

## Data Management and Artificial Intelligence Lab Class 6

In this Labclass, you will deal with some data about music and artists in **influence\_data.csv** and **full\_music\_data**. To be specific, **influence\_data.csv** represents musical influencers and followers, as reported by the artists themselves, as well as the opinions of industry experts. These data contains influencers and followers for 5,854 artists in the last 90 years. And **full\_music\_data.csv** provides 16 variable entries, including musical features such as danceability, tempo, loudness, and key, along with artist\_name and artist\_id for each of 98,340 songs.

### Task 1 Warm-up task(15 min)

In this task, we are interesting in the relationship bewteen "valence", "liveness" and "popularity" in each decade. Starting from 1920 to 2020, you should visualize the relationship of valence and liveness of all songs in each decade, and highlight the top 10 percent of songs that were most popular. The desire output is Fig 9.

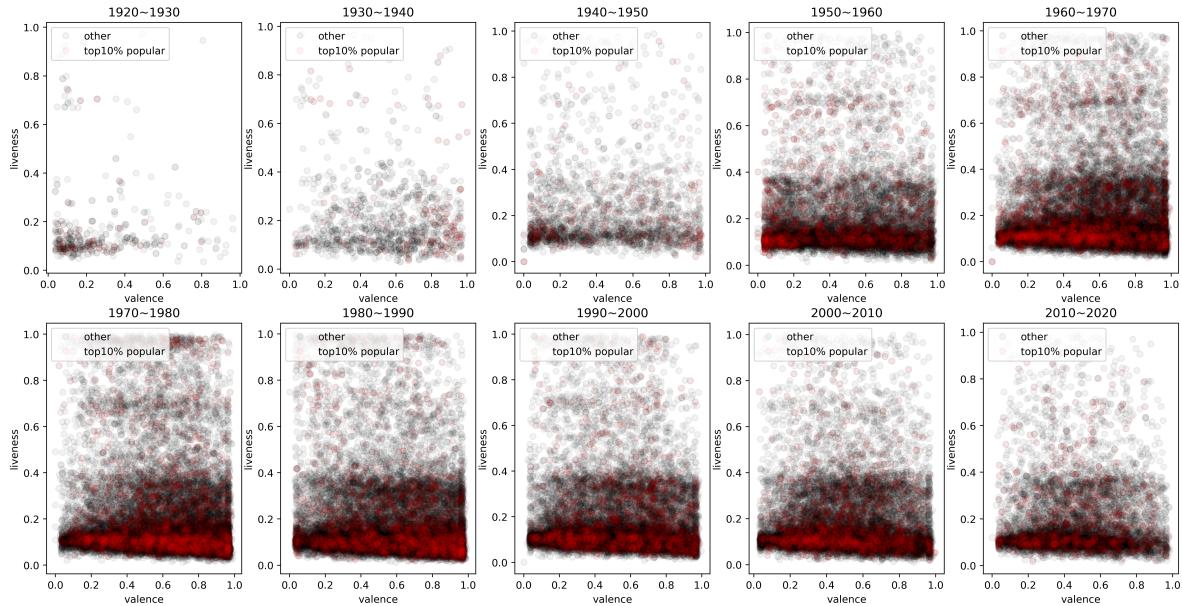


Figure 9: Lab6\_task1

### Task 2 Average attributes for different years (20min)

In this task, we want to explore how each musical property changes over time. For each year from 1920 to 2020, you need to calculate and visualize the average properties of all the music for that year. Here, we mainly focus on danceability, energy, valence, tempo, loudness, acousticness, instrumentalness, liveness, speechiness and duration\_ms these ten properties. The desired output is Fig 10.

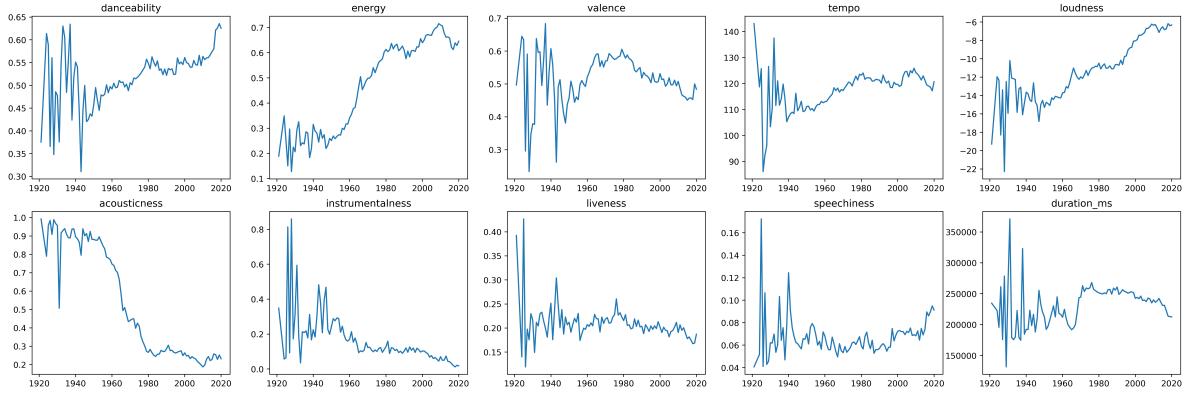


Figure 10: Lab6\_task2

### Task 3 *About the four most prolific musicians(20min)*

First of all, the top four composers are not known, and you need to do data crunching to get that information. For these four musicians, we wanted to explore the relationship between energy and loudness in their music. Please draw them in the graph and use the Red Cross to indicate the average values. The desired output is Fig 11.

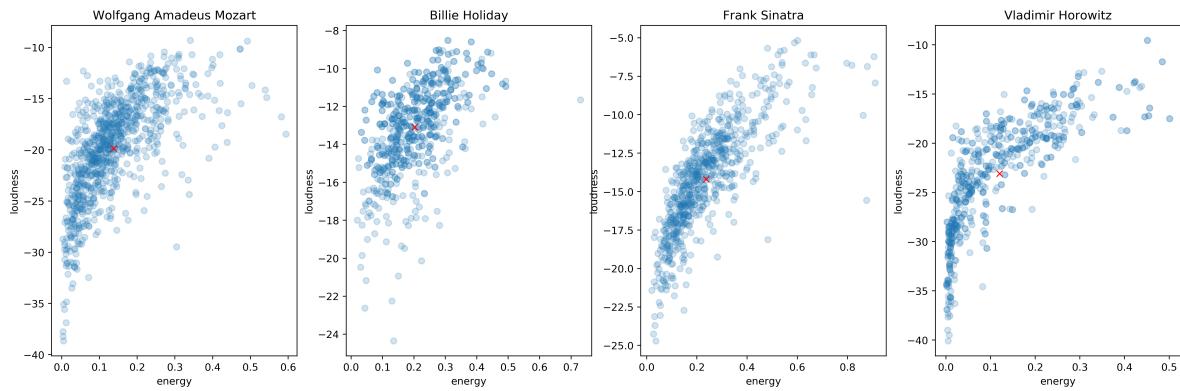


Figure 11: Lab6\_task3

### Task 4 *The popularity of different musical genres(20min)*

In this task, we wanted to explore the popularity of different musical genres. Here, the musical genre of the song is considered to be the main musical genre of its composer. Please plot the popularity distribution of each musical genre. The desired output is like Fig 12.

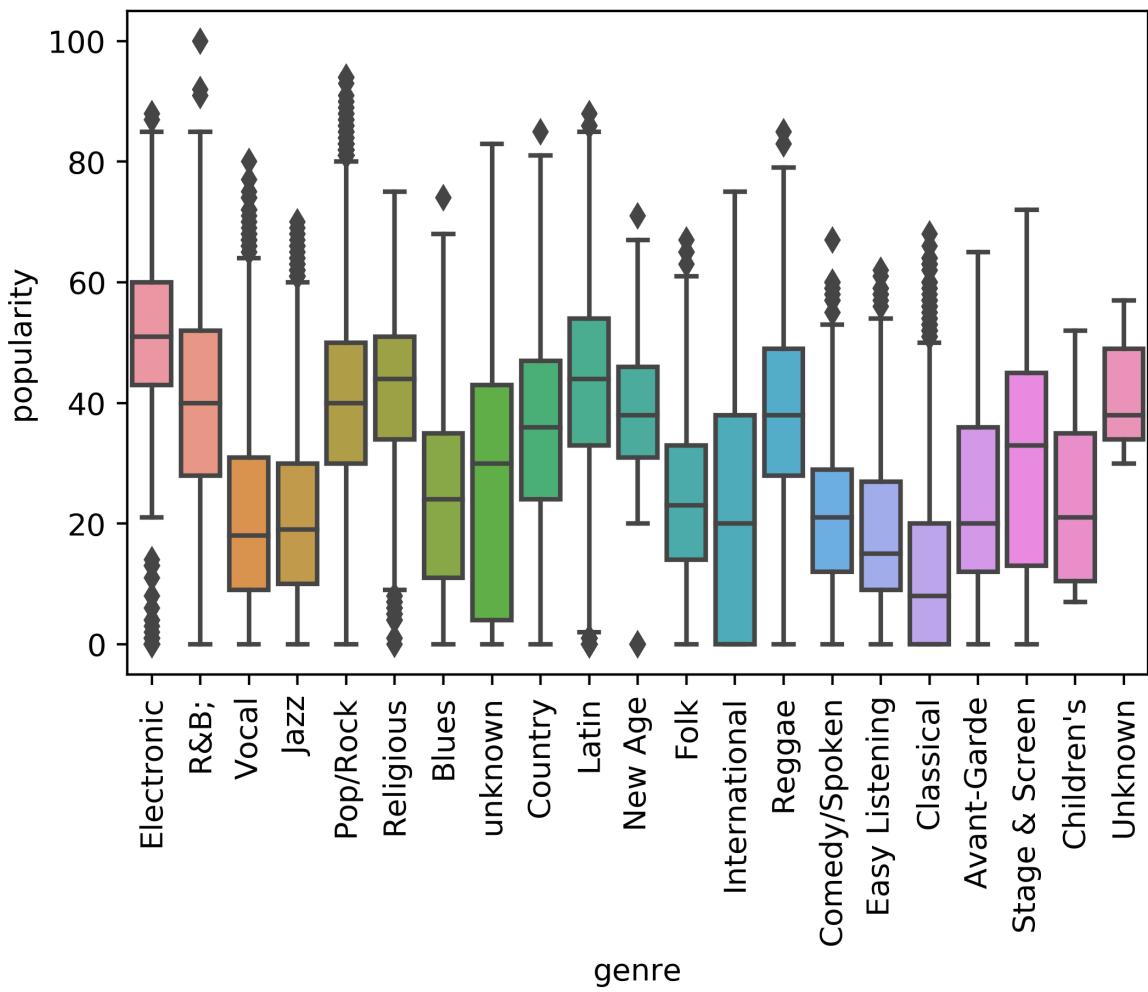


Figure 12: Lab6\_task4