Clustering of Spotify data to Infer Relationships of Genres and Show US Trends Over Time

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Summary

Spotify is a music streaming service that provides millions of people with virtually unlimited amounts of music spanning across multiple genres and time periods. All a person has to do to access this expansive catalogue is to sign up and start listening. Lots of data and metadata characterize music and a variety of very useful statistical information can be derived from such a large database of information. The objective of this project is to leverage this data to answer some questions about the patterns of music trends and to generate a model that can sufficiently infer the relationships of genres, artists, and albums.

Another function of this work would be to create a spectrum of "feelings" for some individual songs that will show the emotional qualities of them and then to assign them to specific regions where those songs are available. A different, more mechanical way of showing this would be to analyze how the composition of music has changed over time by utilizing the *key centers* of songs, tempo, number of keys, and *instrumentalness*. *Keys* being the specific group of notes that establish the tonality of a song and *instrumentalness* being how instrument heavy the composition of a song is.

The existing questions posed can be listed as:

- What relationships are there between different genres/styles of music?
- What kinds of emotions are displayed in music and how does that change over time?
- Which regions in the world listen to which genres and emotional qualities of music, and can that be related with seasonality at all?
- How has music composition change over time?

Resources

The primary resource for this project is the ['spotifyr'] package, an wrapper for the Spotify web API which can be found with the following R commands

```
install.packages("spotifyr")
library("spotifyr")
```

Other resources include

- Sentiment analysis of musical taste: a cross-European comparison
- A paper titled Analyzing Spotify Data written by Jeroen van den Hoven from VU University.