, gamma=0.1, kernel=sigmoid;; score=0.264 total time= 1.2s
[CV 3/3] END C=0.1, degree=3, gamma=0.1, kernel=sigmoid;; score=0.246 total time= 1.2s
[CV 1/3] END C=0.1, degree=3, gamma=0.01, kernel=rbf;; score=0.459 total time= 1.4s
[CV 2/3] END C=0.1, degree=3, gamma=0.01, kernel=rbf;; score=0.460 total time= 1.3s
[CV 3/3] END C=0.1, degree=3, gamma=0.01, kernel=rbf;; score=0.454 total time= 1.5s
[CV 1/3] END C=0.1, degree=3, gamma=0.01, kernel=linear;; score=0.842 total time= 0.4s
[CV 2/3] END C=0.1, degree=3, gamma=0.01, kernel=linear;; score=0.838 total time= 0.5s
[CV 3/3] END C=0.1, degree=3, gamma=0.01, kernel=linear;; score=0.850 total time= 0.5s
[CV 1/3] END C=0.1, degree=3, gamma=0.01, kernel=poly;; score=0.076 total time= 1.4s
[CV 2/3] END C=0.1, degree=3, gamma=0.01, kernel=poly;; score=0.076 total time= 1.3s
[CV 3/3] END C=0.1, degree=3, gamma=0.01, kernel=poly;; score=0.076 total time=

1.3s
[CV 1/3] END C=0.1, degree=3, gamma=0.01, kernel=sigmoid;; score=0.443 total time= 1.3s
[CV 2/3] END C=0.1, degree=3, gamma=0.01, kernel=sigmoid;; score=0.451 total time= 1.0s
[CV 3/3] END C=0.1, degree=3, gamma=0.01, kernel=sigmoid;; score=0.449 total time= 1.0s
[CV 1/3] END C=0.1, degree=3, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.4s
[CV 2/3] END C=0.1, degree=3, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.7s
[CV 3/3] END C=0.1, degree=3, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.3s
[CV 1/3] END C=0.1, degree=3, gamma=0.001, kernel=linear;; score=0.842 total time= 0.5s
[CV 2/3] END C=0.1, degree=3, gamma=0.001, kernel=linear;; score=0.838 total time= 0.5s
[CV 3/3] END C=0.1, degree=3, gamma=0.001, kernel=linear;; score=0.850 total time= 0.5s
[CV 1/3] END C=0.1, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 1.0s
[CV 2/3] END C=0.1, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 1.1s
[CV 3/3] END C=0.1, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 0.9s
[CV 1/3] END C=0.1, degree=3, gamma=0.001, kernel=sigmoid;; score=0.076 total time= 1.1s
[CV 2/3] END C=0.1, degree=3, gamma=0.001, kernel=sigmoid;; score=0.076 total time= 1.1s
[CV 3/3] END C=0.1, degree=3, gamma=0.001, kernel=sigmoid;; score=0.076 total time= 1.2s
[CV 1/3] END C=0.1, degree=4, gamma=scale, kernel=rbf;; score=0.471 total time= 1.1s
[CV 2/3] END C=0.1, degree=4, gamma=scale, kernel=rbf;; score=0.481 total time= 1.3s
[CV 3/3] END C=0.1, degree=4, gamma=scale, kernel=rbf;; score=0.476 total time= 1.3s
[CV 1/3] END C=0.1, degree=4, gamma=scale, kernel=linear;; score=0.842 total time= 0.5s
[CV 2/3] END C=0.1, degree=4, gamma=scale, kernel=linear;; score=0.838 total time= 0.5s
[CV 3/3] END C=0.1, degree=4, gamma=scale, kernel=linear;; score=0.850 total time= 0.5s
[CV 1/3] END C=0.1, degree=4, gamma=scale, kernel=poly;; score=0.792 total time= 0.8s
[CV 2/3] END C=0.1, degree=4, gamma=scale, kernel=poly;; score=0.819 total time= 0.9s
[CV 3/3] END C=0.1, degree=4, gamma=scale, kernel=poly;; score=0.811 total time=

0.8s

[CV 1/3] END C=0.1, degree=4, gamma=scale, kernel=sigmoid;; score=0.494 total time= 0.9s

[CV 2/3] END C=0.1, degree=4, gamma=scale, kernel=sigmoid;; score=0.485 total time= 0.9s

[CV 3/3] END C=0.1, degree=4, gamma=scale, kernel=sigmoid;; score=0.500 total time= 1.0s

[CV 1/3] END C=0.1, degree=4, gamma=auto, kernel=rbf;; score=0.076 total time= 1.2s

[CV 2/3] END C=0.1, degree=4, gamma=auto, kernel=rbf;; score=0.076 total time= 1.3s

[CV 3/3] END C=0.1, degree=4, gamma=auto, kernel=rbf;; score=0.076 total time= 1.4s

[CV 1/3] END C=0.1, degree=4, gamma=auto, kernel=linear;; score=0.842 total time= 0.7s

[CV 2/3] END C=0.1, degree=4, gamma=auto, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=4, gamma=auto, kernel=linear;; score=0.850 total time= 0.7s

[CV 1/3] END C=0.1, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.3s

[CV 2/3] END C=0.1, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.2s

[CV 3/3] END C=0.1, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.0s

[CV 1/3] END C=0.1, degree=4, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.1s

[CV 2/3] END C=0.1, degree=4, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.0s

[CV 3/3] END C=0.1, degree=4, gamma=auto, kernel=sigmoid;; score=0.076 total time= 1.1s

[CV 1/3] END C=0.1, degree=4, gamma=0.1, kernel=rbf;; score=0.249 total time= 1.3s

[CV 2/3] END C=0.1, degree=4, gamma=0.1, kernel=rbf;; score=0.226 total time= 1.3s

[CV 3/3] END C=0.1, degree=4, gamma=0.1, kernel=rbf;; score=0.224 total time= 1.3s

[CV 1/3] END C=0.1, degree=4, gamma=0.1, kernel=linear;; score=0.842 total time= 0.4s

[CV 2/3] END C=0.1, degree=4, gamma=0.1, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=4, gamma=0.1, kernel=linear;; score=0.850 total time= 0.5s

[CV 1/3] END C=0.1, degree=4, gamma=0.1, kernel=poly;; score=0.847 total time= 0.8s

[CV 2/3] END C=0.1, degree=4, gamma=0.1, kernel=poly;; score=0.884 total time= 0.9s

[CV 3/3] END C=0.1, degree=4, gamma=0.1, kernel=poly;; score=0.897 total time=

0.8s

[CV 1/3] END C=0.1, degree=4, gamma=0.1, kernel=sigmoid;; score=0.208 total time= 1.1s

[CV 2/3] END C=0.1, degree=4, gamma=0.1, kernel=sigmoid;; score=0.264 total time= 1.0s

[CV 3/3] END C=0.1, degree=4, gamma=0.1, kernel=sigmoid;; score=0.246 total time= 1.2s

[CV 1/3] END C=0.1, degree=4, gamma=0.01, kernel=rbf;; score=0.459 total time= 1.1s

[CV 2/3] END C=0.1, degree=4, gamma=0.01, kernel=rbf;; score=0.460 total time= 1.1s

[CV 3/3] END C=0.1, degree=4, gamma=0.01, kernel=rbf;; score=0.454 total time= 1.2s

[CV 1/3] END C=0.1, degree=4, gamma=0.01, kernel=linear;; score=0.842 total time= 0.4s

[CV 2/3] END C=0.1, degree=4, gamma=0.01, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=4, gamma=0.01, kernel=linear;; score=0.850 total time= 0.4s

[CV 1/3] END C=0.1, degree=4, gamma=0.01, kernel=poly;; score=0.076 total time= 1.3s

[CV 2/3] END C=0.1, degree=4, gamma=0.01, kernel=poly;; score=0.076 total time= 1.2s

[CV 3/3] END C=0.1, degree=4, gamma=0.01, kernel=poly;; score=0.076 total time= 1.0s

[CV 1/3] END C=0.1, degree=4, gamma=0.01, kernel=sigmoid;; score=0.443 total time= 1.1s

[CV 2/3] END C=0.1, degree=4, gamma=0.01, kernel=sigmoid;; score=0.451 total time= 1.1s

[CV 3/3] END C=0.1, degree=4, gamma=0.01, kernel=sigmoid;; score=0.449 total time= 1.0s

[CV 1/3] END C=0.1, degree=4, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.2s

[CV 2/3] END C=0.1, degree=4, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.4s

[CV 3/3] END C=0.1, degree=4, gamma=0.001, kernel=rbf;; score=0.076 total time= 1.2s

[CV 1/3] END C=0.1, degree=4, gamma=0.001, kernel=linear;; score=0.842 total time= 0.4s

[CV 2/3] END C=0.1, degree=4, gamma=0.001, kernel=linear;; score=0.838 total time= 0.6s

[CV 3/3] END C=0.1, degree=4, gamma=0.001, kernel=linear;; score=0.850 total time= 0.6s

[CV 1/3] END C=0.1, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time= 1.0s

[CV 2/3] END C=0.1, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time= 1.0s

[CV 3/3] END C=0.1, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=

1.0s
[CV 1/3] END C=0.1, degree=4, gamma=0.001, kernel=sigmoid;; score=0.076 total time= 1.1s
[CV 2/3] END C=0.1, degree=4, gamma=0.001, kernel=sigmoid;; score=0.076 total time= 1.0s
[CV 3/3] END C=0.1, degree=4, gamma=0.001, kernel=sigmoid;; score=0.076 total time= 1.1s
[CV 1/3] END C=1, degree=2, gamma=scale, kernel=rbf;; score=0.833 total time= 0.9s
[CV 2/3] END C=1, degree=2, gamma=scale, kernel=rbf;; score=0.837 total time= 1.0s
[CV 3/3] END C=1, degree=2, gamma=scale, kernel=rbf;; score=0.864 total time= 0.9s
[CV 1/3] END C=1, degree=2, gamma=scale, kernel=linear;; score=0.822 total time= 0.5s
[CV 2/3] END C=1, degree=2, gamma=scale, kernel=linear;; score=0.817 total time= 0.5s
[CV 3/3] END C=1, degree=2, gamma=scale, kernel=linear;; score=0.845 total time= 0.6s
[CV 1/3] END C=1, degree=2, gamma=scale, kernel=poly;; score=0.861 total time= 0.6s
[CV 2/3] END C=1, degree=2, gamma=scale, kernel=poly;; score=0.885 total time= 0.7s
[CV 3/3] END C=1, degree=2, gamma=scale, kernel=poly;; score=0.888 total time= 0.6s
[CV 1/3] END C=1, degree=2, gamma=scale, kernel=sigmoid;; score=0.748 total time= 0.6s
[CV 2/3] END C=1, degree=2, gamma=scale, kernel=sigmoid;; score=0.727 total time= 0.6s
[CV 3/3] END C=1, degree=2, gamma=scale, kernel=sigmoid;; score=0.735 total time= 0.8s
[CV 1/3] END C=1, degree=2, gamma=auto, kernel=rbf;; score=0.450 total time= 1.5s
[CV 2/3] END C=1, degree=2, gamma=auto, kernel=rbf;; score=0.453 total time= 1.6s
[CV 3/3] END C=1, degree=2, gamma=auto, kernel=rbf;; score=0.452 total time= 1.3s
[CV 1/3] END C=1, degree=2, gamma=auto, kernel=linear;; score=0.822 total time= 0.7s
[CV 2/3] END C=1, degree=2, gamma=auto, kernel=linear;; score=0.817 total time= 0.7s
[CV 3/3] END C=1, degree=2, gamma=auto, kernel=linear;; score=0.845 total time= 0.7s
[CV 1/3] END C=1, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.2s
[CV 2/3] END C=1, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s
[CV 3/3] END C=1, degree=2, gamma=auto, kernel=poly;; score=0.076 total time=

1.3s
[CV 1/3] END C=1, degree=2, gamma=auto, kernel=sigmoid;; score=0.400 total time=1.3s
[CV 2/3] END C=1, degree=2, gamma=auto, kernel=sigmoid;; score=0.396 total time=1.2s
[CV 3/3] END C=1, degree=2, gamma=auto, kernel=sigmoid;; score=0.403 total time=1.2s
[CV 1/3] END C=1, degree=2, gamma=0.1, kernel=rbf;; score=0.806 total time=1.3s
[CV 2/3] END C=1, degree=2, gamma=0.1, kernel=rbf;; score=0.781 total time=1.5s
[CV 3/3] END C=1, degree=2, gamma=0.1, kernel=rbf;; score=0.809 total time=1.3s
[CV 1/3] END C=1, degree=2, gamma=0.1, kernel=linear;; score=0.822 total time=0.7s
[CV 2/3] END C=1, degree=2, gamma=0.1, kernel=linear;; score=0.817 total time=0.5s
[CV 3/3] END C=1, degree=2, gamma=0.1, kernel=linear;; score=0.845 total time=0.6s
[CV 1/3] END C=1, degree=2, gamma=0.1, kernel=poly;; score=0.851 total time=0.6s
[CV 2/3] END C=1, degree=2, gamma=0.1, kernel=poly;; score=0.877 total time=0.6s
[CV 3/3] END C=1, degree=2, gamma=0.1, kernel=poly;; score=0.897 total time=0.6s
[CV 1/3] END C=1, degree=2, gamma=0.1, kernel=sigmoid;; score=0.505 total time=1.0s
[CV 2/3] END C=1, degree=2, gamma=0.1, kernel=sigmoid;; score=0.460 total time=1.0s
[CV 3/3] END C=1, degree=2, gamma=0.1, kernel=sigmoid;; score=0.460 total time=1.0s
[CV 1/3] END C=1, degree=2, gamma=0.01, kernel=rbf;; score=0.779 total time=1.2s
[CV 2/3] END C=1, degree=2, gamma=0.01, kernel=rbf;; score=0.781 total time=1.0s
[CV 3/3] END C=1, degree=2, gamma=0.01, kernel=rbf;; score=0.773 total time=0.8s
[CV 1/3] END C=1, degree=2, gamma=0.01, kernel=linear;; score=0.822 total time=0.6s
[CV 2/3] END C=1, degree=2, gamma=0.01, kernel=linear;; score=0.817 total time=0.8s
[CV 3/3] END C=1, degree=2, gamma=0.01, kernel=linear;; score=0.845 total time=0.6s
[CV 1/3] END C=1, degree=2, gamma=0.01, kernel=poly;; score=0.732 total time=0.8s
[CV 2/3] END C=1, degree=2, gamma=0.01, kernel=poly;; score=0.682 total time=0.9s
[CV 3/3] END C=1, degree=2, gamma=0.01, kernel=poly;; score=0.691 total time=

0.9s
[CV 1/3] END C=1, degree=2, gamma=0.01, kernel=sigmoid;; score=0.758 total time=0.7s
[CV 2/3] END C=1, degree=2, gamma=0.01, kernel=sigmoid;; score=0.720 total time=0.8s
[CV 3/3] END C=1, degree=2, gamma=0.01, kernel=sigmoid;; score=0.728 total time=0.8s
[CV 1/3] END C=1, degree=2, gamma=0.001, kernel=rbf;; score=0.511 total time=1.3s
[CV 2/3] END C=1, degree=2, gamma=0.001, kernel=rbf;; score=0.516 total time=1.3s
[CV 3/3] END C=1, degree=2, gamma=0.001, kernel=rbf;; score=0.513 total time=1.3s
[CV 1/3] END C=1, degree=2, gamma=0.001, kernel=linear;; score=0.822 total time=0.5s
[CV 2/3] END C=1, degree=2, gamma=0.001, kernel=linear;; score=0.817 total time=0.7s
[CV 3/3] END C=1, degree=2, gamma=0.001, kernel=linear;; score=0.845 total time=0.5s
[CV 1/3] END C=1, degree=2, gamma=0.001, kernel=poly;; score=0.076 total time=1.1s
[CV 2/3] END C=1, degree=2, gamma=0.001, kernel=poly;; score=0.076 total time=1.1s
[CV 3/3] END C=1, degree=2, gamma=0.001, kernel=poly;; score=0.076 total time=1.1s
[CV 1/3] END C=1, degree=2, gamma=0.001, kernel=sigmoid;; score=0.448 total time= 1.1s
[CV 2/3] END C=1, degree=2, gamma=0.001, kernel=sigmoid;; score=0.453 total time= 0.9s
[CV 3/3] END C=1, degree=2, gamma=0.001, kernel=sigmoid;; score=0.452 total time= 1.0s
[CV 1/3] END C=1, degree=3, gamma=scale, kernel=rbf;; score=0.833 total time=0.9s
[CV 2/3] END C=1, degree=3, gamma=scale, kernel=rbf;; score=0.837 total time=0.9s
[CV 3/3] END C=1, degree=3, gamma=scale, kernel=rbf;; score=0.864 total time=1.0s
[CV 1/3] END C=1, degree=3, gamma=scale, kernel=linear;; score=0.822 total time=0.6s
[CV 2/3] END C=1, degree=3, gamma=scale, kernel=linear;; score=0.817 total time=0.6s
[CV 3/3] END C=1, degree=3, gamma=scale, kernel=linear;; score=0.845 total time=0.6s
[CV 1/3] END C=1, degree=3, gamma=scale, kernel=poly;; score=0.851 total time=0.8s
[CV 2/3] END C=1, degree=3, gamma=scale, kernel=poly;; score=0.901 total time=0.8s
[CV 3/3] END C=1, degree=3, gamma=scale, kernel=poly;; score=0.897 total time=

0.9s

[CV 1/3] END C=1, degree=3, gamma=scale, kernel=sigmoid;; score=0.748 total time= 0.6s

[CV 2/3] END C=1, degree=3, gamma=scale, kernel=sigmoid;; score=0.727 total time= 0.7s

[CV 3/3] END C=1, degree=3, gamma=scale, kernel=sigmoid;; score=0.735 total time= 0.7s

[CV 1/3] END C=1, degree=3, gamma=auto, kernel=rbf;; score=0.450 total time= 1.2s

[CV 2/3] END C=1, degree=3, gamma=auto, kernel=rbf;; score=0.453 total time= 1.3s

[CV 3/3] END C=1, degree=3, gamma=auto, kernel=rbf;; score=0.452 total time= 1.2s

[CV 1/3] END C=1, degree=3, gamma=auto, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=1, degree=3, gamma=auto, kernel=linear;; score=0.817 total time= 0.7s

[CV 3/3] END C=1, degree=3, gamma=auto, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=1, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 1.0s

[CV 2/3] END C=1, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s

[CV 3/3] END C=1, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s

[CV 1/3] END C=1, degree=3, gamma=auto, kernel=sigmoid;; score=0.400 total time= 1.4s

[CV 2/3] END C=1, degree=3, gamma=auto, kernel=sigmoid;; score=0.396 total time= 1.1s

[CV 3/3] END C=1, degree=3, gamma=auto, kernel=sigmoid;; score=0.403 total time= 1.1s

[CV 1/3] END C=1, degree=3, gamma=0.1, kernel=rbf;; score=0.806 total time= 1.4s

[CV 2/3] END C=1, degree=3, gamma=0.1, kernel=rbf;; score=0.781 total time= 1.3s

[CV 3/3] END C=1, degree=3, gamma=0.1, kernel=rbf;; score=0.809 total time= 1.4s

[CV 1/3] END C=1, degree=3, gamma=0.1, kernel=linear;; score=0.822 total time= 0.6s

[CV 2/3] END C=1, degree=3, gamma=0.1, kernel=linear;; score=0.817 total time= 0.5s

[CV 3/3] END C=1, degree=3, gamma=0.1, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=1, degree=3, gamma=0.1, kernel=poly;; score=0.851 total time= 0.8s

[CV 2/3] END C=1, degree=3, gamma=0.1, kernel=poly;; score=0.901 total time= 0.9s

[CV 3/3] END C=1, degree=3, gamma=0.1, kernel=poly;; score=0.897 total time=

0.9s
[CV 1/3] END C=1, degree=3, gamma=0.1, kernel=sigmoid;; score=0.505 total time=1.0s
[CV 2/3] END C=1, degree=3, gamma=0.1, kernel=sigmoid;; score=0.460 total time=1.0s
[CV 3/3] END C=1, degree=3, gamma=0.1, kernel=sigmoid;; score=0.460 total time=0.8s
[CV 1/3] END C=1, degree=3, gamma=0.01, kernel=rbf;; score=0.779 total time=1.0s
[CV 2/3] END C=1, degree=3, gamma=0.01, kernel=rbf;; score=0.781 total time=0.8s
[CV 3/3] END C=1, degree=3, gamma=0.01, kernel=rbf;; score=0.773 total time=1.0s
[CV 1/3] END C=1, degree=3, gamma=0.01, kernel=linear;; score=0.822 total time=0.5s
[CV 2/3] END C=1, degree=3, gamma=0.01, kernel=linear;; score=0.817 total time=0.8s
[CV 3/3] END C=1, degree=3, gamma=0.01, kernel=linear;; score=0.845 total time=0.6s
[CV 1/3] END C=1, degree=3, gamma=0.01, kernel=poly;; score=0.554 total time=0.9s
[CV 2/3] END C=1, degree=3, gamma=0.01, kernel=poly;; score=0.529 total time=1.0s
[CV 3/3] END C=1, degree=3, gamma=0.01, kernel=poly;; score=0.535 total time=0.9s
[CV 1/3] END C=1, degree=3, gamma=0.01, kernel=sigmoid;; score=0.758 total time=0.9s
[CV 2/3] END C=1, degree=3, gamma=0.01, kernel=sigmoid;; score=0.720 total time=0.6s
[CV 3/3] END C=1, degree=3, gamma=0.01, kernel=sigmoid;; score=0.728 total time=0.7s
[CV 1/3] END C=1, degree=3, gamma=0.001, kernel=rbf;; score=0.511 total time=1.1s
[CV 2/3] END C=1, degree=3, gamma=0.001, kernel=rbf;; score=0.516 total time=1.3s
[CV 3/3] END C=1, degree=3, gamma=0.001, kernel=rbf;; score=0.513 total time=1.4s
[CV 1/3] END C=1, degree=3, gamma=0.001, kernel=linear;; score=0.822 total time=0.7s
[CV 2/3] END C=1, degree=3, gamma=0.001, kernel=linear;; score=0.817 total time=0.7s
[CV 3/3] END C=1, degree=3, gamma=0.001, kernel=linear;; score=0.845 total time=0.6s
[CV 1/3] END C=1, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time=1.2s
[CV 2/3] END C=1, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time=1.3s
[CV 3/3] END C=1, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time=

1.4s
[CV 1/3] END C=1, degree=3, gamma=0.001, kernel=sigmoid;; score=0.448 total time= 1.2s
[CV 2/3] END C=1, degree=3, gamma=0.001, kernel=sigmoid;; score=0.453 total time= 1.1s
[CV 3/3] END C=1, degree=3, gamma=0.001, kernel=sigmoid;; score=0.452 total time= 1.1s
[CV 1/3] END C=1, degree=4, gamma=scale, kernel=rbf;; score=0.833 total time= 1.1s
[CV 2/3] END C=1, degree=4, gamma=scale, kernel=rbf;; score=0.837 total time= 1.0s
[CV 3/3] END C=1, degree=4, gamma=scale, kernel=rbf;; score=0.864 total time= 1.0s
[CV 1/3] END C=1, degree=4, gamma=scale, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=1, degree=4, gamma=scale, kernel=linear;; score=0.817 total time= 0.6s
[CV 3/3] END C=1, degree=4, gamma=scale, kernel=linear;; score=0.845 total time= 0.7s
[CV 1/3] END C=1, degree=4, gamma=scale, kernel=poly;; score=0.847 total time= 0.9s
[CV 2/3] END C=1, degree=4, gamma=scale, kernel=poly;; score=0.884 total time= 1.0s
[CV 3/3] END C=1, degree=4, gamma=scale, kernel=poly;; score=0.897 total time= 1.0s
[CV 1/3] END C=1, degree=4, gamma=scale, kernel=sigmoid;; score=0.748 total time= 0.6s
[CV 2/3] END C=1, degree=4, gamma=scale, kernel=sigmoid;; score=0.727 total time= 0.7s
[CV 3/3] END C=1, degree=4, gamma=scale, kernel=sigmoid;; score=0.735 total time= 0.7s
[CV 1/3] END C=1, degree=4, gamma=auto, kernel=rbf;; score=0.450 total time= 2.0s
[CV 2/3] END C=1, degree=4, gamma=auto, kernel=rbf;; score=0.453 total time= 1.2s
[CV 3/3] END C=1, degree=4, gamma=auto, kernel=rbf;; score=0.452 total time= 1.7s
[CV 1/3] END C=1, degree=4, gamma=auto, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=1, degree=4, gamma=auto, kernel=linear;; score=0.817 total time= 0.6s
[CV 3/3] END C=1, degree=4, gamma=auto, kernel=linear;; score=0.845 total time= 0.5s
[CV 1/3] END C=1, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.3s
[CV 2/3] END C=1, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s
[CV 3/3] END C=1, degree=4, gamma=auto, kernel=poly;; score=0.076 total time=

1.1s
[CV 1/3] END C=1, degree=4, gamma=auto, kernel=sigmoid;; score=0.400 total time=1.2s
1.2s
[CV 2/3] END C=1, degree=4, gamma=auto, kernel=sigmoid;; score=0.396 total time=1.1s
1.1s
[CV 3/3] END C=1, degree=4, gamma=auto, kernel=sigmoid;; score=0.403 total time=1.1s
1.1s
[CV 1/3] END C=1, degree=4, gamma=0.1, kernel=rbf;; score=0.806 total time=1.9s
1.9s
[CV 2/3] END C=1, degree=4, gamma=0.1, kernel=rbf;; score=0.781 total time=2.3s
2.3s
[CV 3/3] END C=1, degree=4, gamma=0.1, kernel=rbf;; score=0.809 total time=2.0s
2.0s
[CV 1/3] END C=1, degree=4, gamma=0.1, kernel=linear;; score=0.822 total time=0.7s
0.7s
[CV 2/3] END C=1, degree=4, gamma=0.1, kernel=linear;; score=0.817 total time=0.8s
0.8s
[CV 3/3] END C=1, degree=4, gamma=0.1, kernel=linear;; score=0.845 total time=0.7s
0.7s
[CV 1/3] END C=1, degree=4, gamma=0.1, kernel=poly;; score=0.847 total time=0.9s
0.9s
[CV 2/3] END C=1, degree=4, gamma=0.1, kernel=poly;; score=0.884 total time=1.0s
1.0s
[CV 3/3] END C=1, degree=4, gamma=0.1, kernel=poly;; score=0.897 total time=0.9s
0.9s
[CV 1/3] END C=1, degree=4, gamma=0.1, kernel=sigmoid;; score=0.505 total time=1.2s
1.2s
[CV 2/3] END C=1, degree=4, gamma=0.1, kernel=sigmoid;; score=0.460 total time=1.0s
1.0s
[CV 3/3] END C=1, degree=4, gamma=0.1, kernel=sigmoid;; score=0.460 total time=1.0s
1.0s
[CV 1/3] END C=1, degree=4, gamma=0.01, kernel=rbf;; score=0.779 total time=0.8s
0.8s
[CV 2/3] END C=1, degree=4, gamma=0.01, kernel=rbf;; score=0.781 total time=0.9s
0.9s
[CV 3/3] END C=1, degree=4, gamma=0.01, kernel=rbf;; score=0.773 total time=1.0s
1.0s
[CV 1/3] END C=1, degree=4, gamma=0.01, kernel=linear;; score=0.822 total time=0.5s
0.5s
[CV 2/3] END C=1, degree=4, gamma=0.01, kernel=linear;; score=0.817 total time=0.6s
0.6s
[CV 3/3] END C=1, degree=4, gamma=0.01, kernel=linear;; score=0.845 total time=0.7s
0.7s
[CV 1/3] END C=1, degree=4, gamma=0.01, kernel=poly;; score=0.432 total time=1.1s
1.1s
[CV 2/3] END C=1, degree=4, gamma=0.01, kernel=poly;; score=0.444 total time=1.2s
1.2s
[CV 3/3] END C=1, degree=4, gamma=0.01, kernel=poly;; score=0.451 total time=

1.1s
[CV 1/3] END C=1, degree=4, gamma=0.01, kernel=sigmoid;; score=0.758 total time=0.8s
[CV 2/3] END C=1, degree=4, gamma=0.01, kernel=sigmoid;; score=0.720 total time=0.9s
[CV 3/3] END C=1, degree=4, gamma=0.01, kernel=sigmoid;; score=0.728 total time=0.7s
[CV 1/3] END C=1, degree=4, gamma=0.001, kernel=rbf;; score=0.511 total time=1.3s
[CV 2/3] END C=1, degree=4, gamma=0.001, kernel=rbf;; score=0.516 total time=1.2s
[CV 3/3] END C=1, degree=4, gamma=0.001, kernel=rbf;; score=0.513 total time=1.2s
[CV 1/3] END C=1, degree=4, gamma=0.001, kernel=linear;; score=0.822 total time=0.6s
[CV 2/3] END C=1, degree=4, gamma=0.001, kernel=linear;; score=0.817 total time=0.6s
[CV 3/3] END C=1, degree=4, gamma=0.001, kernel=linear;; score=0.845 total time=0.5s
[CV 1/3] END C=1, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=1.2s
[CV 2/3] END C=1, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=1.2s
[CV 3/3] END C=1, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=1.2s
[CV 1/3] END C=1, degree=4, gamma=0.001, kernel=sigmoid;; score=0.448 total time= 1.3s
[CV 2/3] END C=1, degree=4, gamma=0.001, kernel=sigmoid;; score=0.453 total time= 1.0s
[CV 3/3] END C=1, degree=4, gamma=0.001, kernel=sigmoid;; score=0.452 total time= 1.1s
[CV 1/3] END C=10, degree=2, gamma=scale, kernel=rbf;; score=0.851 total time=1.0s
[CV 2/3] END C=10, degree=2, gamma=scale, kernel=rbf;; score=0.891 total time=1.2s
[CV 3/3] END C=10, degree=2, gamma=scale, kernel=rbf;; score=0.894 total time=1.1s
[CV 1/3] END C=10, degree=2, gamma=scale, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=10, degree=2, gamma=scale, kernel=linear;; score=0.817 total time= 0.7s
[CV 3/3] END C=10, degree=2, gamma=scale, kernel=linear;; score=0.845 total time= 0.5s
[CV 1/3] END C=10, degree=2, gamma=scale, kernel=poly;; score=0.851 total time=0.8s
[CV 2/3] END C=10, degree=2, gamma=scale, kernel=poly;; score=0.877 total time=0.9s
[CV 3/3] END C=10, degree=2, gamma=scale, kernel=poly;; score=0.897 total time=

0.8s

[CV 1/3] END C=10, degree=2, gamma=scale, kernel=sigmoid;; score=0.728 total time= 0.4s

[CV 2/3] END C=10, degree=2, gamma=scale, kernel=sigmoid;; score=0.731 total time= 0.5s

[CV 3/3] END C=10, degree=2, gamma=scale, kernel=sigmoid;; score=0.725 total time= 0.6s

[CV 1/3] END C=10, degree=2, gamma=auto, kernel=rbf;; score=0.765 total time= 0.9s

[CV 2/3] END C=10, degree=2, gamma=auto, kernel=rbf;; score=0.739 total time= 0.8s

[CV 3/3] END C=10, degree=2, gamma=auto, kernel=rbf;; score=0.744 total time= 0.9s

[CV 1/3] END C=10, degree=2, gamma=auto, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=2, gamma=auto, kernel=linear;; score=0.817 total time= 0.6s

[CV 3/3] END C=10, degree=2, gamma=auto, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=10, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.0s

[CV 2/3] END C=10, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s

[CV 3/3] END C=10, degree=2, gamma=auto, kernel=poly;; score=0.076 total time= 1.3s

[CV 1/3] END C=10, degree=2, gamma=auto, kernel=sigmoid;; score=0.694 total time= 0.7s

[CV 2/3] END C=10, degree=2, gamma=auto, kernel=sigmoid;; score=0.622 total time= 0.7s

[CV 3/3] END C=10, degree=2, gamma=auto, kernel=sigmoid;; score=0.657 total time= 0.8s

[CV 1/3] END C=10, degree=2, gamma=0.1, kernel=rbf;; score=0.810 total time= 1.4s

[CV 2/3] END C=10, degree=2, gamma=0.1, kernel=rbf;; score=0.805 total time= 1.4s

[CV 3/3] END C=10, degree=2, gamma=0.1, kernel=rbf;; score=0.835 total time= 1.5s

[CV 1/3] END C=10, degree=2, gamma=0.1, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=2, gamma=0.1, kernel=linear;; score=0.817 total time= 0.6s

[CV 3/3] END C=10, degree=2, gamma=0.1, kernel=linear;; score=0.845 total time= 0.5s

[CV 1/3] END C=10, degree=2, gamma=0.1, kernel=poly;; score=0.851 total time= 0.7s

[CV 2/3] END C=10, degree=2, gamma=0.1, kernel=poly;; score=0.877 total time= 0.7s

[CV 3/3] END C=10, degree=2, gamma=0.1, kernel=poly;; score=0.897 total time=

0.7s
[CV 1/3] END C=10, degree=2, gamma=0.1, kernel=sigmoid;; score=0.521 total time=0.6s
[CV 2/3] END C=10, degree=2, gamma=0.1, kernel=sigmoid;; score=0.502 total time=0.5s
[CV 3/3] END C=10, degree=2, gamma=0.1, kernel=sigmoid;; score=0.435 total time=0.6s
[CV 1/3] END C=10, degree=2, gamma=0.01, kernel=rbf;; score=0.844 total time=0.9s
[CV 2/3] END C=10, degree=2, gamma=0.01, kernel=rbf;; score=0.868 total time=0.7s
[CV 3/3] END C=10, degree=2, gamma=0.01, kernel=rbf;; score=0.881 total time=0.9s
[CV 1/3] END C=10, degree=2, gamma=0.01, kernel=linear;; score=0.822 total time=0.5s
[CV 2/3] END C=10, degree=2, gamma=0.01, kernel=linear;; score=0.817 total time=0.6s
[CV 3/3] END C=10, degree=2, gamma=0.01, kernel=linear;; score=0.845 total time=0.6s
[CV 1/3] END C=10, degree=2, gamma=0.01, kernel=poly;; score=0.858 total time=0.7s
[CV 2/3] END C=10, degree=2, gamma=0.01, kernel=poly;; score=0.877 total time=0.6s
[CV 3/3] END C=10, degree=2, gamma=0.01, kernel=poly;; score=0.888 total time=0.7s
[CV 1/3] END C=10, degree=2, gamma=0.01, kernel=sigmoid;; score=0.827 total time= 0.4s
[CV 2/3] END C=10, degree=2, gamma=0.01, kernel=sigmoid;; score=0.841 total time= 0.6s
[CV 3/3] END C=10, degree=2, gamma=0.01, kernel=sigmoid;; score=0.850 total time= 0.5s
[CV 1/3] END C=10, degree=2, gamma=0.001, kernel=rbf;; score=0.805 total time=0.8s
[CV 2/3] END C=10, degree=2, gamma=0.001, kernel=rbf;; score=0.795 total time=0.9s
[CV 3/3] END C=10, degree=2, gamma=0.001, kernel=rbf;; score=0.806 total time=0.9s
[CV 1/3] END C=10, degree=2, gamma=0.001, kernel=linear;; score=0.822 total time= 0.5s
[CV 2/3] END C=10, degree=2, gamma=0.001, kernel=linear;; score=0.817 total time= 0.6s
[CV 3/3] END C=10, degree=2, gamma=0.001, kernel=linear;; score=0.845 total time= 0.5s
[CV 1/3] END C=10, degree=2, gamma=0.001, kernel=poly;; score=0.398 total time=1.0s
[CV 2/3] END C=10, degree=2, gamma=0.001, kernel=poly;; score=0.386 total time=1.0s
[CV 3/3] END C=10, degree=2, gamma=0.001, kernel=poly;; score=0.389 total time=

1.2s

[CV 1/3] END C=10, degree=2, gamma=0.001, kernel=sigmoid;; score=0.761 total time= 0.6s

[CV 2/3] END C=10, degree=2, gamma=0.001, kernel=sigmoid;; score=0.732 total time= 0.6s

[CV 3/3] END C=10, degree=2, gamma=0.001, kernel=sigmoid;; score=0.738 total time= 0.6s

[CV 1/3] END C=10, degree=3, gamma=scale, kernel=rbf;; score=0.851 total time= 1.1s

[CV 2/3] END C=10, degree=3, gamma=scale, kernel=rbf;; score=0.891 total time= 1.0s

[CV 3/3] END C=10, degree=3, gamma=scale, kernel=rbf;; score=0.894 total time= 1.2s

[CV 1/3] END C=10, degree=3, gamma=scale, kernel=linear;; score=0.822 total time= 0.6s

[CV 2/3] END C=10, degree=3, gamma=scale, kernel=linear;; score=0.817 total time= 0.7s

[CV 3/3] END C=10, degree=3, gamma=scale, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=10, degree=3, gamma=scale, kernel=poly;; score=0.851 total time= 0.9s

[CV 2/3] END C=10, degree=3, gamma=scale, kernel=poly;; score=0.901 total time= 0.8s

[CV 3/3] END C=10, degree=3, gamma=scale, kernel=poly;; score=0.897 total time= 1.0s

[CV 1/3] END C=10, degree=3, gamma=scale, kernel=sigmoid;; score=0.728 total time= 0.5s

[CV 2/3] END C=10, degree=3, gamma=scale, kernel=sigmoid;; score=0.731 total time= 0.4s

[CV 3/3] END C=10, degree=3, gamma=scale, kernel=sigmoid;; score=0.725 total time= 0.6s

[CV 1/3] END C=10, degree=3, gamma=auto, kernel=rbf;; score=0.765 total time= 0.8s

[CV 2/3] END C=10, degree=3, gamma=auto, kernel=rbf;; score=0.739 total time= 0.8s

[CV 3/3] END C=10, degree=3, gamma=auto, kernel=rbf;; score=0.744 total time= 0.9s

[CV 1/3] END C=10, degree=3, gamma=auto, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=3, gamma=auto, kernel=linear;; score=0.817 total time= 0.5s

[CV 3/3] END C=10, degree=3, gamma=auto, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=10, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 1.0s

[CV 2/3] END C=10, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 0.9s

[CV 3/3] END C=10, degree=3, gamma=auto, kernel=poly;; score=0.076 total time=

1.0s

[CV 1/3] END C=10, degree=3, gamma=auto, kernel=sigmoid;; score=0.694 total time= 0.7s

[CV 2/3] END C=10, degree=3, gamma=auto, kernel=sigmoid;; score=0.622 total time= 0.7s

[CV 3/3] END C=10, degree=3, gamma=auto, kernel=sigmoid;; score=0.657 total time= 0.8s

[CV 1/3] END C=10, degree=3, gamma=0.1, kernel=rbf;; score=0.810 total time= 1.3s

[CV 2/3] END C=10, degree=3, gamma=0.1, kernel=rbf;; score=0.805 total time= 1.3s

[CV 3/3] END C=10, degree=3, gamma=0.1, kernel=rbf;; score=0.835 total time= 1.3s

[CV 1/3] END C=10, degree=3, gamma=0.1, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=3, gamma=0.1, kernel=linear;; score=0.817 total time= 0.6s

[CV 3/3] END C=10, degree=3, gamma=0.1, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=10, degree=3, gamma=0.1, kernel=poly;; score=0.851 total time= 0.7s

[CV 2/3] END C=10, degree=3, gamma=0.1, kernel=poly;; score=0.901 total time= 0.7s

[CV 3/3] END C=10, degree=3, gamma=0.1, kernel=poly;; score=0.897 total time= 0.8s

[CV 1/3] END C=10, degree=3, gamma=0.1, kernel=sigmoid;; score=0.521 total time= 0.5s

[CV 2/3] END C=10, degree=3, gamma=0.1, kernel=sigmoid;; score=0.502 total time= 0.4s

[CV 3/3] END C=10, degree=3, gamma=0.1, kernel=sigmoid;; score=0.435 total time= 0.6s

[CV 1/3] END C=10, degree=3, gamma=0.01, kernel=rbf;; score=0.844 total time= 0.9s

[CV 2/3] END C=10, degree=3, gamma=0.01, kernel=rbf;; score=0.868 total time= 0.8s

[CV 3/3] END C=10, degree=3, gamma=0.01, kernel=rbf;; score=0.881 total time= 0.9s

[CV 1/3] END C=10, degree=3, gamma=0.01, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=3, gamma=0.01, kernel=linear;; score=0.817 total time= 0.5s

[CV 3/3] END C=10, degree=3, gamma=0.01, kernel=linear;; score=0.845 total time= 0.5s

[CV 1/3] END C=10, degree=3, gamma=0.01, kernel=poly;; score=0.848 total time= 0.7s

[CV 2/3] END C=10, degree=3, gamma=0.01, kernel=poly;; score=0.875 total time= 0.7s

[CV 3/3] END C=10, degree=3, gamma=0.01, kernel=poly;; score=0.876 total time=

0.7s

[CV 1/3] END C=10, degree=3, gamma=0.01, kernel=sigmoid;; score=0.827 total time= 0.5s

[CV 2/3] END C=10, degree=3, gamma=0.01, kernel=sigmoid;; score=0.841 total time= 0.5s

[CV 3/3] END C=10, degree=3, gamma=0.01, kernel=sigmoid;; score=0.850 total time= 0.5s

[CV 1/3] END C=10, degree=3, gamma=0.001, kernel=rbf;; score=0.805 total time= 0.8s

[CV 2/3] END C=10, degree=3, gamma=0.001, kernel=rbf;; score=0.795 total time= 0.8s

[CV 3/3] END C=10, degree=3, gamma=0.001, kernel=rbf;; score=0.806 total time= 0.7s

[CV 1/3] END C=10, degree=3, gamma=0.001, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=3, gamma=0.001, kernel=linear;; score=0.817 total time= 0.5s

[CV 3/3] END C=10, degree=3, gamma=0.001, kernel=linear;; score=0.845 total time= 0.5s

[CV 1/3] END C=10, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 1.1s

[CV 2/3] END C=10, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 1.1s

[CV 3/3] END C=10, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 1.0s

[CV 1/3] END C=10, degree=3, gamma=0.001, kernel=sigmoid;; score=0.761 total time= 0.6s

[CV 2/3] END C=10, degree=3, gamma=0.001, kernel=sigmoid;; score=0.732 total time= 0.7s

[CV 3/3] END C=10, degree=3, gamma=0.001, kernel=sigmoid;; score=0.738 total time= 0.6s

[CV 1/3] END C=10, degree=4, gamma=scale, kernel=rbf;; score=0.851 total time= 1.0s

[CV 2/3] END C=10, degree=4, gamma=scale, kernel=rbf;; score=0.891 total time= 1.0s

[CV 3/3] END C=10, degree=4, gamma=scale, kernel=rbf;; score=0.894 total time= 1.1s

[CV 1/3] END C=10, degree=4, gamma=scale, kernel=linear;; score=0.822 total time= 0.7s

[CV 2/3] END C=10, degree=4, gamma=scale, kernel=linear;; score=0.817 total time= 0.6s

[CV 3/3] END C=10, degree=4, gamma=scale, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=10, degree=4, gamma=scale, kernel=poly;; score=0.847 total time= 0.9s

[CV 2/3] END C=10, degree=4, gamma=scale, kernel=poly;; score=0.884 total time= 1.0s

[CV 3/3] END C=10, degree=4, gamma=scale, kernel=poly;; score=0.897 total time=

1.1s

[CV 1/3] END C=10, degree=4, gamma=scale, kernel=sigmoid;; score=0.728 total time= 0.3s

[CV 2/3] END C=10, degree=4, gamma=scale, kernel=sigmoid;; score=0.731 total time= 0.5s

[CV 3/3] END C=10, degree=4, gamma=scale, kernel=sigmoid;; score=0.725 total time= 0.5s

[CV 1/3] END C=10, degree=4, gamma=auto, kernel=rbf;; score=0.765 total time= 0.9s

[CV 2/3] END C=10, degree=4, gamma=auto, kernel=rbf;; score=0.739 total time= 0.8s

[CV 3/3] END C=10, degree=4, gamma=auto, kernel=rbf;; score=0.744 total time= 1.0s

[CV 1/3] END C=10, degree=4, gamma=auto, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=4, gamma=auto, kernel=linear;; score=0.817 total time= 0.6s

[CV 3/3] END C=10, degree=4, gamma=auto, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=10, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.0s

[CV 2/3] END C=10, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.0s

[CV 3/3] END C=10, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.3s

[CV 1/3] END C=10, degree=4, gamma=auto, kernel=sigmoid;; score=0.694 total time= 0.8s

[CV 2/3] END C=10, degree=4, gamma=auto, kernel=sigmoid;; score=0.622 total time= 0.8s

[CV 3/3] END C=10, degree=4, gamma=auto, kernel=sigmoid;; score=0.657 total time= 0.7s

[CV 1/3] END C=10, degree=4, gamma=0.1, kernel=rbf;; score=0.810 total time= 1.5s

[CV 2/3] END C=10, degree=4, gamma=0.1, kernel=rbf;; score=0.805 total time= 1.3s

[CV 3/3] END C=10, degree=4, gamma=0.1, kernel=rbf;; score=0.835 total time= 1.4s

[CV 1/3] END C=10, degree=4, gamma=0.1, kernel=linear;; score=0.822 total time= 0.5s

[CV 2/3] END C=10, degree=4, gamma=0.1, kernel=linear;; score=0.817 total time= 0.5s

[CV 3/3] END C=10, degree=4, gamma=0.1, kernel=linear;; score=0.845 total time= 0.5s

[CV 1/3] END C=10, degree=4, gamma=0.1, kernel=poly;; score=0.847 total time= 1.0s

[CV 2/3] END C=10, degree=4, gamma=0.1, kernel=poly;; score=0.884 total time= 0.9s

[CV 3/3] END C=10, degree=4, gamma=0.1, kernel=poly;; score=0.897 total time=

1.0s
[CV 1/3] END C=10, degree=4, gamma=0.1, kernel=sigmoid;; score=0.521 total time=0.5s
[CV 2/3] END C=10, degree=4, gamma=0.1, kernel=sigmoid;; score=0.502 total time=0.5s
[CV 3/3] END C=10, degree=4, gamma=0.1, kernel=sigmoid;; score=0.435 total time=0.6s
[CV 1/3] END C=10, degree=4, gamma=0.01, kernel=rbf;; score=0.844 total time=0.8s
[CV 2/3] END C=10, degree=4, gamma=0.01, kernel=rbf;; score=0.868 total time=0.8s
[CV 3/3] END C=10, degree=4, gamma=0.01, kernel=rbf;; score=0.881 total time=0.8s
[CV 1/3] END C=10, degree=4, gamma=0.01, kernel=linear;; score=0.822 total time=0.5s
[CV 2/3] END C=10, degree=4, gamma=0.01, kernel=linear;; score=0.817 total time=0.7s
[CV 3/3] END C=10, degree=4, gamma=0.01, kernel=linear;; score=0.845 total time=0.6s
[CV 1/3] END C=10, degree=4, gamma=0.01, kernel=poly;; score=0.789 total time=0.9s
[CV 2/3] END C=10, degree=4, gamma=0.01, kernel=poly;; score=0.812 total time=0.8s
[CV 3/3] END C=10, degree=4, gamma=0.01, kernel=poly;; score=0.805 total time=0.8s
[CV 1/3] END C=10, degree=4, gamma=0.01, kernel=sigmoid;; score=0.827 total time= 0.5s
[CV 2/3] END C=10, degree=4, gamma=0.01, kernel=sigmoid;; score=0.841 total time= 0.5s
[CV 3/3] END C=10, degree=4, gamma=0.01, kernel=sigmoid;; score=0.850 total time= 0.5s
[CV 1/3] END C=10, degree=4, gamma=0.001, kernel=rbf;; score=0.805 total time=0.9s
[CV 2/3] END C=10, degree=4, gamma=0.001, kernel=rbf;; score=0.795 total time=0.7s
[CV 3/3] END C=10, degree=4, gamma=0.001, kernel=rbf;; score=0.806 total time=0.7s
[CV 1/3] END C=10, degree=4, gamma=0.001, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=10, degree=4, gamma=0.001, kernel=linear;; score=0.817 total time= 0.5s
[CV 3/3] END C=10, degree=4, gamma=0.001, kernel=linear;; score=0.845 total time= 0.7s
[CV 1/3] END C=10, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=1.1s
[CV 2/3] END C=10, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=1.0s
[CV 3/3] END C=10, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=

1.1s
[CV 1/3] END C=10, degree=4, gamma=0.001, kernel=sigmoid;; score=0.761 total time= 0.6s
[CV 2/3] END C=10, degree=4, gamma=0.001, kernel=sigmoid;; score=0.732 total time= 0.6s
[CV 3/3] END C=10, degree=4, gamma=0.001, kernel=sigmoid;; score=0.738 total time= 0.6s
[CV 1/3] END C=100, degree=2, gamma=scale, kernel=rbf;; score=0.851 total time= 1.1s
[CV 2/3] END C=100, degree=2, gamma=scale, kernel=rbf;; score=0.891 total time= 1.1s
[CV 3/3] END C=100, degree=2, gamma=scale, kernel=rbf;; score=0.894 total time= 1.1s
[CV 1/3] END C=100, degree=2, gamma=scale, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=100, degree=2, gamma=scale, kernel=linear;; score=0.817 total time= 0.5s
[CV 3/3] END C=100, degree=2, gamma=scale, kernel=linear;; score=0.845 total time= 0.5s
[CV 1/3] END C=100, degree=2, gamma=scale, kernel=poly;; score=0.851 total time= 0.7s
[CV 2/3] END C=100, degree=2, gamma=scale, kernel=poly;; score=0.877 total time= 0.7s
[CV 3/3] END C=100, degree=2, gamma=scale, kernel=poly;; score=0.897 total time= 0.8s
[CV 1/3] END C=100, degree=2, gamma=scale, kernel=sigmoid;; score=0.712 total time= 0.3s
[CV 2/3] END C=100, degree=2, gamma=scale, kernel=sigmoid;; score=0.624 total time= 0.3s
[CV 3/3] END C=100, degree=2, gamma=scale, kernel=sigmoid;; score=0.699 total time= 0.5s
[CV 1/3] END C=100, degree=2, gamma=auto, kernel=rbf;; score=0.834 total time= 0.7s
[CV 2/3] END C=100, degree=2, gamma=auto, kernel=rbf;; score=0.841 total time= 0.7s
[CV 3/3] END C=100, degree=2, gamma=auto, kernel=rbf;; score=0.850 total time= 0.7s
[CV 1/3] END C=100, degree=2, gamma=auto, kernel=linear;; score=0.822 total time= 0.5s
[CV 2/3] END C=100, degree=2, gamma=auto, kernel=linear;; score=0.817 total time= 0.6s
[CV 3/3] END C=100, degree=2, gamma=auto, kernel=linear;; score=0.845 total time= 0.6s
[CV 1/3] END C=100, degree=2, gamma=auto, kernel=poly;; score=0.477 total time= 0.9s
[CV 2/3] END C=100, degree=2, gamma=auto, kernel=poly;; score=0.490 total time= 0.9s
[CV 3/3] END C=100, degree=2, gamma=auto, kernel=poly;; score=0.487 total time=

0.9s

[CV 1/3] END C=100, degree=2, gamma=auto, kernel=sigmoid;; score=0.835 total time= 0.5s

[CV 2/3] END C=100, degree=2, gamma=auto, kernel=sigmoid;; score=0.839 total time= 0.5s

[CV 3/3] END C=100, degree=2, gamma=auto, kernel=sigmoid;; score=0.844 total time= 0.6s

[CV 1/3] END C=100, degree=2, gamma=0.1, kernel=rbf;; score=0.810 total time= 1.5s

[CV 2/3] END C=100, degree=2, gamma=0.1, kernel=rbf;; score=0.805 total time= 1.2s

[CV 3/3] END C=100, degree=2, gamma=0.1, kernel=rbf;; score=0.835 total time= 1.3s

[CV 1/3] END C=100, degree=2, gamma=0.1, kernel=linear;; score=0.822 total time= 0.6s

[CV 2/3] END C=100, degree=2, gamma=0.1, kernel=linear;; score=0.817 total time= 0.6s

[CV 3/3] END C=100, degree=2, gamma=0.1, kernel=linear;; score=0.845 total time= 0.7s

[CV 1/3] END C=100, degree=2, gamma=0.1, kernel=poly;; score=0.851 total time= 0.7s

[CV 2/3] END C=100, degree=2, gamma=0.1, kernel=poly;; score=0.877 total time= 0.7s

[CV 3/3] END C=100, degree=2, gamma=0.1, kernel=poly;; score=0.897 total time= 0.6s

[CV 1/3] END C=100, degree=2, gamma=0.1, kernel=sigmoid;; score=0.493 total time= 0.3s

[CV 2/3] END C=100, degree=2, gamma=0.1, kernel=sigmoid;; score=0.544 total time= 0.4s

[CV 3/3] END C=100, degree=2, gamma=0.1, kernel=sigmoid;; score=0.428 total time= 0.5s

[CV 1/3] END C=100, degree=2, gamma=0.01, kernel=rbf;; score=0.849 total time= 0.8s

[CV 2/3] END C=100, degree=2, gamma=0.01, kernel=rbf;; score=0.866 total time= 1.0s

[CV 3/3] END C=100, degree=2, gamma=0.01, kernel=rbf;; score=0.881 total time= 0.9s

[CV 1/3] END C=100, degree=2, gamma=0.01, kernel=linear;; score=0.822 total time= 0.6s

[CV 2/3] END C=100, degree=2, gamma=0.01, kernel=linear;; score=0.817 total time= 0.7s

[CV 3/3] END C=100, degree=2, gamma=0.01, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=100, degree=2, gamma=0.01, kernel=poly;; score=0.851 total time= 0.7s

[CV 2/3] END C=100, degree=2, gamma=0.01, kernel=poly;; score=0.877 total time= 0.9s

[CV 3/3] END C=100, degree=2, gamma=0.01, kernel=poly;; score=0.897 total time=

0.7s

[CV 1/3] END C=100, degree=2, gamma=0.01, kernel=sigmoid;; score=0.807 total time= 0.5s

[CV 2/3] END C=100, degree=2, gamma=0.01, kernel=sigmoid;; score=0.810 total time= 0.6s

[CV 3/3] END C=100, degree=2, gamma=0.01, kernel=sigmoid;; score=0.832 total time= 0.5s

[CV 1/3] END C=100, degree=2, gamma=0.001, kernel=rbf;; score=0.835 total time= 0.7s

[CV 2/3] END C=100, degree=2, gamma=0.001, kernel=rbf;; score=0.831 total time= 0.8s

[CV 3/3] END C=100, degree=2, gamma=0.001, kernel=rbf;; score=0.845 total time= 0.8s

[CV 1/3] END C=100, degree=2, gamma=0.001, kernel=linear;; score=0.822 total time= 0.6s

[CV 2/3] END C=100, degree=2, gamma=0.001, kernel=linear;; score=0.817 total time= 0.5s

[CV 3/3] END C=100, degree=2, gamma=0.001, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=100, degree=2, gamma=0.001, kernel=poly;; score=0.732 total time= 0.7s

[CV 2/3] END C=100, degree=2, gamma=0.001, kernel=poly;; score=0.682 total time= 0.7s

[CV 3/3] END C=100, degree=2, gamma=0.001, kernel=poly;; score=0.691 total time= 0.6s

[CV 1/3] END C=100, degree=2, gamma=0.001, kernel=sigmoid;; score=0.842 total time= 0.8s

[CV 2/3] END C=100, degree=2, gamma=0.001, kernel=sigmoid;; score=0.838 total time= 0.8s

[CV 3/3] END C=100, degree=2, gamma=0.001, kernel=sigmoid;; score=0.850 total time= 0.6s

[CV 1/3] END C=100, degree=3, gamma=scale, kernel=rbf;; score=0.851 total time= 1.3s

[CV 2/3] END C=100, degree=3, gamma=scale, kernel=rbf;; score=0.891 total time= 1.4s

[CV 3/3] END C=100, degree=3, gamma=scale, kernel=rbf;; score=0.894 total time= 1.1s

[CV 1/3] END C=100, degree=3, gamma=scale, kernel=linear;; score=0.822 total time= 0.6s

[CV 2/3] END C=100, degree=3, gamma=scale, kernel=linear;; score=0.817 total time= 0.6s

[CV 3/3] END C=100, degree=3, gamma=scale, kernel=linear;; score=0.845 total time= 0.8s

[CV 1/3] END C=100, degree=3, gamma=scale, kernel=poly;; score=0.851 total time= 0.9s

[CV 2/3] END C=100, degree=3, gamma=scale, kernel=poly;; score=0.901 total time= 0.9s

[CV 3/3] END C=100, degree=3, gamma=scale, kernel=poly;; score=0.897 total time=

0.9s

[CV 1/3] END C=100, degree=3, gamma=scale, kernel=sigmoid;; score=0.712 total time= 0.5s

[CV 2/3] END C=100, degree=3, gamma=scale, kernel=sigmoid;; score=0.624 total time= 0.6s

[CV 3/3] END C=100, degree=3, gamma=scale, kernel=sigmoid;; score=0.699 total time= 0.3s

[CV 1/3] END C=100, degree=3, gamma=auto, kernel=rbf;; score=0.834 total time= 0.8s

[CV 2/3] END C=100, degree=3, gamma=auto, kernel=rbf;; score=0.841 total time= 0.7s

[CV 3/3] END C=100, degree=3, gamma=auto, kernel=rbf;; score=0.850 total time= 0.8s

[CV 1/3] END C=100, degree=3, gamma=auto, kernel=linear;; score=0.822 total time= 0.9s

[CV 2/3] END C=100, degree=3, gamma=auto, kernel=linear;; score=0.817 total time= 0.8s

[CV 3/3] END C=100, degree=3, gamma=auto, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=100, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 1.2s

[CV 2/3] END C=100, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 1.4s

[CV 3/3] END C=100, degree=3, gamma=auto, kernel=poly;; score=0.076 total time= 1.2s

[CV 1/3] END C=100, degree=3, gamma=auto, kernel=sigmoid;; score=0.835 total time= 0.7s

[CV 2/3] END C=100, degree=3, gamma=auto, kernel=sigmoid;; score=0.839 total time= 0.7s

[CV 3/3] END C=100, degree=3, gamma=auto, kernel=sigmoid;; score=0.844 total time= 0.7s

[CV 1/3] END C=100, degree=3, gamma=0.1, kernel=rbf;; score=0.810 total time= 1.9s

[CV 2/3] END C=100, degree=3, gamma=0.1, kernel=rbf;; score=0.805 total time= 1.5s

[CV 3/3] END C=100, degree=3, gamma=0.1, kernel=rbf;; score=0.835 total time= 1.6s

[CV 1/3] END C=100, degree=3, gamma=0.1, kernel=linear;; score=0.822 total time= 0.6s

[CV 2/3] END C=100, degree=3, gamma=0.1, kernel=linear;; score=0.817 total time= 0.7s

[CV 3/3] END C=100, degree=3, gamma=0.1, kernel=linear;; score=0.845 total time= 0.6s

[CV 1/3] END C=100, degree=3, gamma=0.1, kernel=poly;; score=0.851 total time= 0.9s

[CV 2/3] END C=100, degree=3, gamma=0.1, kernel=poly;; score=0.901 total time= 1.1s

[CV 3/3] END C=100, degree=3, gamma=0.1, kernel=poly;; score=0.897 total time=

0.9s
[CV 1/3] END C=100, degree=3, gamma=0.1, kernel=sigmoid;; score=0.493 total time= 0.4s
[CV 2/3] END C=100, degree=3, gamma=0.1, kernel=sigmoid;; score=0.544 total time= 0.5s
[CV 3/3] END C=100, degree=3, gamma=0.1, kernel=sigmoid;; score=0.428 total time= 0.6s
[CV 1/3] END C=100, degree=3, gamma=0.01, kernel=rbf;; score=0.849 total time= 1.0s
[CV 2/3] END C=100, degree=3, gamma=0.01, kernel=rbf;; score=0.866 total time= 1.0s
[CV 3/3] END C=100, degree=3, gamma=0.01, kernel=rbf;; score=0.881 total time= 0.8s
[CV 1/3] END C=100, degree=3, gamma=0.01, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=100, degree=3, gamma=0.01, kernel=linear;; score=0.817 total time= 0.7s
[CV 3/3] END C=100, degree=3, gamma=0.01, kernel=linear;; score=0.845 total time= 0.8s
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[CV 2/3] END C=100, degree=3, gamma=0.01, kernel=poly;; score=0.901 total time= 0.9s
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[CV 1/3] END C=100, degree=3, gamma=0.01, kernel=sigmoid;; score=0.807 total time= 0.6s
[CV 2/3] END C=100, degree=3, gamma=0.01, kernel=sigmoid;; score=0.810 total time= 0.6s
[CV 3/3] END C=100, degree=3, gamma=0.01, kernel=sigmoid;; score=0.832 total time= 0.5s
[CV 1/3] END C=100, degree=3, gamma=0.001, kernel=rbf;; score=0.835 total time= 0.8s
[CV 2/3] END C=100, degree=3, gamma=0.001, kernel=rbf;; score=0.831 total time= 0.9s
[CV 3/3] END C=100, degree=3, gamma=0.001, kernel=rbf;; score=0.845 total time= 0.7s
[CV 1/3] END C=100, degree=3, gamma=0.001, kernel=linear;; score=0.822 total time= 0.6s
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[CV 3/3] END C=100, degree=3, gamma=0.001, kernel=linear;; score=0.845 total time= 0.6s
[CV 1/3] END C=100, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 1.2s
[CV 2/3] END C=100, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time= 1.1s
[CV 3/3] END C=100, degree=3, gamma=0.001, kernel=poly;; score=0.076 total time=

1.3s
[CV 1/3] END C=100, degree=3, gamma=0.001, kernel=sigmoid;; score=0.842 total time= 0.5s
[CV 2/3] END C=100, degree=3, gamma=0.001, kernel=sigmoid;; score=0.838 total time= 0.6s
[CV 3/3] END C=100, degree=3, gamma=0.001, kernel=sigmoid;; score=0.850 total time= 0.5s
[CV 1/3] END C=100, degree=4, gamma=scale, kernel=rbf;; score=0.851 total time= 1.2s
[CV 2/3] END C=100, degree=4, gamma=scale, kernel=rbf;; score=0.891 total time= 1.0s
[CV 3/3] END C=100, degree=4, gamma=scale, kernel=rbf;; score=0.894 total time= 1.0s
[CV 1/3] END C=100, degree=4, gamma=scale, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=100, degree=4, gamma=scale, kernel=linear;; score=0.817 total time= 0.6s
[CV 3/3] END C=100, degree=4, gamma=scale, kernel=linear;; score=0.845 total time= 0.5s
[CV 1/3] END C=100, degree=4, gamma=scale, kernel=poly;; score=0.847 total time= 1.0s
[CV 2/3] END C=100, degree=4, gamma=scale, kernel=poly;; score=0.884 total time= 1.0s
[CV 3/3] END C=100, degree=4, gamma=scale, kernel=poly;; score=0.897 total time= 0.9s
[CV 1/3] END C=100, degree=4, gamma=scale, kernel=sigmoid;; score=0.712 total time= 0.3s
[CV 2/3] END C=100, degree=4, gamma=scale, kernel=sigmoid;; score=0.624 total time= 0.4s
[CV 3/3] END C=100, degree=4, gamma=scale, kernel=sigmoid;; score=0.699 total time= 0.4s
[CV 1/3] END C=100, degree=4, gamma=auto, kernel=rbf;; score=0.834 total time= 0.8s
[CV 2/3] END C=100, degree=4, gamma=auto, kernel=rbf;; score=0.841 total time= 0.7s
[CV 3/3] END C=100, degree=4, gamma=auto, kernel=rbf;; score=0.850 total time= 0.8s
[CV 1/3] END C=100, degree=4, gamma=auto, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=100, degree=4, gamma=auto, kernel=linear;; score=0.817 total time= 0.5s
[CV 3/3] END C=100, degree=4, gamma=auto, kernel=linear;; score=0.845 total time= 0.5s
[CV 1/3] END C=100, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.1s
[CV 2/3] END C=100, degree=4, gamma=auto, kernel=poly;; score=0.076 total time= 1.0s
[CV 3/3] END C=100, degree=4, gamma=auto, kernel=poly;; score=0.076 total time=

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[CV 2/3] END C=100, degree=4, gamma=auto, kernel=sigmoid;; score=0.839 total time= 0.6s
[CV 3/3] END C=100, degree=4, gamma=auto, kernel=sigmoid;; score=0.844 total time= 0.5s
[CV 1/3] END C=100, degree=4, gamma=0.1, kernel=rbf;; score=0.810 total time= 1.4s
[CV 2/3] END C=100, degree=4, gamma=0.1, kernel=rbf;; score=0.805 total time= 1.6s
[CV 3/3] END C=100, degree=4, gamma=0.1, kernel=rbf;; score=0.835 total time= 1.6s
[CV 1/3] END C=100, degree=4, gamma=0.1, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=100, degree=4, gamma=0.1, kernel=linear;; score=0.817 total time= 0.5s
[CV 3/3] END C=100, degree=4, gamma=0.1, kernel=linear;; score=0.845 total time= 0.5s
[CV 1/3] END C=100, degree=4, gamma=0.1, kernel=poly;; score=0.847 total time= 1.2s
[CV 2/3] END C=100, degree=4, gamma=0.1, kernel=poly;; score=0.884 total time= 1.0s
[CV 3/3] END C=100, degree=4, gamma=0.1, kernel=poly;; score=0.897 total time= 1.0s
[CV 1/3] END C=100, degree=4, gamma=0.1, kernel=sigmoid;; score=0.493 total time= 0.5s
[CV 2/3] END C=100, degree=4, gamma=0.1, kernel=sigmoid;; score=0.544 total time= 0.3s
[CV 3/3] END C=100, degree=4, gamma=0.1, kernel=sigmoid;; score=0.428 total time= 0.5s
[CV 1/3] END C=100, degree=4, gamma=0.01, kernel=rbf;; score=0.849 total time= 1.0s
[CV 2/3] END C=100, degree=4, gamma=0.01, kernel=rbf;; score=0.866 total time= 0.8s
[CV 3/3] END C=100, degree=4, gamma=0.01, kernel=rbf;; score=0.881 total time= 0.8s
[CV 1/3] END C=100, degree=4, gamma=0.01, kernel=linear;; score=0.822 total time= 0.6s
[CV 2/3] END C=100, degree=4, gamma=0.01, kernel=linear;; score=0.817 total time= 0.6s
[CV 3/3] END C=100, degree=4, gamma=0.01, kernel=linear;; score=0.845 total time= 0.6s
[CV 1/3] END C=100, degree=4, gamma=0.01, kernel=poly;; score=0.847 total time= 1.0s
[CV 2/3] END C=100, degree=4, gamma=0.01, kernel=poly;; score=0.884 total time= 0.9s
[CV 3/3] END C=100, degree=4, gamma=0.01, kernel=poly;; score=0.897 total time=

```

0.9s
[CV 1/3] END C=100, degree=4, gamma=0.01, kernel=sigmoid;; score=0.807 total
time= 0.5s
[CV 2/3] END C=100, degree=4, gamma=0.01, kernel=sigmoid;; score=0.810 total
time= 0.5s
[CV 3/3] END C=100, degree=4, gamma=0.01, kernel=sigmoid;; score=0.832 total
time= 0.5s
[CV 1/3] END C=100, degree=4, gamma=0.001, kernel=rbf;; score=0.835 total time=
1.0s
[CV 2/3] END C=100, degree=4, gamma=0.001, kernel=rbf;; score=0.831 total time=
0.7s
[CV 3/3] END C=100, degree=4, gamma=0.001, kernel=rbf;; score=0.845 total time=
0.8s
[CV 1/3] END C=100, degree=4, gamma=0.001, kernel=linear;; score=0.822 total
time= 0.5s
[CV 2/3] END C=100, degree=4, gamma=0.001, kernel=linear;; score=0.817 total
time= 0.6s
[CV 3/3] END C=100, degree=4, gamma=0.001, kernel=linear;; score=0.845 total
time= 0.4s
[CV 1/3] END C=100, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=
1.2s
[CV 2/3] END C=100, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=
1.1s
[CV 3/3] END C=100, degree=4, gamma=0.001, kernel=poly;; score=0.076 total time=
1.1s
[CV 1/3] END C=100, degree=4, gamma=0.001, kernel=sigmoid;; score=0.842 total
time= 0.5s
[CV 2/3] END C=100, degree=4, gamma=0.001, kernel=sigmoid;; score=0.838 total
time= 0.5s
[CV 3/3] END C=100, degree=4, gamma=0.001, kernel=sigmoid;; score=0.850 total
time= 0.5s

```

```

GridSearchCV(cv=3, estimator=SVC(random_state=42),
             param_grid={'C': [0.1, 1, 10, 100], 'degree': [2, 3, 4],
                          'gamma': ['scale', 'auto', 0.1, 0.01, 0.001],
                          'kernel': ['rbf', 'linear', 'poly', 'sigmoid']},
             scoring='f1_macro', verbose=3)

```

```

best_svm = grid_search_svm.best_estimator_
# Get the best parameters and score
print("Best parameters:", grid_search_svm.best_params_)
best_svm.fit(train_features, train_labels_encoded)

y_pred_svm = best_svm.predict(test_features)

joblib.dump(best_svm, project_dir + '\\joblib\\best_svm_model.joblib')

```

```

Best parameters: {'C': 0.1, 'degree': 3, 'gamma': 0.1, 'kernel': 'poly'}

```

```
['d:\\ASUS\\Deploy-Traffic-Sign-Classification-through-Images\\joblib\\best_svm_model.joblib']
```

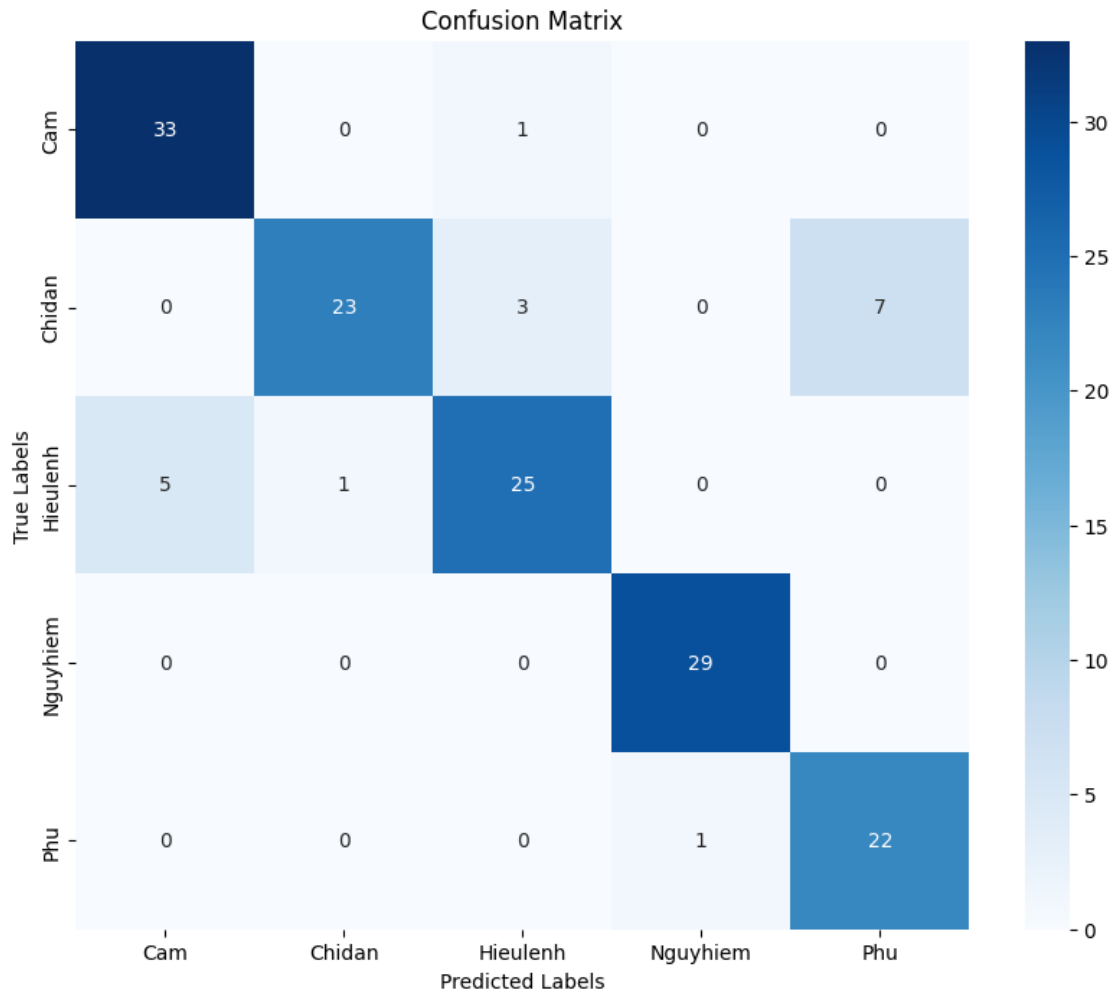
7 Predict on test images for KNN

```
report_knn = classification_report(test_labels_encoded, y_pred_knn,
    ↪target_names=label_encoder.classes_)
print(report_knn)
```

	precision	recall	f1-score	support
Cam	0.87	0.97	0.92	34
Chidan	0.96	0.70	0.81	33
Hieulenh	0.86	0.81	0.83	31
Nguyhiem	0.97	1.00	0.98	29
Phu	0.76	0.96	0.85	23
accuracy			0.88	150
macro avg	0.88	0.89	0.88	150
weighted avg	0.89	0.88	0.88	150

```
heatmap_label_knn = confusion_matrix(test_labels_encoded, y_pred_knn)

plt.figure(figsize=(10, 8))
sns.heatmap(heatmap_label_knn, annot=True, fmt='d', cmap='Blues',
    ↪xticklabels=label_encoder.classes_, yticklabels=label_encoder.classes_)
plt.title('Confusion Matrix')
plt.xlabel('Predicted Labels')
plt.ylabel('True Labels')
plt.show()
```



```

n_columns = 10
n_rows = math.ceil(len(test_images) / n_columns)

fig, axes = plt.subplots(n_rows, n_columns, figsize=(30, n_rows * 3))

for idx, (image, true_label, pred_label) in enumerate(zip(test_images,
    ↪ test_labels_encoded, y_pred_knn)):
    row = idx // n_columns
    col = idx % n_columns

    axes[row, col].imshow(image)
    axes[row, col].set_title(f'True: {label_encoder.classes_[true_label]}\nPred:
    ↪ {label_encoder.classes_[pred_label]}')
    axes[row, col].axis('off')

```

```
for ax in axes.flat:
    if not ax.has_data():
        ax.axis('off')

plt.tight_layout()
plt.show()
```

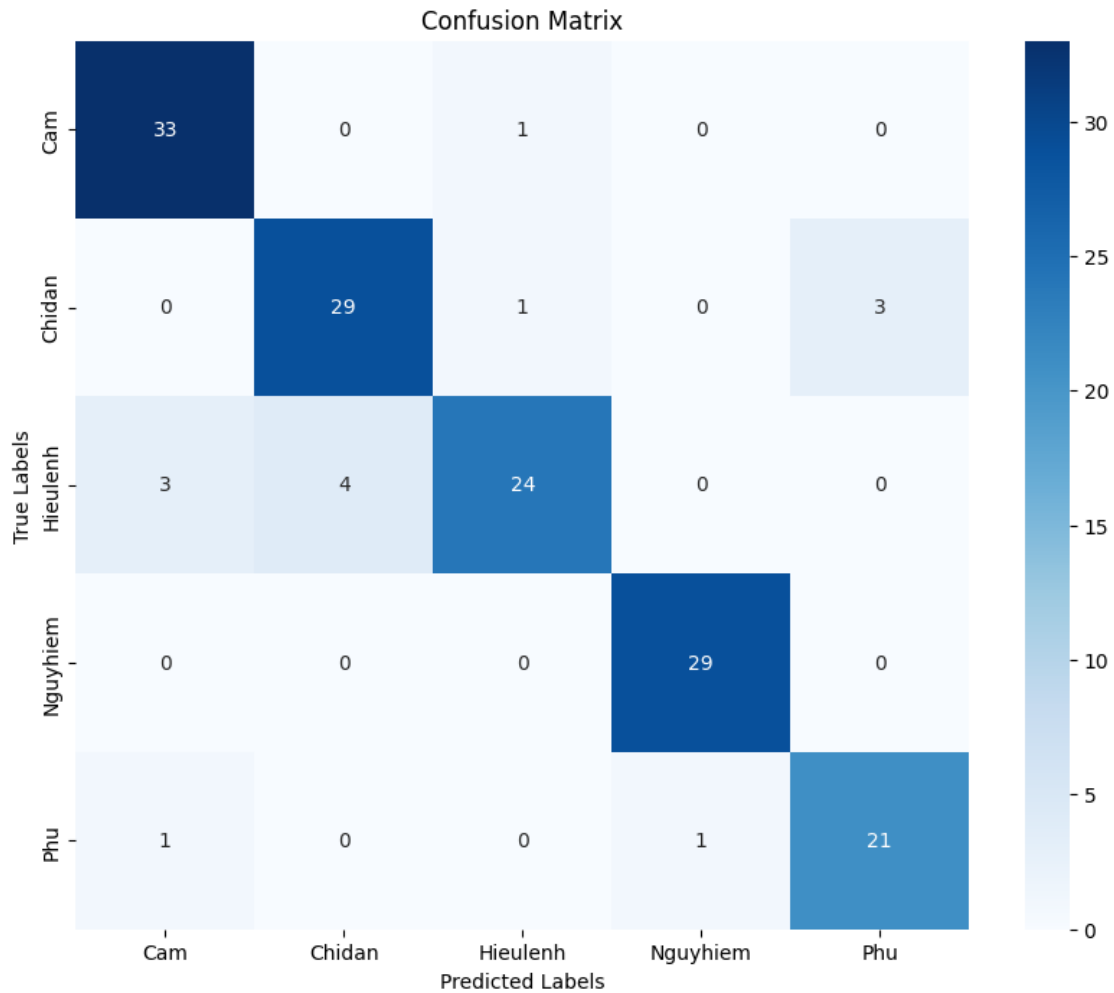

8 Predict on test images for SVM

```
report_svm = classification_report(test_labels_encoded, y_pred_svm,
    ↪target_names=label_encoder.classes_)
print(report_svm)
```

	precision	recall	f1-score	support
Cam	0.89	0.97	0.93	34
Chidan	0.88	0.88	0.88	33
Hieulenh	0.92	0.77	0.84	31
Nguyhiem	0.97	1.00	0.98	29
Phu	0.88	0.91	0.89	23
accuracy			0.91	150
macro avg	0.91	0.91	0.91	150
weighted avg	0.91	0.91	0.91	150

```
heatmap_label_svm = confusion_matrix(test_labels_encoded, y_pred_svm)

plt.figure(figsize=(10, 8))
sns.heatmap(heatmap_label_svm, annot=True, fmt='d', cmap='Blues',
    ↪xticklabels=label_encoder.classes_, yticklabels=label_encoder.classes_)
plt.title('Confusion Matrix')
plt.xlabel('Predicted Labels')
plt.ylabel('True Labels')
plt.show()
```



```

n_columns = 10
n_rows = math.ceil(len(test_images) / n_columns)

fig, axes = plt.subplots(n_rows, n_columns, figsize=(30, n_rows * 3))

for idx, (image, true_label, pred_label) in enumerate(zip(test_images,
↳ test_labels_encoded, y_pred_svm)):
    row = idx // n_columns
    col = idx % n_columns

    axes[row, col].imshow(image)
    axes[row, col].set_title(f'True: {label_encoder.classes_[true_label]}\nPred:
↳ {label_encoder.classes_[pred_label]}')
    axes[row, col].axis('off')

```



```
for ax in axes.flat:
    if not ax.has_data():
        ax.axis('off')

plt.tight_layout()
plt.show()
```



9 Save grid search results

```
def export_notebook_to_pdf(notebook_path, project_dir):
    results_dir = os.path.join(project_dir)
    os.makedirs(results_dir, exist_ok=True)

    # Đọc notebook
    with open(notebook_path, 'r', encoding='utf-8') as f:
        nb = nbformat.read(f, as_version=4)

    # Cấu hình PDF exporter
    pdf_exporter = PDFExporter()
    pdf_exporter.exclude_input_prompt = True
    pdf_exporter.exclude_output_prompt = True

    # Thêm template và style cơ bản
    pdf_exporter.template_name = 'classic'

    # Chuyển đổi sang PDF
    pdf_data, resources = pdf_exporter.from_notebook_node(nb)

    # Tạo tên file với timestamp
    current_time = datetime.now().strftime('%Y-%m-%d_%H_%M_%S')
    pdf_file = os.path.join(results_dir, f"notebook_export_{current_time}.pdf")

    # Lưu file PDF
    with open(pdf_file, 'wb') as f:
        f.write(pdf_data)

    print(f"Đã xuất file PDF thành công: {pdf_file}")
    return pdf_file
```

```
# project_dir = os.path.dirname(project_dir)
notebook_path = project_dir + "\\model\\main.ipynb"
proj_dir = project_dir + "\\grid_search_results"

export_notebook_to_pdf(notebook_path, proj_dir)
```

```
-----
KeyboardInterrupt                                Traceback (most recent call last)
Cell In[36], line 5
      2 notebook_path = project_dir + "\\model\\main.ipynb"
      3 proj_dir = project_dir + "\\grid_search_results"
```

```
----> 5 export_notebook_to_pdf(notebook_path, proj_dir)
```

```
Cell In[35], line 18, in export_notebook_to_pdf(notebook_path, project_dir)
```

```
    15 pdf_exporter.template_name = 'classic'
    17 # Chuyển đổi sang PDF
----> 18 pdf_data, resources = pdf_exporter.from_notebook_node(nb)
    20 # Tạo tên file với timestamp
    21 current_time = datetime.now().strftime('%Y-%m-%d_%H_%M_%S')
```

File c:

```
↪\Users\hoang\AppData\Local\Programs\Python\Python311\Lib\site-packages\nbconvert\exporters\
py:197, in PDFExporter.from_notebook_node(self, nb, resources, **kw)
    195 tex_file = self.writer.write(latex, resources,
↪notebook_name=notebook_name)
    196 self.log.info("Building PDF")
--> 197 self.run_latex(tex_file)
    198 if self.run_bib(tex_file):
    199     self.run_latex(tex_file)
```

File c:

```
↪\Users\hoang\AppData\Local\Programs\Python\Python311\Lib\site-packages\nbconvert\exporters\
py:166, in PDFExporter.run_latex(self, filename, raise_on_failure)
    163 def log_error(command, out):
    164     self.log.critical("%s failed: %s\n%s", command[0], command, out)
--> 166 return self.run_command(
    167
↪    self.latex_command, filename, self.latex_count, log_error, raise_on_failure
    168 )
```

File c:

```
↪\Users\hoang\AppData\Local\Programs\Python\Python311\Lib\site-packages\nbconvert\exporters\
py:144, in PDFExporter.run_command(self, command_list, filename, count,
↪log_function, raise_on_failure)
    135 for _ in range(count):
    136     p = subprocess.Popen(
    137         command,
    138         stdout=stdout,
    (...)
    142         env=env,
    143     )
--> 144     out, _ = p.communicate()
    145     if p.returncode:
    146         if self.verbose: # noqa: SIM108
    147             # verbose means I didn't capture stdout with PIPE,
    148             # so it's already been displayed and `out` is None.
```

File c:\Users\hoang\AppData\Local\Programs\Python\Python311\Lib\subprocess.py:

```
↪1192, in Popen.communicate(self, input, timeout)
    1190     self._stdin_write(input)
```

```
1191 elif self.stdout:  
-> 1192     stdout = self.stdout.read()  
1193     self.stdout.close()  
1194 elif self.stderr:
```

KeyboardInterrupt: