```python
In [38]: import os
         import fnmatch
         import numpy as np
         import matplotlib.pyplot as plt
         import itertools
         from sklearn.preprocessing import LabelEncoder, StandardScaler
         from sklearn.model_selection import StratifiedShuffleSplit
         from sklearn.neighbors import KNeighborsClassifier
         from sklearn.svm import LinearSVC, SVC
         from sklearn.metrics import classification_report, confusion_matrix
         from xgboost import XGBClassifier
         import librosa
```

```python
In [39]: dataset_path = "C:\Pavan\Mini Proj\Dataset"
         classes = ['sax', 'flute', 'cello', 'trumpet', 'oboe', 'viola']

         files = []
         labels = []

         # Confirm dataset path exists
         if not os.path.exists(dataset_path):
             raise ValueError(f"Dataset path does not exist: {dataset_path}")

         # Collect audio files and labels with debug prints
         for class_name in classes:
             class_folder = os.path.join(dataset_path, class_name)
             if not os.path.exists(class_folder):
                 raise ValueError(f"Class folder not found: {class_folder}. Check your
             for root, _, filenames in os.walk(class_folder):
                 for filename in fnmatch.filter(filenames, '*.mp3'):
                     filepath = os.path.join(root, filename)
                     files.append(filepath)
                     labels.append(class_name)

         print(f"Found {len(files)} audio files.")

         if len(files) == 0:
             raise ValueError("No audio files found. Please verify dataset path and fol

         labelencoder = LabelEncoder()
         labelencoder.fit(labels)
         classesnum = labelencoder.transform(labels)

         def get_features(y, sr):
             S = librosa.feature.melspectrogram(y=y, sr=sr, n_mels=128)
             log_S = librosa.power_to_db(S, ref=np.max)
             mfcc = librosa.feature.mfcc(S=log_S, n_mfcc=13)
             feature_vector = np.mean(mfcc, axis=1)
             feature_vector = (feature_vector - np.mean(feature_vector)) / np.std(featu
             return feature_vector

         featurevectors = []
         for i, f in enumerate(files):
```

```python
    print(f"Processing {i+1}/{len(files)}: {f}")
    try:
        y, sr = librosa.load(f, sr=44100)
        if len(y) == 0:
            print(f"Warning: Empty audio file skipped: {f}")
            continue
        y = y / np.max(np.abs(y))  # Normalize audio
        feat = get_features(y, sr)
        featurevectors.append(feat)
    except Exception as e:
        print(f"Error loading {f}: {e}")

if len(featurevectors) == 0:
    raise ValueError("No features extracted. Check your audio files and datase

featurevectors = np.array(featurevectors)
print(f"Extracted features shape: {featurevectors.shape}")
```

```
<>:1: SyntaxWarning: invalid escape sequence '\P'
<>:1: SyntaxWarning: invalid escape sequence '\P'
C:\Users\Pavan\AppData\Local\Temp\ipykernel_15512\665009490.py:1: SyntaxWarnin
g: invalid escape sequence '\P'
  dataset_path = "C:\Pavan\Mini Proj\Dataset"
```

```
Found 600 audio files.
Processing 1/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_025_forte_norma
l.mp3
Processing 2/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_025_fortissimo_no
rmal.mp3
Processing 3/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_025_mezzo-piano_n
ormal.mp3
Processing 4/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_025_pianissimo_no
rmal.mp3
Processing 5/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_05_forte_normal.m
p3
Processing 6/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_05_fortissimo_nor
mal.mp3
Processing 7/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_05_mezzo-piano_no
rmal.mp3
Processing 8/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_05_pianissimo_nor
mal.mp3
Processing 9/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_05_piano_normal.m
p3
Processing 10/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_15_forte_norma
l.mp3
Processing 11/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_15_fortissimo_no
rmal.mp3
Processing 12/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_15_pianissimo_no
rmal.mp3
Processing 13/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_1_forte_normal.m
p3
Processing 14/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_1_fortissimo_nor
mal.mp3
Processing 15/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_1_pianissimo_nor
mal.mp3
Processing 16/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A3_1_piano_normal.m
p3
Processing 17/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_025_forte_norma
l.mp3
Processing 18/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_025_fortissimo_n
ormal.mp3
Processing 19/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_025_piano_norma
l.mp3
Processing 20/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_05_forte_norma
l.mp3
Processing 21/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_05_fortissimo_no
rmal.mp3
Processing 22/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_05_pianissimo_no
rmal.mp3
Processing 23/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_05_piano_norma
l.mp3
Processing 24/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_15_forte_norma
l.mp3
Processing 25/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_15_fortissimo_no
rmal.mp3
Processing 26/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_15_piano_norma
l.mp3
Processing 27/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_1_forte_normal.m
```

p3
Processing 28/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_1_fortissimo_nor
mal.mp3
Processing 29/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_1_mezzo-forte_no
rmal.mp3
Processing 30/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_1_pianissimo_nor
mal.mp3
Processing 31/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A4_1_piano_normal.m
p3
Processing 32/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_05_forte_norma
l.mp3
Processing 33/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_05_fortissimo_no
rmal.mp3
Processing 34/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_05_pianissimo_no
rmal.mp3
Processing 35/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_05_piano_norma
l.mp3
Processing 36/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_15_forte_norma
l.mp3
Processing 37/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_15_fortissimo_no
rmal.mp3
Processing 38/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_15_pianissimo_no
rmal.mp3
Processing 39/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_1_forte_normal.m
p3
Processing 40/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_1_fortissimo_nor
mal.mp3
Processing 41/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_1_pianissimo_nor
mal.mp3
Processing 42/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_A5_1_piano_normal.m
p3
Processing 43/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_025_forte_norma
l.mp3
Processing 44/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_025_fortissim
o_normal.mp3
Processing 45/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_025_mezzo-fort
e_normal.mp3
Processing 46/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_025_pianissim
o_normal.mp3
Processing 47/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_05_fortissimo_n
ormal.mp3
Processing 48/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_05_mezzo-fort
e_normal.mp3
Processing 49/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_05_mezzo-fort
e_slap-tongue.mp3
Processing 50/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_05_pianissimo_n
ormal.mp3
Processing 51/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_05_pianissimo_s
ubtone.mp3
Processing 52/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_05_piano_norma
l.mp3
Processing 53/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds4_15_fortissimo_n
ormal.mp3
Processing 54/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds5_1_forte_major-t

```
rill.mp3
Processing 55/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Ds5_1_forte_minor-t
rill.mp3
Processing 56/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_025_forte_norma
l.mp3
Processing 57/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_025_fortissim
o_normal.mp3
Processing 58/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_025_mezzo-pian
o_normal.mp3
Processing 59/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_05_forte_norma
l.mp3
Processing 60/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_05_fortissimo_n
ormal.mp3
Processing 61/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_05_mezzo-pian
o_normal.mp3
Processing 62/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_05_pianissimo_n
ormal.mp3
Processing 63/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_05_piano_norma
l.mp3
Processing 64/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_15_fortissimo_n
ormal.mp3
Processing 65/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_15_pianissimo_n
ormal.mp3
Processing 66/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_1_pianissimo_no
rmal.mp3
Processing 67/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs3_1_piano_norma
l.mp3
Processing 68/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_025_forte_norma
l.mp3
Processing 69/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_025_fortissim
o_normal.mp3
Processing 70/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_025_mezzo-fort
e_normal.mp3
Processing 71/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_025_pianissim
o_normal.mp3
Processing 72/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_025_piano_norma
l.mp3
Processing 73/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_05_forte_norma
l.mp3
Processing 74/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_05_fortissimo_n
ormal.mp3
Processing 75/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_05_mezzo-fort
e_normal.mp3
Processing 76/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_05_pianissimo_n
ormal.mp3
Processing 77/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_05_piano_norma
l.mp3
Processing 78/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_15_forte_norma
l.mp3
Processing 79/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_15_fortissimo_n
ormal.mp3
Processing 80/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_15_pianissimo_n
ormal.mp3
Processing 81/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_15_piano_norma
```

l.mp3
Processing 82/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_1_forte_norma
l.mp3
Processing 83/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_1_fortissimo_no
rmal.mp3
Processing 84/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_1_pianissimo_no
rmal.mp3
Processing 85/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs4_1_piano_norma
l.mp3
Processing 86/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_025_forte_norma
l.mp3
Processing 87/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_025_fortissim
o_normal.mp3
Processing 88/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_025_piano_norma
l.mp3
Processing 89/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_05_forte_norma
l.mp3
Processing 90/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_05_fortissimo_n
ormal.mp3
Processing 91/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_05_pianissimo_n
ormal.mp3
Processing 92/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_05_piano_norma
l.mp3
Processing 93/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_15_forte_norma
l.mp3
Processing 94/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_15_fortissimo_n
ormal.mp3
Processing 95/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_15_pianissimo_n
ormal.mp3
Processing 96/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_15_piano_norma
l.mp3
Processing 97/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_1_forte_norma
l.mp3
Processing 98/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_1_fortissimo_no
rmal.mp3
Processing 99/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_1_pianissimo_no
rmal.mp3
Processing 100/600: C:\Pavan\Mini Proj\Dataset\sax\saxophone_Gs5_1_piano_norma
l.mp3
Processing 101/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_025_forte_norma
l.mp3
Processing 102/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_025_mezzo-forte_n
ormal.mp3
Processing 103/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_025_mezzo-piano_n
ormal.mp3
Processing 104/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_025_pianissimo_no
rmal.mp3
Processing 105/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_025_piano_norma
l.mp3
Processing 106/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_05_forte_normal.m
p3
Processing 107/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_05_mezzo-forte_no
rmal.mp3
Processing 108/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_05_mezzo-piano_no

rmal.mp3
Processing 109/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_05_pianissimo_normal.mp3
Processing 110/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_05_piano_normal.mp3
Processing 111/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_15_forte_normal.mp3
Processing 112/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_15_mezzo-forte_normal.mp3
Processing 113/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_15_mezzo-piano_normal.mp3
Processing 114/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_15_pianissimo_normal.mp3
Processing 115/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_15_piano_normal.mp3
Processing 116/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_1_forte_normal.mp3
Processing 117/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_1_mezzo-forte_normal.mp3
Processing 118/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_1_mezzo-piano_normal.mp3
Processing 119/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_1_pianissimo_normal.mp3
Processing 120/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A4_1_piano_normal.mp3
Processing 121/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_025_forte_normal.mp3
Processing 122/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_025_mezzo-forte_normal.mp3
Processing 123/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_025_mezzo-piano_normal.mp3
Processing 124/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_025_pianissimo_normal.mp3
Processing 125/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_025_piano_normal.mp3
Processing 126/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_05_forte_normal.mp3
Processing 127/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_05_mezzo-forte_normal.mp3
Processing 128/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_05_mezzo-piano_normal.mp3
Processing 129/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_05_pianissimo_normal.mp3
Processing 130/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_05_piano_normal.mp3
Processing 131/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_15_forte_normal.mp3
Processing 132/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_15_mezzo-forte_normal.mp3
Processing 133/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_15_mezzo-piano_normal.mp3
Processing 134/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_15_pianissimo_normal.mp3
Processing 135/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_15_piano_normal.m

```
p3
Processing 136/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_1_forte_normal.mp
3
Processing 137/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_1_mezzo-forte_nor
mal.mp3
Processing 138/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_1_mezzo-piano_nor
mal.mp3
Processing 139/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_1_pianissimo_norm
al.mp3
Processing 140/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A5_1_piano_normal.mp
3
Processing 141/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_05_forte_normal.m
p3
Processing 142/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_05_mezzo-forte_no
rmal.mp3
Processing 143/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_05_pianissimo_nor
mal.mp3
Processing 144/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_05_piano_normal.m
p3
Processing 145/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_15_forte_normal.m
p3
Processing 146/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_1_forte_normal.mp
3
Processing 147/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_1_fortissimo_mino
r-trill.mp3
Processing 148/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_1_mezzo-forte_nor
mal.mp3
Processing 149/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_1_pianissimo_norm
al.mp3
Processing 150/600: C:\Pavan\Mini Proj\Dataset\flute\flute_A6_1_piano_normal.mp
3
Processing 151/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_025_forte_norma
l.mp3
Processing 152/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_025_mezzo-fort
e_normal.mp3
Processing 153/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_025_mezzo-pian
o_normal.mp3
Processing 154/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_025_pianissimo_n
ormal.mp3
Processing 155/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_025_piano_norma
l.mp3
Processing 156/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_05_forte_norma
l.mp3
Processing 157/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_05_mezzo-forte_n
ormal.mp3
Processing 158/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_05_mezzo-piano_n
ormal.mp3
Processing 159/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_05_pianissimo_no
rmal.mp3
Processing 160/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_05_piano_norma
l.mp3
Processing 161/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_15_forte_norma
l.mp3
Processing 162/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_15_mezzo-forte_n
```

```
ormal.mp3
Processing 163/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_15_mezzo-piano_n
ormal.mp3
Processing 164/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_15_pianissimo_no
rmal.mp3
Processing 165/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs4_15_piano_norma
l.mp3
Processing 166/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_025_forte_norma
l.mp3
Processing 167/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_025_mezzo-fort
e_normal.mp3
Processing 168/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_025_mezzo-pian
o_normal.mp3
Processing 169/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_025_pianissimo_n
ormal.mp3
Processing 170/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_025_piano_norma
l.mp3
Processing 171/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_05_forte_norma
l.mp3
Processing 172/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_05_mezzo-forte_n
ormal.mp3
Processing 173/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_05_mezzo-piano_n
ormal.mp3
Processing 174/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_05_pianissimo_no
rmal.mp3
Processing 175/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_05_piano_norma
l.mp3
Processing 176/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_15_forte_norma
l.mp3
Processing 177/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_15_mezzo-forte_n
ormal.mp3
Processing 178/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_15_mezzo-piano_n
ormal.mp3
Processing 179/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_15_piano_norma
l.mp3
Processing 180/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_1_forte_normal.m
p3
Processing 181/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_1_mezzo-forte_no
rmal.mp3
Processing 182/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_1_mezzo-piano_no
rmal.mp3
Processing 183/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_1_pianissimo_nor
mal.mp3
Processing 184/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs5_1_piano_normal.m
p3
Processing 185/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_025_forte_norma
l.mp3
Processing 186/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_025_mezzo-fort
e_normal.mp3
Processing 187/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_025_pianissimo_n
ormal.mp3
Processing 188/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_025_piano_norma
l.mp3
Processing 189/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_05_forte_norma
```

l.mp3
Processing 190/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_05_mezzo-forte_normal.mp3
Processing 191/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_05_pianissimo_normal.mp3
Processing 192/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_05_piano_normal.mp3
Processing 193/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_15_forte_normal.mp3
Processing 194/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_15_mezzo-forte_normal.mp3
Processing 195/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_15_pianissimo_normal.mp3
Processing 196/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_15_piano_normal.mp3
Processing 197/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_1_forte_normal.mp3
Processing 198/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_1_mezzo-forte_normal.mp3
Processing 199/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_1_pianissimo_normal.mp3
Processing 200/600: C:\Pavan\Mini Proj\Dataset\flute\flute_Gs6_1_piano_normal.mp3
Processing 201/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_025_forte_arco-normal.mp3
Processing 202/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_025_fortissimo_arco-normal.mp3
Processing 203/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_025_mezzo-forte_arco-col-legno-battuto.mp3
Processing 204/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_025_mezzo-piano_arco-normal.mp3
Processing 205/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_025_pianissimo_arco-normal.mp3
Processing 206/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_05_forte_arco-normal.mp3
Processing 207/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_05_fortissimo_arco-normal.mp3
Processing 208/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_05_mezzo-piano_arco-normal.mp3
Processing 209/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_05_pianissimo_arco-normal.mp3
Processing 210/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_15_forte_arco-normal.mp3
Processing 211/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_15_pianissimo_arco-normal.mp3
Processing 212/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_15_piano_arco-normal.mp3
Processing 213/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_1_forte_arco-normal.mp3
Processing 214/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_1_fortissimo_arco-normal.mp3
Processing 215/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_1_mezzo-piano_arco-normal.mp3
Processing 216/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_1_mezzo-piano_no

```
n-vibrato.mp3
Processing 217/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A2_1_pianissimo_arc
o-normal.mp3
Processing 218/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_025_forte_arco-no
rmal.mp3
Processing 219/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_025_fortissimo_ar
co-normal.mp3
Processing 220/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_025_mezzo-forte_a
rco-col-legno-battuto.mp3
Processing 221/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_025_mezzo-piano_a
rco-normal.mp3
Processing 222/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_025_pianissimo_ar
co-normal.mp3
Processing 223/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_05_forte_arco-nor
mal.mp3
Processing 224/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_05_fortissimo_arc
o-normal.mp3
Processing 225/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_05_mezzo-piano_ar
co-normal.mp3
Processing 226/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_15_forte_arco-nor
mal.mp3
Processing 227/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_15_mezzo-piano_ar
co-normal.mp3
Processing 228/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_1_forte_arco-norm
al.mp3
Processing 229/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_1_fortissimo_arc
o-normal.mp3
Processing 230/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_1_mezzo-piano_arc
o-minor-trill.mp3
Processing 231/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_1_mezzo-piano_arc
o-normal.mp3
Processing 232/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_1_mezzo-piano_no
n-vibrato.mp3
Processing 233/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A3_1_pianissimo_arc
o-normal.mp3
Processing 234/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_025_forte_arco-no
rmal.mp3
Processing 235/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_025_fortissimo_ar
co-normal.mp3
Processing 236/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_025_mezzo-forte_a
rco-col-legno-battuto.mp3
Processing 237/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_025_mezzo-piano_a
rco-normal.mp3
Processing 238/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_025_pianissimo_ar
co-normal.mp3
Processing 239/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_05_forte_arco-nor
mal.mp3
Processing 240/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_05_mezzo-piano_ar
co-normal.mp3
Processing 241/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_05_pianissimo_arc
o-normal.mp3
Processing 242/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_15_forte_arco-nor
mal.mp3
Processing 243/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_15_mezzo-piano_ar
```

```
co-normal.mp3
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al.mp3
Processing 245/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_1_fortissimo_arc
o-normal.mp3
Processing 246/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_1_mezzo-forte_arc
o-harmonic.mp3
Processing 247/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_1_mezzo-piano_arc
o-minor-trill.mp3
Processing 248/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_1_mezzo-piano_arc
o-normal.mp3
Processing 249/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_1_mezzo-piano_mol
to-vibrato.mp3
Processing 250/600: C:\Pavan\Mini Proj\Dataset\cello\cello_A4_1_pianissimo_arc
o-normal.mp3
Processing 251/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs2_025_pianissimo_a
rco-normal.mp3
Processing 252/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_025_forte_arco-n
ormal.mp3
Processing 253/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_025_fortissimo_a
rco-normal.mp3
Processing 254/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_025_mezzo-pian
o_arco-normal.mp3
Processing 255/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_025_pianissimo_a
rco-normal.mp3
Processing 256/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_05_forte_arco-no
rmal.mp3
Processing 257/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_05_fortissimo_ar
co-normal.mp3
Processing 258/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_05_mezzo-piano_a
rco-normal.mp3
Processing 259/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_05_pianissimo_ar
co-normal.mp3
Processing 260/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_15_forte_arco-no
rmal.mp3
Processing 261/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_15_fortissimo_ar
co-normal.mp3
Processing 262/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_15_pianissimo_ar
co-normal.mp3
Processing 263/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_15_piano_arco-no
rmal.mp3
Processing 264/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_1_forte_arco-nor
mal.mp3
Processing 265/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_1_mezzo-piano_ar
co-normal.mp3
Processing 266/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs3_1_pianissimo_arc
o-normal.mp3
Processing 267/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_025_forte_arco-n
ormal.mp3
Processing 268/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_025_fortissimo_a
rco-normal.mp3
Processing 269/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_025_mezzo-fort
e_arco-col-legno-battuto.mp3
Processing 270/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_025_mezzo-pian
```

o_arco-normal.mp3
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Processing 272/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_05_forte_arco-normal.mp3
Processing 273/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_05_fortissimo_arco-normal.mp3
Processing 274/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_05_mezzo-piano_arco-normal.mp3
Processing 275/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_05_pianissimo_arco-normal.mp3
Processing 276/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_15_forte_arco-normal.mp3
Processing 277/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_15_fortissimo_arco-normal.mp3
Processing 278/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_15_mezzo-piano_arco-normal.mp3
Processing 279/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_15_pianissimo_arco-normal.mp3
Processing 280/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_1_forte_arco-normal.mp3
Processing 281/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_1_fortissimo_arco-normal.mp3
Processing 282/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_1_mezzo-piano_arco-normal.mp3
Processing 283/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs4_1_pianissimo_arco-normal.mp3
Processing 284/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_025_forte_arco-normal.mp3
Processing 285/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_025_fortissimo_arco-normal.mp3
Processing 286/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_025_mezzo-piano_arco-normal.mp3
Processing 287/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_025_pianissimo_arco-normal.mp3
Processing 288/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_05_forte_arco-normal.mp3
Processing 289/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_05_fortissimo_arco-normal.mp3
Processing 290/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_05_mezzo-piano_arco-normal.mp3
Processing 291/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_05_pianissimo_arco-normal.mp3
Processing 292/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_15_forte_arco-normal.mp3
Processing 293/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_15_fortissimo_arco-normal.mp3
Processing 294/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_15_mezzo-piano_arco-normal.mp3
Processing 295/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_15_pianissimo_arco-normal.mp3
Processing 296/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_1_forte_arco-normal.mp3
Processing 297/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_1_fortissimo_arc

o-normal.mp3
Processing 298/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_1_mezzo-forte_arco-harmonic.mp3
Processing 299/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_1_mezzo-piano_arco-normal.mp3
Processing 300/600: C:\Pavan\Mini Proj\Dataset\cello\cello_Gs5_1_pianissimo_arco-normal.mp3
Processing 301/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A3_025_pianissimo_normal.mp3
Processing 302/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A3_05_forte_normal.mp3
Processing 303/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A3_05_pianissimo_normal.mp3
Processing 304/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A3_15_pianissimo_normal.mp3
Processing 305/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A3_1_pianissimo_normal.mp3
Processing 306/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A4_025_forte_normal.mp3
Processing 307/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A4_05_forte_normal.mp3
Processing 308/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A5_025_forte_normal.mp3
Processing 309/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A5_025_mezzo-forte_normal.mp3
Processing 310/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_A5_05_mezzo-forte_normal.mp3
Processing 311/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As3_025_forte_normal.mp3
Processing 312/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As3_025_pianissimo_normal.mp3
Processing 313/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As3_05_pianissimo_normal.mp3
Processing 314/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As3_15_pianissimo_normal.mp3
Processing 315/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As3_1_pianissimo_normal.mp3
Processing 316/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As4_025_forte_normal.mp3
Processing 317/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As5_025_forte_normal.mp3
Processing 318/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As5_05_forte_normal.mp3
Processing 319/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_As5_05_mezzo-forte_normal.mp3
Processing 320/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B3_025_forte_normal.mp3
Processing 321/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B3_025_pianissimo_normal.mp3
Processing 322/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B3_05_forte_normal.mp3
Processing 323/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B3_05_pianissimo_normal.mp3
Processing 324/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B3_15_pianissim

o_normal.mp3
Processing 325/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B3_1_pianissim
o_normal.mp3
Processing 326/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B4_025_forte_nor
mal.mp3
Processing 327/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B5_025_forte_nor
mal.mp3
Processing 328/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_B5_025_mezzo-for
te_normal.mp3
Processing 329/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_C4_025_forte_nor
mal.mp3
Processing 330/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_C4_025_pianissim
o_normal.mp3
Processing 331/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_C4_05_forte_norm
al.mp3
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Processing 333/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_C4_15_pianissim
o_normal.mp3
Processing 334/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_C4_1_pianissim
o_normal.mp3
Processing 335/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_C6_025_forte_nor
mal.mp3
Processing 336/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_C6_05_forte_norm
al.mp3
Processing 337/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Cs4_025_pianissi
mo_normal.mp3
Processing 338/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Cs4_05_forte_nor
mal.mp3
Processing 339/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Cs4_05_pianissim
o_normal.mp3
Processing 340/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Cs4_15_pianissim
o_normal.mp3
Processing 341/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Cs4_1_pianissim
o_normal.mp3
Processing 342/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Cs6_025_forte_no
rmal.mp3
Processing 343/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D4_025_forte_nor
mal.mp3
Processing 344/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D4_025_pianissim
o_normal.mp3
Processing 345/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D4_05_forte_norm
al.mp3
Processing 346/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D4_05_pianissim
o_normal.mp3
Processing 347/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D4_15_pianissim
o_normal.mp3
Processing 348/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D4_1_pianissim
o_normal.mp3
Processing 349/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D5_05_forte_norm
al.mp3
Processing 350/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D6_025_forte_nor
mal.mp3
Processing 351/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_D6_05_forte_norm

al.mp3
Processing 352/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds4_025_pianissi
mo_normal.mp3
Processing 353/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds4_05_forte_nor
mal.mp3
Processing 354/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds4_05_pianissim
o_normal.mp3
Processing 355/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds4_15_pianissim
o_normal.mp3
Processing 356/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds4_1_pianissim
o_normal.mp3
Processing 357/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds5_05_forte_nor
mal.mp3
Processing 358/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds6_025_forte_no
rmal.mp3
Processing 359/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Ds6_05_forte_nor
mal.mp3
Processing 360/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E3_025_pianissim
o_normal.mp3
Processing 361/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E3_05_forte_norm
al.mp3
Processing 362/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E3_05_pianissim
o_normal.mp3
Processing 363/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E3_15_pianissim
o_normal.mp3
Processing 364/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E3_1_forte_norma
l.mp3
Processing 365/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E3_1_pianissim
o_normal.mp3
Processing 366/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E4_025_pianissim
o_normal.mp3
Processing 367/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E4_05_pianissim
o_normal.mp3
Processing 368/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E4_15_pianissim
o_normal.mp3
Processing 369/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E4_1_pianissim
o_normal.mp3
Processing 370/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E6_025_forte_nor
mal.mp3
Processing 371/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_E6_1_forte_norma
l.mp3
Processing 372/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F3_025_forte_nor
mal.mp3
Processing 373/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F3_025_pianissim
o_normal.mp3
Processing 374/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F3_05_forte_norm
al.mp3
Processing 375/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F3_05_pianissim
o_normal.mp3
Processing 376/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F3_15_pianissim
o_normal.mp3
Processing 377/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F3_1_forte_norma
l.mp3
Processing 378/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F3_1_pianissim

```
o_normal.mp3
Processing 379/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F4_025_pianissim
o_normal.mp3
Processing 380/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_F4_05_pianissim
o_normal.mp3
Processing 381/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G3_025_pianissim
o_normal.mp3
Processing 382/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G3_05_pianissim
o_normal.mp3
Processing 383/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G3_15_pianissim
o_normal.mp3
Processing 384/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G3_1_pianissim
o_normal.mp3
Processing 385/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G5_025_mezzo-for
te_normal.mp3
Processing 386/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G5_05_mezzo-fort
e_normal.mp3
Processing 387/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G5_15_mezzo-fort
e_normal.mp3
Processing 388/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_G5_1_mezzo-fort
e_normal.mp3
Processing 389/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs3_025_pianissi
mo_normal.mp3
Processing 390/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs3_05_forte_nor
mal.mp3
Processing 391/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs3_05_pianissim
o_normal.mp3
Processing 392/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs3_15_pianissim
o_normal.mp3
Processing 393/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs3_1_forte_norm
al.mp3
Processing 394/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs3_1_pianissim
o_normal.mp3
Processing 395/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs4_025_forte_no
rmal.mp3
Processing 396/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs4_05_forte_nor
mal.mp3
Processing 397/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs5_025_forte_no
rmal.mp3
Processing 398/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs5_025_mezzo-fo
rte_normal.mp3
Processing 399/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs5_05_forte_nor
mal.mp3
Processing 400/600: C:\Pavan\Mini Proj\Dataset\trumpet\trumpet_Gs5_05_mezzo-for
te_normal.mp3
Processing 401/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_025_forte_normal.mp
3
Processing 402/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_025_fortissimo_norm
al.mp3
Processing 403/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_025_piano_normal.mp
3
Processing 404/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_05_forte_normal.mp3
Processing 405/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_05_fortissimo_norma
l.mp3
```

```
Processing 406/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_05_piano_normal.mp3
Processing 407/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_15_forte_normal.mp3
Processing 408/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_15_piano_normal.mp3
Processing 409/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_1_forte_normal.mp3
Processing 410/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_1_fortissimo_norma
l.mp3
Processing 411/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_1_mezzo-forte_norma
l.mp3
Processing 412/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A4_1_piano_normal.mp3
Processing 413/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_025_forte_normal.mp
3
Processing 414/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_025_fortissimo_norm
al.mp3
Processing 415/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_025_mezzo-forte_nor
mal.mp3
Processing 416/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_025_piano_normal.mp
3
Processing 417/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_05_forte_normal.mp3
Processing 418/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_05_fortissimo_norma
l.mp3
Processing 419/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_05_mezzo-forte_norm
al.mp3
Processing 420/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_05_piano_normal.mp3
Processing 421/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_15_forte_normal.mp3
Processing 422/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_15_fortissimo_norma
l.mp3
Processing 423/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_15_mezzo-forte_norm
al.mp3
Processing 424/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_15_piano_normal.mp3
Processing 425/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_1_forte_major-tril
l.mp3
Processing 426/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_1_forte_minor-tril
l.mp3
Processing 427/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_1_forte_normal.mp3
Processing 428/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_1_fortissimo_norma
l.mp3
Processing 429/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_1_mezzo-forte_norma
l.mp3
Processing 430/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A5_1_piano_normal.mp3
Processing 431/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A6_025_piano_normal.mp
3
Processing 432/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A6_05_piano_normal.mp3
Processing 433/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A6_15_piano_normal.mp3
Processing 434/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A6_1_forte_major-tril
l.mp3
Processing 435/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A6_1_forte_minor-tril
l.mp3
Processing 436/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_A6_1_piano_normal.mp3
Processing 437/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_05_forte_normal.mp
3
Processing 438/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_05_fortissimo_norm
al.mp3
Processing 439/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_05_mezzo-forte_nor
mal.mp3
```

```
Processing 440/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_05_piano_normal.mp
3
Processing 441/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_15_forte_normal.mp
3
Processing 442/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_15_fortissimo_norm
al.mp3
Processing 443/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_15_mezzo-forte_nor
mal.mp3
Processing 444/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_1_forte_normal.mp3
Processing 445/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_1_fortissimo_norma
l.mp3
Processing 446/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_1_mezzo-forte_norm
al.mp3
Processing 447/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_As3_1_piano_normal.mp3
Processing 448/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Ds6_05_fortissimo_norm
al.mp3
Processing 449/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Ds6_05_mezzo-forte_nor
mal.mp3
Processing 450/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Ds6_05_piano_normal.mp
3
Processing 451/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Ds6_15_forte_normal.mp
3
Processing 452/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_G6_025_forte_normal.mp
3
Processing 453/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_G6_025_mezzo-forte_nor
mal.mp3
Processing 454/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_G6_025_piano_normal.mp
3
Processing 455/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_025_forte_normal.m
p3
Processing 456/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_025_fortissimo_nor
mal.mp3
Processing 457/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_025_mezzo-forte_no
rmal.mp3
Processing 458/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_025_piano_normal.m
p3
Processing 459/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_05_forte_normal.mp
3
Processing 460/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_05_fortissimo_norm
al.mp3
Processing 461/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_05_mezzo-forte_nor
mal.mp3
Processing 462/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_05_piano_normal.mp
3
Processing 463/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_15_forte_normal.mp
3
Processing 464/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_15_fortissimo_norm
al.mp3
Processing 465/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_15_mezzo-forte_nor
mal.mp3
Processing 466/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_15_piano_normal.mp
3
Processing 467/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_1_forte_major-tril
l.mp3
```

```
Processing 468/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_1_forte_minor-tril
l.mp3
Processing 469/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_1_forte_normal.mp3
Processing 470/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_1_fortissimo_norma
l.mp3
Processing 471/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_1_mezzo-forte_norm
al.mp3
Processing 472/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs4_1_piano_normal.mp3
Processing 473/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_025_forte_normal.m
p3
Processing 474/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_025_fortissimo_nor
mal.mp3
Processing 475/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_025_mezzo-forte_no
rmal.mp3
Processing 476/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_025_piano_normal.m
p3
Processing 477/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_05_forte_normal.mp
3
Processing 478/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_05_fortissimo_norm
al.mp3
Processing 479/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_05_mezzo-forte_nor
mal.mp3
Processing 480/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_05_piano_normal.mp
3
Processing 481/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_15_forte_normal.mp
3
Processing 482/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_15_fortissimo_norm
al.mp3
Processing 483/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_15_mezzo-forte_nor
mal.mp3
Processing 484/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_15_piano_normal.mp
3
Processing 485/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_1_forte_normal.mp3
Processing 486/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_1_fortissimo_norma
l.mp3
Processing 487/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_1_mezzo-forte_norm
al.mp3
Processing 488/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs5_1_piano_normal.mp3
Processing 489/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_025_forte_normal.m
p3
Processing 490/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_025_mezzo-forte_no
rmal.mp3
Processing 491/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_025_piano_normal.m
p3
Processing 492/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_05_forte_normal.mp
3
Processing 493/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_05_mezzo-forte_nor
mal.mp3
Processing 494/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_05_piano_normal.mp
3
Processing 495/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_15_forte_normal.mp
3
Processing 496/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_15_mezzo-forte_nor
mal.mp3
```

```
Processing 497/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_15_piano_normal.mp
3
Processing 498/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_1_forte_normal.mp3
Processing 499/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_1_mezzo-forte_norm
al.mp3
Processing 500/600: C:\Pavan\Mini Proj\Dataset\oboe\oboe_Gs6_1_piano_normal.mp3
Processing 501/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_025_fortissimo_ar
co-normal.mp3
Processing 502/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_025_mezzo-piano_a
rco-normal.mp3
Processing 503/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_025_pianissimo_ar
co-normal.mp3
Processing 504/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_025_piano_arco-no
rmal.mp3
Processing 505/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_05_fortissimo_arc
o-normal.mp3
Processing 506/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_05_mezzo-piano_ar
co-normal.mp3
Processing 507/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_05_pianissimo_arc
o-normal.mp3
Processing 508/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_05_piano_arco-nor
mal.mp3
Processing 509/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_15_forte_arco-nor
mal.mp3
Processing 510/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_15_fortissimo_arc
o-normal.mp3
Processing 511/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_15_piano_arco-nor
mal.mp3
Processing 512/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_forte_arco-norm
al.mp3
Processing 513/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_fortissimo_arc
o-normal.mp3
Processing 514/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_fortissimo_piz
z-normal.mp3
Processing 515/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_mezzo-forte_mol
to-vibrato.mp3
Processing 516/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_mezzo-piano_no
n-vibrato.mp3
Processing 517/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_pianissimo_arc
o-normal.mp3
Processing 518/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_piano_arco-glis
sando.mp3
Processing 519/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_piano_arco-norm
al.mp3
Processing 520/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A3_1_piano_pizz-norm
al.mp3
Processing 521/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_025_fortissimo_ar
co-normal.mp3
Processing 522/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_025_mezzo-piano_a
rco-normal.mp3
Processing 523/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_025_pianissimo_ar
co-normal.mp3
Processing 524/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_025_piano_arco-no
rmal.mp3
```

```
Processing 525/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_05_forte_arco-nor
mal.mp3
Processing 526/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_05_fortissimo_arc
o-normal.mp3
Processing 527/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_05_mezzo-piano_ar
co-normal.mp3
Processing 528/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_05_pianissimo_arc
o-normal.mp3
Processing 529/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_05_piano_arco-nor
mal.mp3
Processing 530/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_15_fortissimo_arc
o-normal.mp3
Processing 531/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_15_pianissimo_arc
o-normal.mp3
Processing 532/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_15_piano_arco-nor
mal.mp3
Processing 533/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_forte_arco-norm
al.mp3
Processing 534/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_fortissimo_arc
o-normal.mp3
Processing 535/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_fortissimo_sna
p-pizz.mp3
Processing 536/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_mezzo-forte_arc
o-major-trill.mp3
Processing 537/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_mezzo-forte_arc
o-minor-trill.mp3
Processing 538/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_mezzo-forte_mol
to-vibrato.mp3
Processing 539/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_mezzo-piano_no
n-vibrato.mp3
Processing 540/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_pianissimo_arc
o-normal.mp3
Processing 541/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_piano_arco-glis
sando.mp3
Processing 542/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_piano_arco-norm
al.mp3
Processing 543/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A4_1_piano_pizz-norm
al.mp3
Processing 544/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A5_1_forte_arco-norm
al.mp3
Processing 545/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A5_1_fortissimo_arc
o-normal.mp3
Processing 546/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A5_1_mezzo-forte_art
ificial-harmonic.mp3
Processing 547/600: C:\Pavan\Mini Proj\Dataset\viola\viola_A5_1_pianissimo_arc
o-normal.mp3
Processing 548/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Ds3_05_fortissimo_ar
co-normal.mp3
Processing 549/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Ds3_05_mezzo-piano_a
rco-normal.mp3
Processing 550/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Ds3_1_piano_pizz-nor
mal.mp3
Processing 551/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs3_025_fortissimo_a
rco-normal.mp3
```

```
Processing 552/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs3_025_mezzo-pian
o_arco-normal.mp3
Processing 553/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs3_025_pianissimo_a
rco-normal.mp3
Processing 554/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs3_025_piano_arco-n
ormal.mp3
Processing 555/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs3_15_fortissimo_ar
co-normal.mp3
Processing 556/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs3_15_pianissimo_ar
co-normal.mp3
Processing 557/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs3_15_piano_arco-no
rmal.mp3
Processing 558/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_025_fortissimo_a
rco-normal.mp3
Processing 559/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_025_mezzo-pian
o_arco-normal.mp3
Processing 560/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_025_pianissimo_a
rco-normal.mp3
Processing 561/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_05_fortissimo_ar
co-normal.mp3
Processing 562/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_05_mezzo-piano_a
rco-normal.mp3
Processing 563/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_05_pianissimo_ar
co-normal.mp3
Processing 564/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_05_piano_arco-no
rmal.mp3
Processing 565/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_15_fortissimo_ar
co-normal.mp3
Processing 566/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_15_mezzo-piano_a
rco-normal.mp3
Processing 567/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_15_pianissimo_ar
co-normal.mp3
Processing 568/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_1_fortissimo_arc
o-normal.mp3
Processing 569/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_1_mezzo-piano_ar
co-normal.mp3
Processing 570/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_1_pianissimo_arc
o-normal.mp3
Processing 571/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs4_1_piano_arco-nor
mal.mp3
Processing 572/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_025_forte_arco-n
ormal.mp3
Processing 573/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_025_fortissimo_a
rco-normal.mp3
Processing 574/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_025_mezzo-pian
o_arco-normal.mp3
Processing 575/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_025_pianissimo_a
rco-normal.mp3
Processing 576/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_05_forte_arco-no
rmal.mp3
Processing 577/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_05_fortissimo_ar
co-normal.mp3
Processing 578/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_05_pianissimo_ar
co-normal.mp3
```

```
Processing 579/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_05_piano_arco-no
rmal.mp3
Processing 580/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_15_fortissimo_ar
co-normal.mp3
Processing 581/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_15_pianissimo_ar
co-normal.mp3
Processing 582/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_1_forte_arco-nor
mal.mp3
Processing 583/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_1_fortissimo_arc
o-normal.mp3
Processing 584/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_1_fortissimo_sna
p-pizz.mp3
Processing 585/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_1_pianissimo_arc
o-normal.mp3
Processing 586/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs5_1_piano_arco-nor
mal.mp3
Processing 587/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_025_forte_arco-n
ormal.mp3
Processing 588/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_025_fortissimo_a
rco-normal.mp3
Processing 589/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_025_mezzo-pian
o_arco-normal.mp3
Processing 590/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_025_pianissimo_a
rco-normal.mp3
Processing 591/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_025_piano_arco-n
ormal.mp3
Processing 592/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_05_forte_arco-no
rmal.mp3
Processing 593/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_05_fortissimo_ar
co-normal.mp3
Processing 594/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_05_pianissimo_ar
co-normal.mp3
Processing 595/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_05_piano_arco-no
rmal.mp3
Processing 596/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_15_forte_arco-no
rmal.mp3
Processing 597/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_15_fortissimo_ar
co-normal.mp3
Processing 598/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_1_forte_arco-nor
mal.mp3
Processing 599/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_1_fortissimo_arc
o-normal.mp3
Processing 600/600: C:\Pavan\Mini Proj\Dataset\viola\viola_Gs6_1_pianissimo_arc
o-normal.mp3
Extracted features shape: (600, 13)
```

Standardize features

```python
In [40]:  scaler = StandardScaler()
          scaled_features = scaler.fit_transform(featurevectors)

          splitter = StratifiedShuffleSplit(n_splits=1, test_size=0.25, random_state=42)
```

```
for train_idx, test_idx in splitter.split(scaled_features, classesnum):
    X_train, X_test = scaled_features[train_idx], scaled_features[test_idx]
    y_train, y_test = classesnum[train_idx], classesnum[test_idx]
```

KNN

In [53]:
```
# Import necessary libraries
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import confusion_matrix, classification_report
import matplotlib.pyplot as plt
import seaborn as sns

# Train KNN model
model_knn = KNeighborsClassifier(n_neighbors=1)
model_knn.fit(X_train, y_train)

# Predict on test set
y_pred_knn = model_knn.predict(X_test)

# Print classification report
print("KNN Classification Report:")
print(classification_report(y_test, y_pred_knn, target_names=labelencoder.clas

# Generate confusion matrix
cm_knn = confusion_matrix(y_test, y_pred_knn)

# Plot confusion matrix as a heatmap
plt.figure(figsize=(8,6))
sns.heatmap(cm_knn, annot=True, fmt='d', cmap='Blues',
            xticklabels=labelencoder.classes_,
            yticklabels=labelencoder.classes_)
plt.xlabel('Predicted Labels')
plt.ylabel('True Labels')
plt.title('KNN Confusion Matrix')
plt.show()
```

```
KNN Classification Report:
              precision    recall  f1-score   support

       cello       0.89      1.00      0.94        25
       flute       0.96      1.00      0.98        25
        oboe       1.00      1.00      1.00        25
         sax       1.00      0.92      0.96        25
     trumpet       1.00      0.96      0.98        25
       viola       0.92      0.88      0.90        25

    accuracy                           0.96       150
   macro avg       0.96      0.96      0.96       150
weighted avg       0.96      0.96      0.96       150
```

KNN Confusion Matrix

SVM Linear

```python
# Import necessary libraries
from sklearn.svm import LinearSVC
from sklearn.metrics import confusion_matrix, classification_report
import matplotlib.pyplot as plt
import seaborn as sns

# Train Linear SVM model
model_svm = LinearSVC(random_state=42, tol=1e-5, max_iter=5000)
model_svm.fit(X_train, y_train)

# Predict on test set
y_pred_svm = model_svm.predict(X_test)

# Print classification report
print("SVM Linear Classification Report:")
print(classification_report(y_test, y_pred_svm, target_names=labelencoder.clas
```
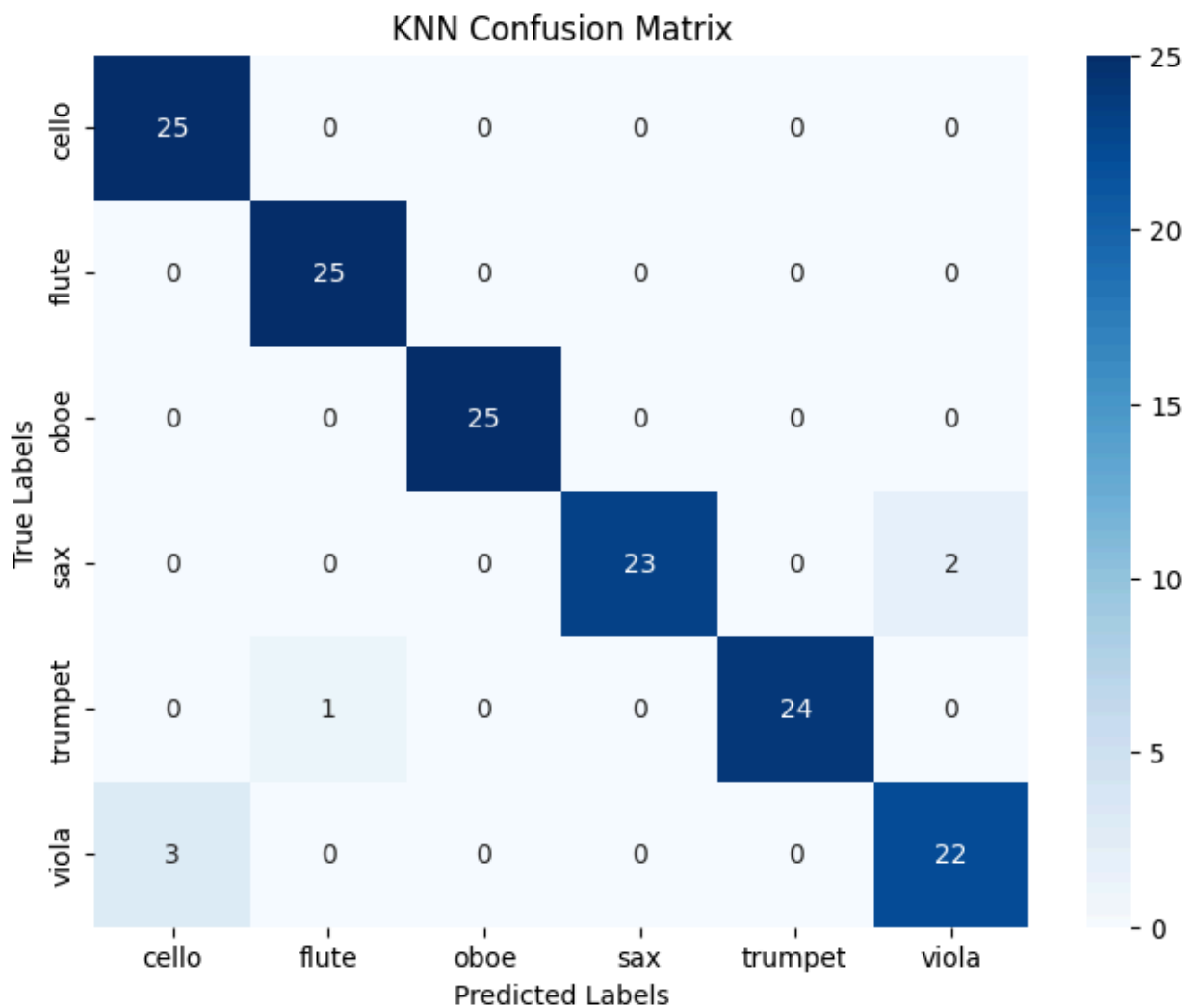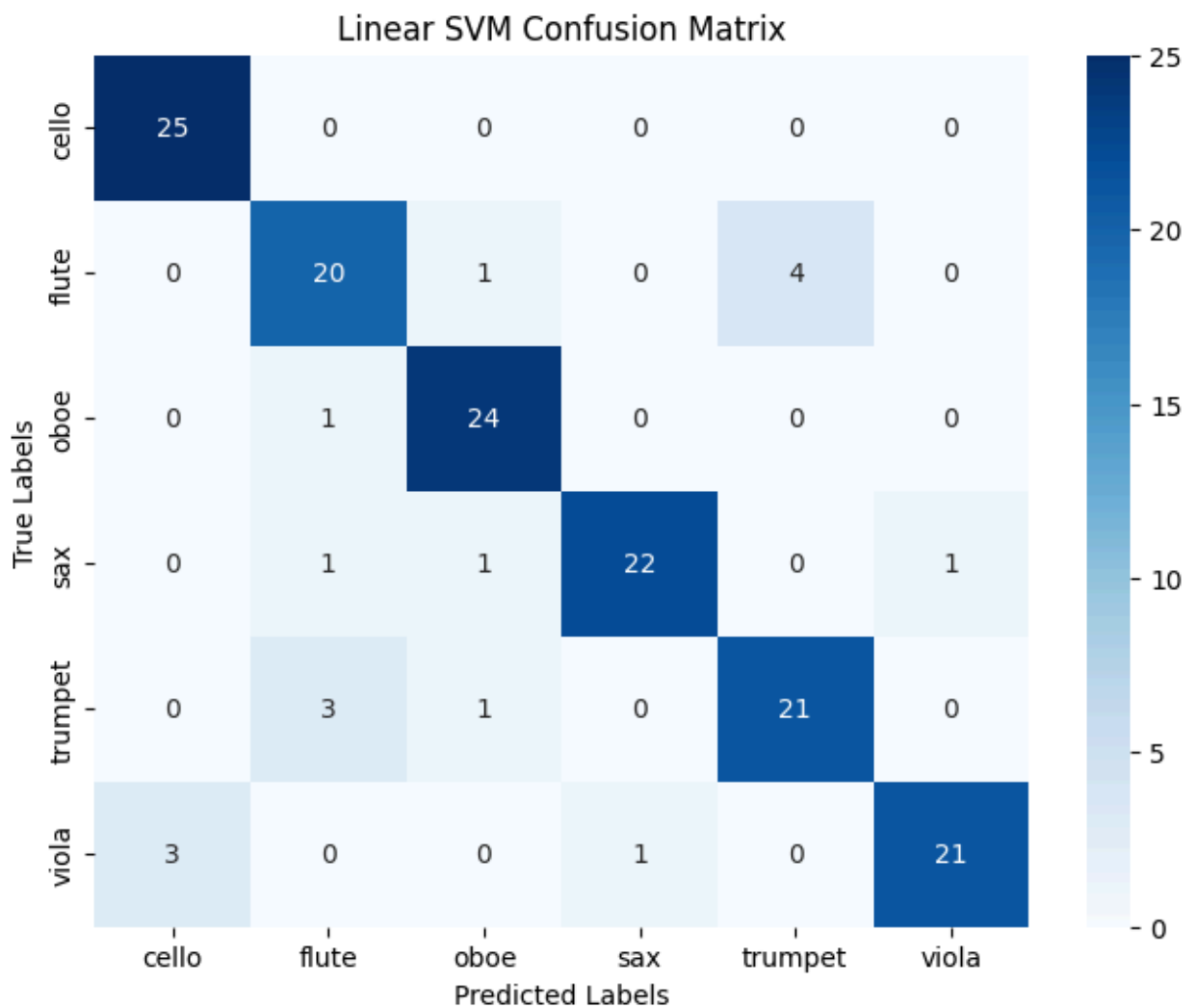
```
# Generate confusion matrix
cm_svm = confusion_matrix(y_test, y_pred_svm)

# Plot confusion matrix as a heatmap
plt.figure(figsize=(8,6))
sns.heatmap(cm_svm, annot=True, fmt='d', cmap='Blues',
            xticklabels=labelencoder.classes_,
            yticklabels=labelencoder.classes_)
plt.xlabel('Predicted Labels')
plt.ylabel('True Labels')
plt.title('Linear SVM Confusion Matrix')
plt.show()
```

```
SVM Linear Classification Report:
              precision    recall  f1-score   support

        cello       0.89      1.00      0.94        25
        flute       0.80      0.80      0.80        25
         oboe       0.89      0.96      0.92        25
          sax       0.96      0.88      0.92        25
      trumpet       0.84      0.84      0.84        25
        viola       0.95      0.84      0.89        25

     accuracy                           0.89       150
    macro avg       0.89      0.89      0.89       150
 weighted avg       0.89      0.89      0.89       150
```

Linear SVM Confusion Matrix

SVM RBF

```
In [51]:  # Import necessary libraries
          from sklearn.svm import SVC
          from sklearn.metrics import confusion_matrix, classification_report
          import matplotlib.pyplot as plt
          import seaborn as sns

          # Train RBF SVM model
          model_rbf = SVC(kernel='rbf', C=10.0, gamma=0.1)
          model_rbf.fit(X_train, y_train)

          # Predict on test set
          y_pred_rbf = model_rbf.predict(X_test)

          # Print classification report
          print("SVM RBF Classification Report:")
          print(classification_report(y_test, y_pred_rbf, target_names=labelencoder.clas
```
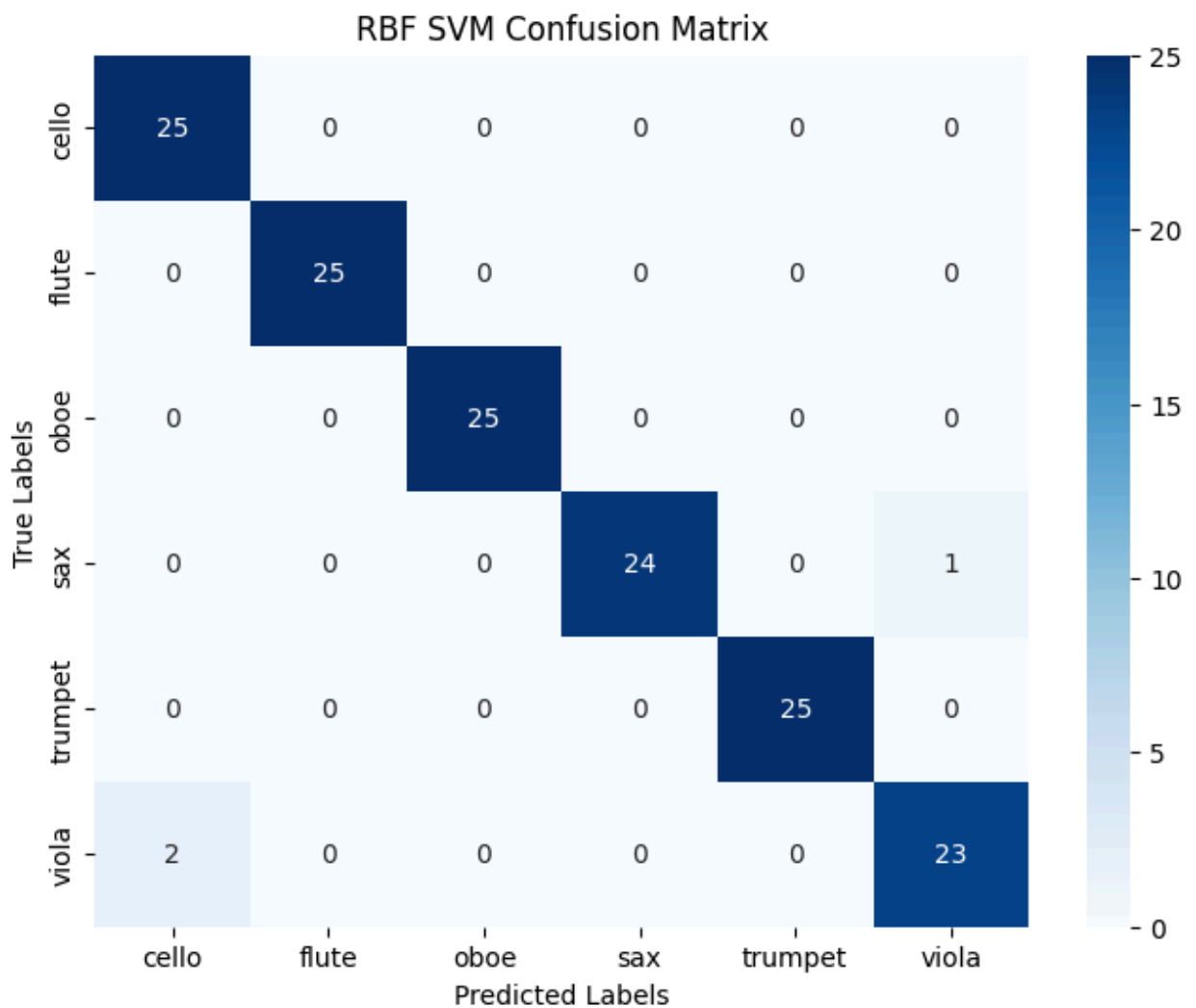
```python
# Generate confusion matrix
cm_rbf = confusion_matrix(y_test, y_pred_rbf)

# Plot confusion matrix as a heatmap
plt.figure(figsize=(8,6))
sns.heatmap(cm_rbf, annot=True, fmt='d', cmap='Blues',
            xticklabels=labelencoder.classes_,
            yticklabels=labelencoder.classes_)
plt.xlabel('Predicted Labels')
plt.ylabel('True Labels')
plt.title('RBF SVM Confusion Matrix')
plt.show()
```

SVM RBF Classification Report:

	precision	recall	f1-score	support
cello	0.93	1.00	0.96	25
flute	1.00	1.00	1.00	25
oboe	1.00	1.00	1.00	25
sax	1.00	0.96	0.98	25
trumpet	1.00	1.00	1.00	25
viola	0.96	0.92	0.94	25
accuracy			0.98	150
macro avg	0.98	0.98	0.98	150
weighted avg	0.98	0.98	0.98	150

RBF SVM Confusion Matrix

XGBoost

```
In [44]: model_xgb = XGBClassifier(use_label_encoder=False, eval_metric='mlogloss', ran
         model_xgb.fit(X_train, y_train)
         y_pred_xgb = model_xgb.predict(X_test)
         print("XGBoost Classification Report:")
         print(classification_report(y_test, y_pred_xgb, target_names=labelencoder.clas

         def plot_confusion_matrix(cm, classes, normalize=False,
                                   title='Confusion matrix',
                                   cmap=plt.cm.Blues):
             if normalize:
                 cm = cm.astype(float) / cm.sum(axis=1)[:, None]
                 print("Normalized confusion matrix:")
             else:
                 print("Confusion matrix:")

             plt.figure(figsize=(10, 8))
             plt.imshow(cm, interpolation='nearest', cmap=cmap)
```

```python
    plt.title(title)
    plt.colorbar()
    tick_marks = np.arange(len(classes))
    plt.xticks(tick_marks, classes, rotation=45)
    plt.yticks(tick_marks, classes)

    fmt = '.2f' if normalize else 'd'
    thresh = cm.max() / 2

    for i, j in itertools.product(range(cm.shape[0]), range(cm.shape[1])):
        plt.text(j, i, format(cm[i, j], fmt),
                 ha="center", va="center",
                 color="white" if cm[i, j] > thresh else "black")

    plt.ylabel('True label')
    plt.xlabel('Predicted label')
    plt.tight_layout()
    plt.show()

cm = confusion_matrix(y_test, y_pred_xgb)
plot_confusion_matrix(cm, labelencoder.classes_, normalize=True,
                      title="Normalized Confusion Matrix - XGBoost")
```
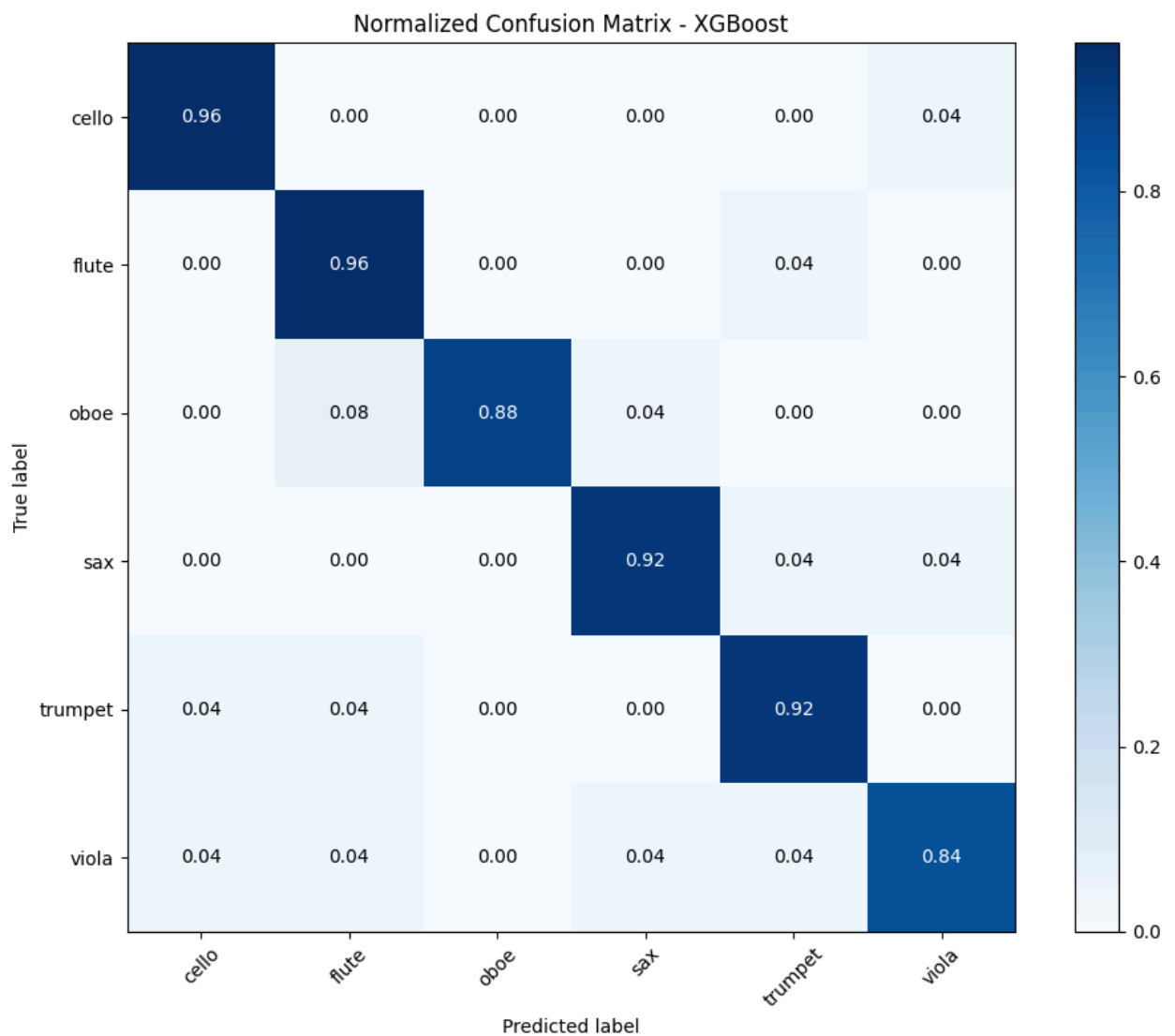
C:\Users\Pavan\AppData\Local\Packages\PythonSoftwareFoundation.Python.3.13_qbz5
n2kfra8p0\LocalCache\local-packages\Python313\site-packages\xgboost\training.p
y:199: UserWarning: [15:43:54] WARNING: C:\actions-runner_work\xgboost\xgboos
t\src\learner.cc:790:
Parameters: { "use_label_encoder" } are not used.

  bst.update(dtrain, iteration=i, fobj=obj)
XGBoost Classification Report:
              precision   recall f1-score   support

       cello   0.92   0.96   0.94   25
       flute   0.86   0.96   0.91   25
        oboe   1.00   0.88   0.94   25
         sax   0.92   0.92   0.92   25
     trumpet   0.88   0.92   0.90   25
       viola   0.91   0.84   0.88   25

    accuracy   0.91   150
   macro avg   0.92   0.91   0.91   150
weighted avg   0.92   0.91   0.91   150

Normalized confusion matrix:

Normalized Confusion Matrix - XGBoost

AdaBoost Classifier

```python
In [45]: from sklearn.ensemble import AdaBoostClassifier

model_ada = AdaBoostClassifier(random_state=42, n_estimators=100)
model_ada.fit(X_train, y_train)
y_pred_ada = model_ada.predict(X_test)

print("AdaBoost Classification Report")
print(classification_report(y_test, y_pred_ada, target_names=labelencoder.clas
```

```
AdaBoost Classification Report
              precision    recall  f1-score   support

       cello       0.68      0.52      0.59        25
       flute       0.50      0.76      0.60        25
        oboe       0.62      0.40      0.49        25
         sax       0.64      0.64      0.64        25
     trumpet       0.65      0.60      0.62        25
       viola       0.45      0.52      0.48        25

    accuracy                          0.57       150
   macro avg       0.59      0.57      0.57       150
weighted avg       0.59      0.57      0.57       150
```
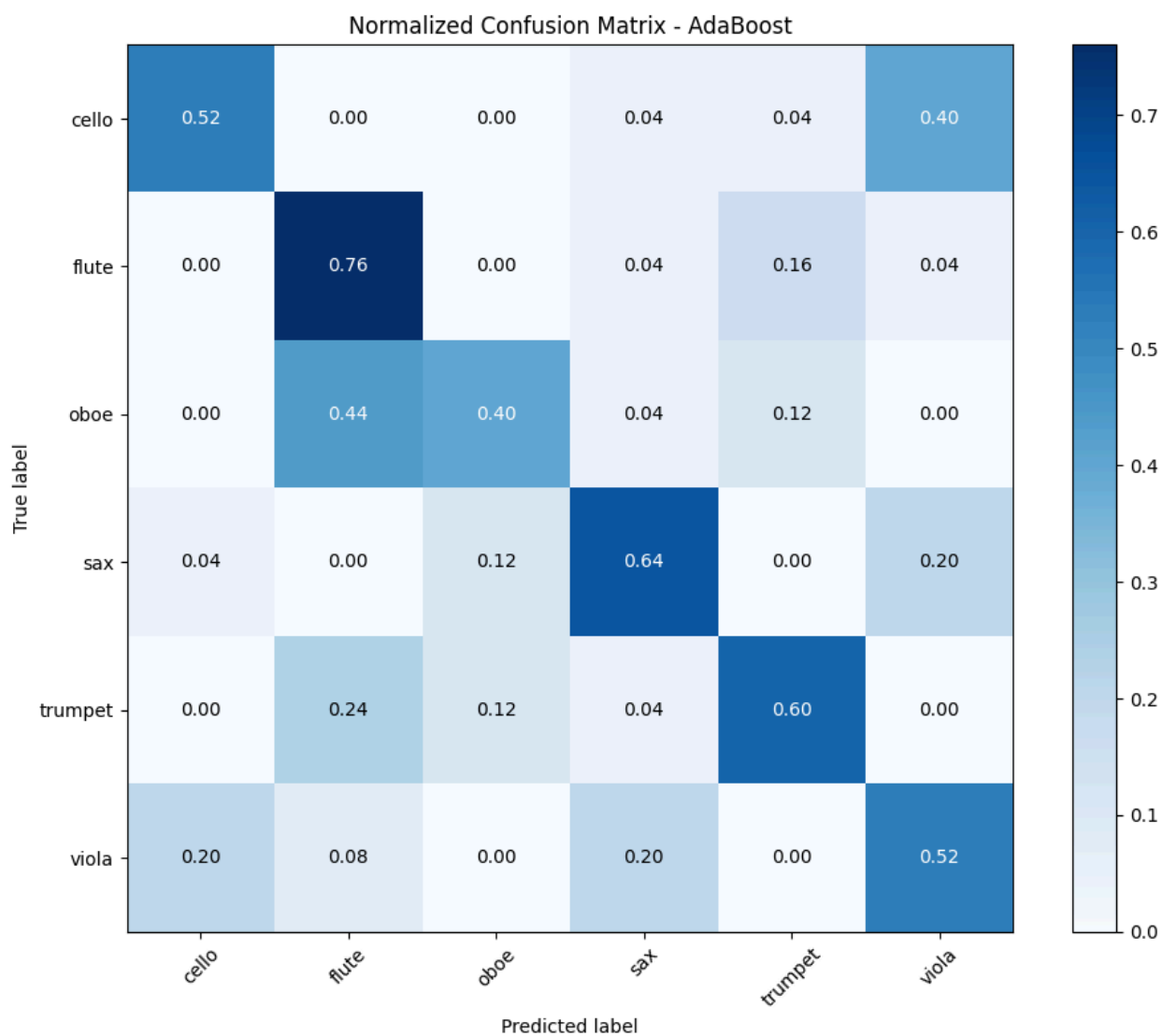
Confusion Matrix for AdaBoost

```
In [46]:  cm_ada = confusion_matrix(y_test, y_pred_ada)
          plot_confusion_matrix(cm_ada, labelencoder.classes_, normalize=True, title='No
```

Normalized confusion matrix:

Normalized Confusion Matrix - AdaBoost

True label \ Predicted label	cello	flute	oboe	sax	trumpet	viola
cello	0.52	0.00	0.00	0.04	0.04	0.40
flute	0.00	0.76	0.00	0.04	0.16	0.04
oboe	0.00	0.44	0.40	0.04	0.12	0.00
sax	0.04	0.00	0.12	0.64	0.00	0.20
trumpet	0.00	0.24	0.12	0.04	0.60	0.00
viola	0.20	0.08	0.00	0.20	0.00	0.52

In [47]:

```python
# MODEL COMPARISON BAR PLOT
# BEST MODEL HIGHLIGHTED


import matplotlib.pyplot as plt
from sklearn.ensemble import AdaBoostClassifier
from sklearn.metrics import accuracy_score
import numpy as np

# ---------- Train AdaBoost ----------
ada_model = AdaBoostClassifier(
    n_estimators=100,
    learning_rate=1.0,
    random_state=42
)

ada_model.fit(X_train, y_train)
y_pred_ada = ada_model.predict(X_test)
```

```python
# ---------- Accuracy Calculation ----------
acc_knn = accuracy_score(y_test, y_pred_knn)
acc_linear_svm = accuracy_score(y_test, y_pred_svm)
acc_rbf_svm = accuracy_score(y_test, y_pred_rbf)
acc_xgb = accuracy_score(y_test, y_pred_xgb)
acc_ada = accuracy_score(y_test, y_pred_ada)

# ---------- Bar Plot Data ----------
models = ['KNN', 'Linear SVM', 'RBF SVM', 'XGBoost', 'AdaBoost']
accuracies = np.array([
    acc_knn,
    acc_linear_svm,
    acc_rbf_svm,
    acc_xgb,
    acc_ada
])

# ---------- Identify Best Model ----------
best_index = np.argmax(accuracies)

# Default color for bars
colors = ['skyblue'] * len(models)
colors[best_index] = 'orange'   # Highlight best model

# ---------- Plot ----------
plt.figure(figsize=(12, 8))

bars = plt.bar(models, accuracies, color=colors, width=0.65)

plt.xlabel('Models', fontsize=13)
plt.ylabel('Accuracy', fontsize=13)
plt.title('Accuracy Comparison of Machine Learning Models', fontsize=15)

# Value labels
for bar in bars:
    height = bar.get_height()
    plt.text(
        bar.get_x() + bar.get_width() / 2,
        height + 0.015,
        f"{height:.2f}",
        ha='center',
        va='bottom',
        fontsize=12
    )

# Annotate best model
plt.text(
    best_index,
    accuracies[best_index] + 0.07,
    f"Best Model\n({models[best_index]})",
    ha='center',
    va='bottom',
    fontsize=12,
```
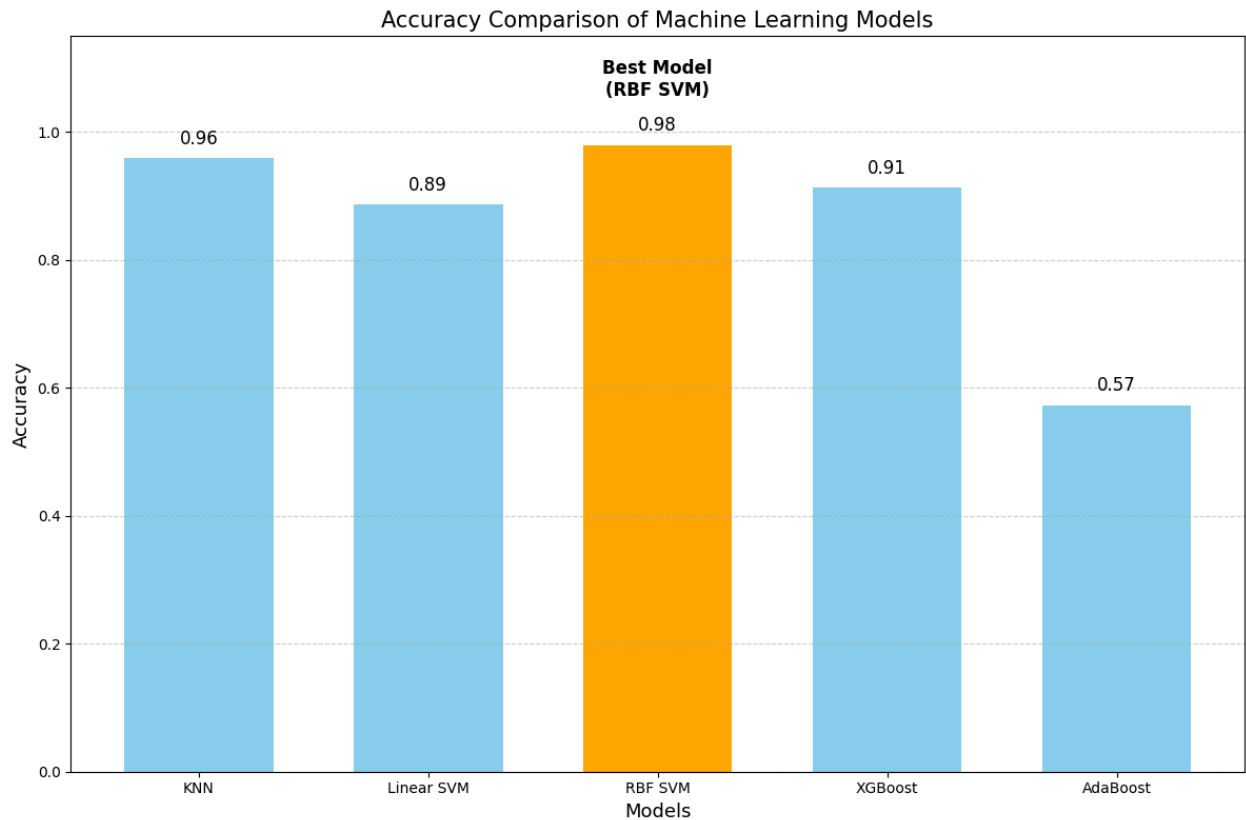
```
        fontweight='bold'
)

plt.ylim(0, 1.15)
plt.grid(axis='y', linestyle='--', alpha=0.6)
plt.tight_layout()
plt.show()
```


Accuracy Comparison of Machine Learning Models

```
In [48]:  import os
          import librosa
          import numpy as np

          def predict_instrument_from_audio(audio_path):
              if not os.path.exists(audio_path):
                  raise FileNotFoundError(f"Audio file not found: {audio_path}")

              # Load audio
              y_audio, sr = librosa.load(audio_path, sr=44100)
              y_audio = y_audio / np.max(np.abs(y_audio))

              # Extract features (same as training)
              features = get_features(y_audio, sr)
              features = features.reshape(1, -1)

              # Scale features
              features = scaler.transform(features)

              # Predict using BEST model (RBF SVM)
```

```
        prediction = model_rbf.predict(features)

        # Decode label
        return labelencoder.inverse_transform(prediction)[0]
```

In [50]:
```
audio_path = r"C:\PAVAN\Mini Proj\Dataset\cello\cello_A3_1_fortissimo_arco-nor
print("Predicted Instrument:", predict_instrument_from_audio(audio_path))
```

Predicted Instrument: cello

In [ ]: