Music Recommendation

CKRAFT-BOT

Intent

- Streaming platforms (Netflix, Amazon, Spotify, Apple Music, etc.) are quietly taking notes on all your activities

- Then they use magic to expose you to things it thinks you might like

- I certainly have benefited from this neat feature, so how do they do it?

- Let's investigate and build our own Music Rec system!
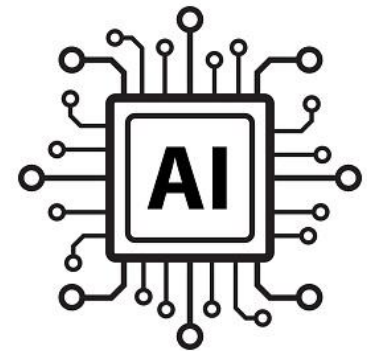
The Secret

- Spotify takes notes on you → uses notes to curate music/audio preferences for you

- Your listening history is compared to other listeners on the platform

- The main algorithm is K-Means Clustering
  - Unsupervised
  - No external classifications
  - Full population gets grouped
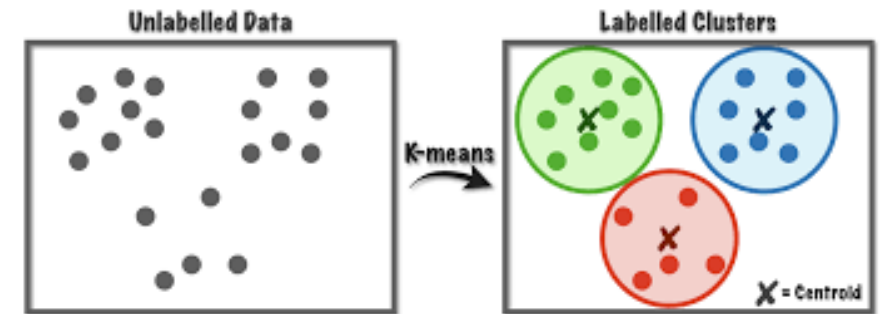
High Level

- Exploratory Data Analysis (EDA) on datasets
  - Data sources: CSV files as downloaded from Kaggle
  - Checked out the sizes of files
  - Checked out the contents of the files
    - Feature correlation
    - Music through the decades
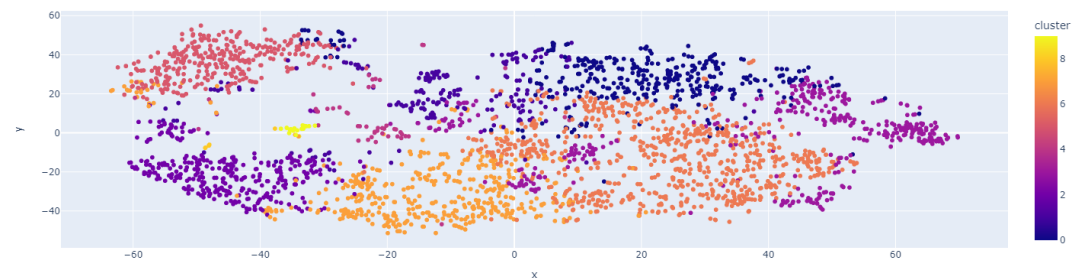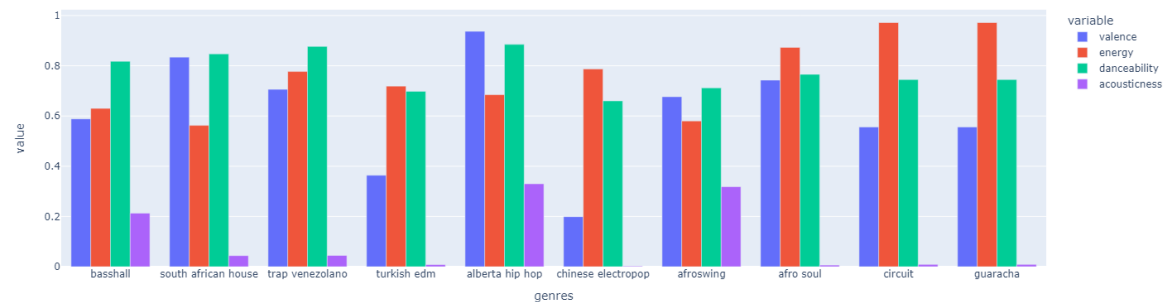   - Genres and characteristics

Detailed

Clustering

- Genre
- Songs

API connection

- Spotify developer page
- Creating an app with my profile

Building the Recommendation Machine

- Matrix
- Calculating the distances between vectors
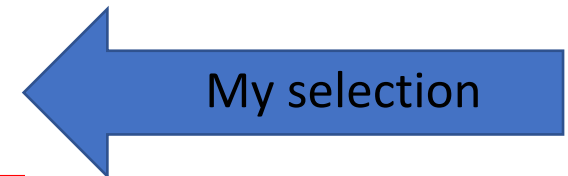- Computing distance between each pair of the two collections of inputs

```python
recommend_songs([{'name': 'Prelude 2', 'year': 2021},
                 {'name': 'Sonata for Violin Solo No. 2 in A Minor, BWV 1003:3. Andante', 'year': 2018},
                 {'name': 'Minuet in G for Piano', 'year': 2020},
                 {'name': 'Symphony No. 7 in C Major, Op. 105', 'year': 2016},
                 {'name': 'Intermezzi, Op. 117: 1. In E-Flat Major', 'year': 2005}], general_data)
```

Output exceeds the size limit. Open the full output data in a text editor

```
[{'name': 'Sphärenklänge, Walzer, Op. 235',
  'year': 2019,
  'artists': "['Josef Strauss', 'Christian Thielemann', 'Wiener Philharmoniker']"},
 {'name': 'Flute Concerto No. 1 in G Major, K. 313: II. Adagio non troppo',
  'year': 1998,
  'artists': "['Wolfgang Amadeus Mozart', 'Anton Gisler', 'Werner Tripp', 'Wiener Philharmoniker', 'Karl Böhm']"},
 {'name': 'Andante spianato et Grande polonaise brillante, Op. 22: Grande Polonaise in E-flat Major. Molto allegro',
  'year': 1995,
  'artists': "['Frédéric Chopin', 'Janusz Olejniczak', 'Tadeusz Strugala', 'The Warsaw Philharmonic National Orchestra of Poland']"},
 {'name': "Variations On A Theme From Pachelbel's Canon In D Major",
  'year': 1991,
  'artists': "['David Lanz']"},
 {'name': 'String Quartet No. 8 in E Minor, Op. 59, No. 2 "Rasumovsky": III. Allegretto (Arranged by Barry Lieberman)',
  'year': 2011,
  'artists': "['Ludwig van Beethoven', 'The American String Project']"},
 {'name': 'Piano Concerto No. 24 in C Minor, K. 491: II. Larghetto',
  'year': 1990,
  'artists': "['Wolfgang Amadeus Mozart', 'Jenő Jandó', 'Concentus Hungaricus', 'Matyas Antal']"},
 {'name': "Prelude a l'apres-midi d'un faune, L. 86",
  'year': 2011,
  'artists': "['Claude Debussy', 'Valery Gergiev', 'London Symphony Orchestra']"},
 {'name': 'Concerto For Two Pianos, K. 365, 3rd Movement',
  'year': 1984,
  'artists': "['Wolfgang Amadeus Mozart', 'Sir Neville Marriner', 'Academy of St. Martin in the Fields', 'Imogen Cooper', 'Anne Queffélec']"},
 {'name': 'Sinfonia No. 12 in G Minor, MWV N12, "Fuga": II. Andante',
...
  'year': 1997,
  'artists': "['Felix Mendelssohn', 'Northern Chamber Orchestra', 'Nicholas Ward']"},
 {'name': "Cello Sonata No. 5 in D Major, Op. 102 No. 2: II. Adagio con molto sentimento d'affetto",
  'year': 1984,
  'artists': "['Ludwig van Beethoven', 'Emanuel Ax', 'Yo-Yo Ma']"}]
```

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                 {'name': 'Symphony No. 7 in C Major, Op. 105', 'year': 2016},
                 {'name': 'Intermezzi, Op. 117: 1. In E-Flat Major', 'year': 2005}], general_data)
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My selection

Recommendation