

untitled3

October 29, 2024

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[10]: # spotify ve pandas kütüphaneleri veri çekme ve analiz için yükleyelim artı plot
!pip install spotipy pandas matplotlib

import os
import json
import spotipy
from spotipy.oauth2 import SpotifyClientCredentials
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np

# config.json dosyasını workspace'ten okuyalım burada vermek güvenli değil
with open('/content/config.json') as config_file:
    config = json.load(config_file)
    os.environ['SPOTIPY_CLIENT_ID'] = config['SPOTIPY_CLIENT_ID']
    os.environ['SPOTIPY_CLIENT_SECRET'] = config['SPOTIPY_CLIENT_SECRET']

# spoti apisinin formatı bu böyle alıyor
client_id = os.environ['SPOTIPY_CLIENT_ID']
client_secret = os.environ['SPOTIPY_CLIENT_SECRET']

sp = spotipy.Spotify(auth_manager=SpotifyClientCredentials(client_id=client_id,
↪client_secret=client_secret))

# Track id linkten alıp direk bu tracki çekelim klasik istiklal marsi 1986
track_id = '2takcw0aAZWiXQijPHIx7B' # Spotify track ID

# track info bu formatta çekiyor rest docsda böyle
track_info = sp.track(track_id)
track_name = track_info['name']
artist_name = track_info['artists'][0]['name']
album_name = track_info['album']['name']
release_date = track_info['album']['release_date']

print(f"Sarkı: {track_name}")
print(f"Sanatçı: {artist_name}")
print(f"Albüm: {album_name}")
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print(f"Çıkış Tarihi: {release_date}")

# audio featuresta track datası var webapi docs çok acik
audio_features = sp.audio_features(track_id)[0]
print("\nAudio Features:", audio_features)

# bir de ses analizi kısmında veri var.
audio_analysis = sp.audio_analysis(track_id)
print("\nAudio Analysis Summary:")
for analysis_key in ["bars", "beats", "sections", "segments"]:
    print(f"{analysis_key.capitalize()}: {len(audio_analysis[analysis_key])} ↵
    ↵elements")

feature_names = ['danceability', 'energy', 'speechiness', 'acousticness', ↵
    ↵'instrumentalness', 'liveness', 'valence']
feature_values = [audio_features[feature] for feature in feature_names]

# radar analizi
angles = np.linspace(0, 2 * np.pi, len(feature_names), endpoint=False).tolist()
feature_values += feature_values[:1] # Kapanış için ilk değeri sona ekle
angles += angles[:1]

fig, ax = plt.subplots(figsize=(8, 8), subplot_kw=dict(polar=True))
ax.fill(angles, feature_values, color='blue', alpha=0.25)
ax.plot(angles, feature_values, color='blue', linewidth=2)

ax.set_yticklabels([])
ax.set_xticks(angles[:-1])
ax.set_xticklabels(feature_names, color='gray', size=12)

plt.title(f"{track_name} - {artist_name} | Spotify Audio Features", size=15, ↵
    ↵color='blue')
plt.show()

# tempo analizi zamanlı sectional
segments_df = pd.DataFrame(audio_analysis['segments'])
sections_df = pd.DataFrame(audio_analysis['sections'])

plt.figure(figsize=(14, 6))

# ses grafigi ne kadar yüksek
plt.subplot(1, 2, 1)
plt.plot(segments_df['start'], segments_df['loudness_start'], color='red', ↵
    ↵label='Loudness')
plt.xlabel('Zaman (saniye)')
plt.ylabel('Loudness (dB)')
plt.title('Şarkı Zaman İçinde Loudness Değişimi')

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plt.legend()

plt.subplot(1, 2, 2)
plt.plot(sections_df['start'], sections_df['tempo'], color='green',
        label='Tempo')
plt.xlabel('Zaman (saniye)')
plt.ylabel('Tempo (BPM)')
plt.title('Şarkı Zaman İçinde Tempo Değişimi')
plt.legend()

plt.tight_layout()
plt.show()

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Requirement already satisfied: spotipy in /usr/local/lib/python3.10/dist-packages (2.24.0)

Requirement already satisfied: pandas in /usr/local/lib/python3.10/dist-packages (2.2.2)

Requirement already satisfied: matplotlib in /usr/local/lib/python3.10/dist-packages (3.7.1)

Requirement already satisfied: redis>=3.5.3 in /usr/local/lib/python3.10/dist-packages (from spotipy) (5.2.0)

Requirement already satisfied: requests>=2.25.0 in /usr/local/lib/python3.10/dist-packages (from spotipy) (2.32.3)

Requirement already satisfied: urllib3>=1.26.0 in /usr/local/lib/python3.10/dist-packages (from spotipy) (2.2.3)

Requirement already satisfied: numpy>=1.22.4 in /usr/local/lib/python3.10/dist-packages (from pandas) (1.26.4)

Requirement already satisfied: python-dateutil>=2.8.2 in /usr/local/lib/python3.10/dist-packages (from pandas) (2.8.2)

Requirement already satisfied: pytz>=2020.1 in /usr/local/lib/python3.10/dist-packages (from pandas) (2024.2)

Requirement already satisfied: tzdata>=2022.7 in /usr/local/lib/python3.10/dist-packages (from pandas) (2024.2)

Requirement already satisfied: contourpy>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.3.0)

Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (0.12.1)

Requirement already satisfied: fonttools>=4.22.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (4.54.1)

Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (1.4.7)

Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (24.1)

Requirement already satisfied: pillow>=6.2.0 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (10.4.0)

Requirement already satisfied: pyparsing>=2.3.1 in /usr/local/lib/python3.10/dist-packages (from matplotlib) (3.2.0)

Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Requirement already satisfied: async-timeout>=4.0.3 in /usr/local/lib/python3.10/dist-packages (from redis>=3.5.3->spotipy) (4.0.3)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests>=2.25.0->spotipy) (3.4.0)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests>=2.25.0->spotipy) (3.10)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests>=2.25.0->spotipy) (2024.8.30)

Şarkı: Time is Running Out

Sanatçı: Muse

Albüm: Absolution

Çıkış Tarihi: 2004-03-23

Audio Features: {'danceability': 0.585, 'energy': 0.842, 'key': 9, 'loudness': -5.883, 'mode': 0, 'speechiness': 0.0556, 'acousticness': 0.00242, 'instrumentalness': 0.00686, 'liveness': 0.0866, 'valence': 0.428, 'tempo': 118.211, 'type': 'audio_features', 'id': '2takcw0aAZWiXQijPHIx7B', 'uri': 'spotify:track:2takcw0aAZWiXQijPHIx7B', 'track_href': 'https://api.spotify.com/v1/tracks/2takcw0aAZWiXQijPHIx7B', 'analysis_url': 'https://api.spotify.com/v1/audio-analysis/2takcw0aAZWiXQijPHIx7B', 'duration_ms': 237040, 'time_signature': 4}

Audio Analysis Summary:

Bars: 115 elements

Beats: 462 elements

Sections: 8 elements

Segments: 733 elements

Time is Running Out - Muse | Spotify Audio Features

