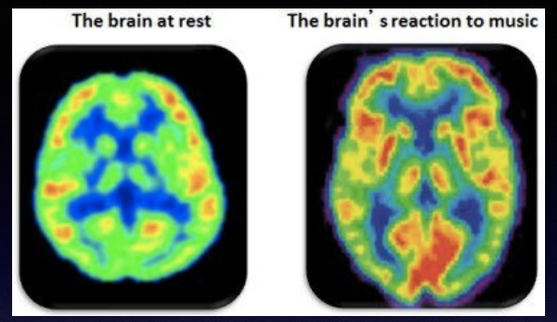
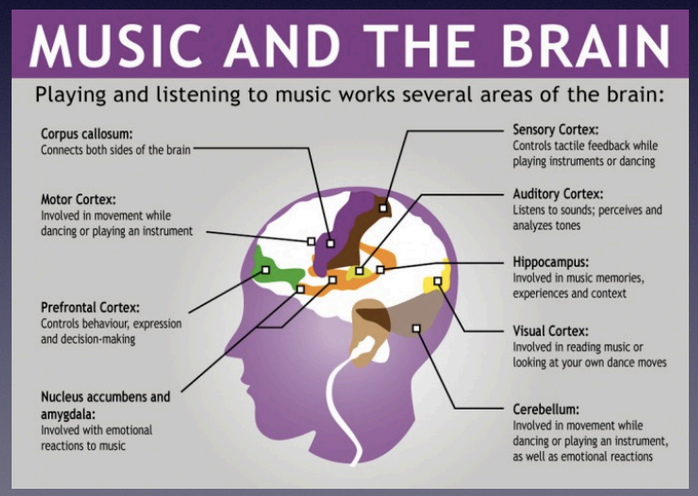
the music that moves us

Good morning/afternoon and welcome to today's presentation on music and the elements that are used to distinguish one genre from another

how music affects your mind and emotions





Whether we are conscious of it or not, music affects multiple areas of our brains. Because of this, music can be a powerful influencer.

mind your music

- mood
- memory
- work performance
- exercise endurance
- blood pressure
- skin

music can affect us both mentally and physically. The business world is increasingly aware of this, and as a result, they attempt to capitalize on this knowledge by using music as a tool of influence.

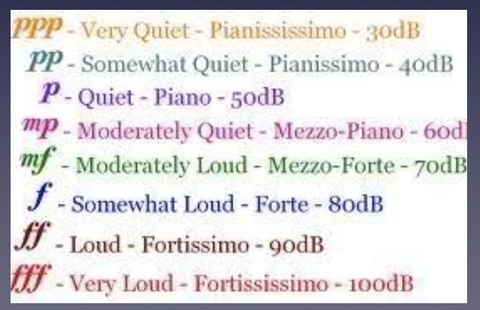
the problem of playlist production

businesses buy or subscribe to playlists based on the environment they are trying to create. These playlists are typically categorized by the different genres of music. Therefore, as a company that produces playlists, it is important that music be classified according to the genre that it most resembles.

besides how differently music can sound, there are elements that make one genre different from another.

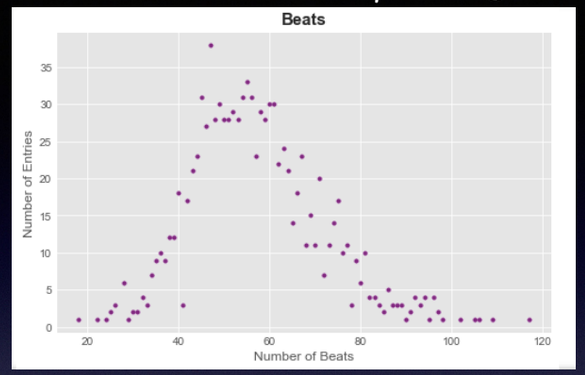
some elements of music

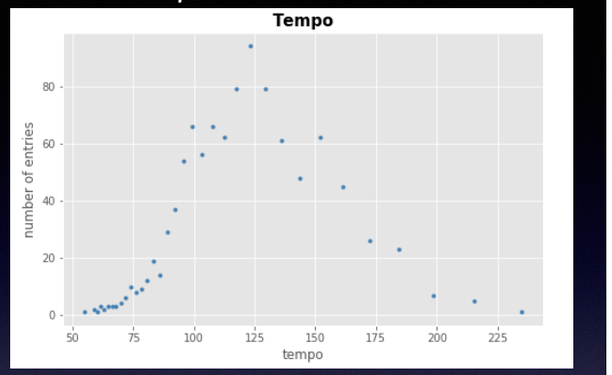
- beat
- tempo
- chroma
- spectral centroid
- zero crossing rate

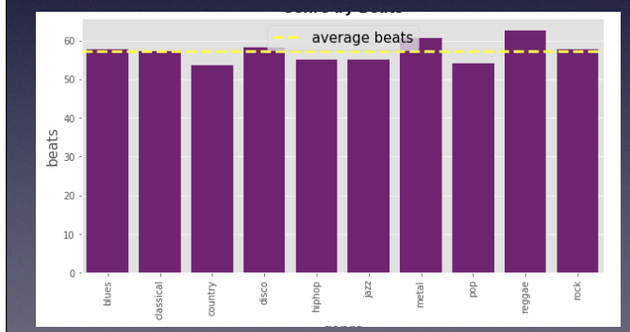


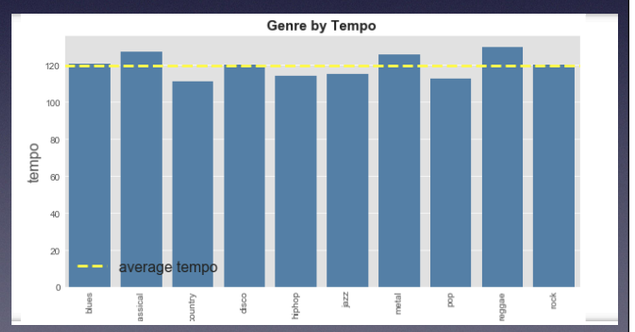
Analysis of music is based on these elements or characteristics. Some of these we are fairly familiar with while others are more technically calculated or related to the audio signal of the music.

comparing beats with tempo...





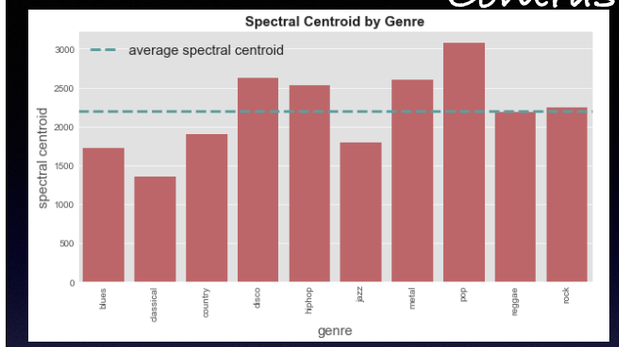


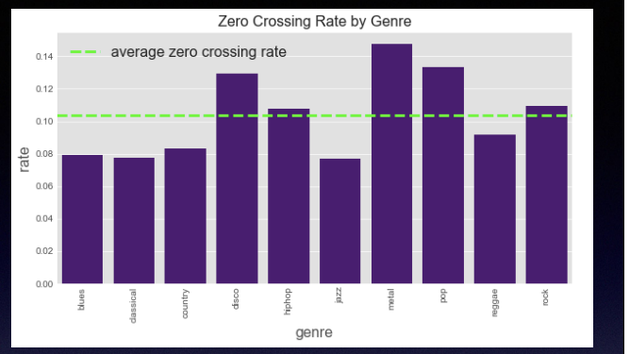


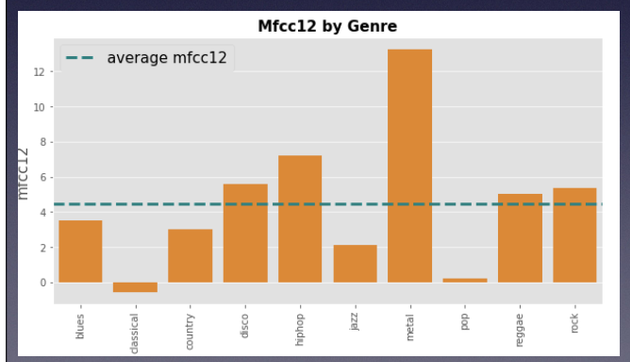
comparing beats to tempo

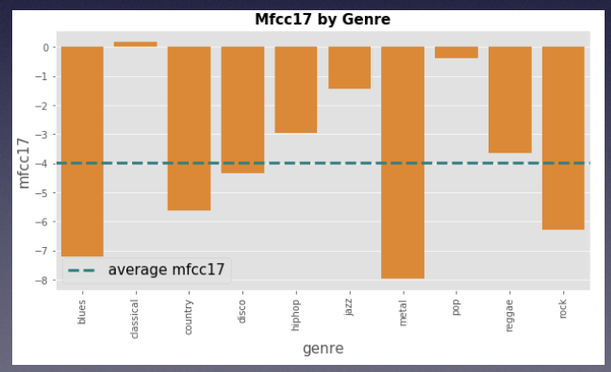
When we look at the beat of the music and the tempo, we see that the graphs look very similar to each other. This makes sense since tempo is a rate involving beats. There is also not a lot of distinction between the genres. Since all genres contain songs that have both slower and faster tempos, we need other characteristics to help us better distinguish between them.

Contrast





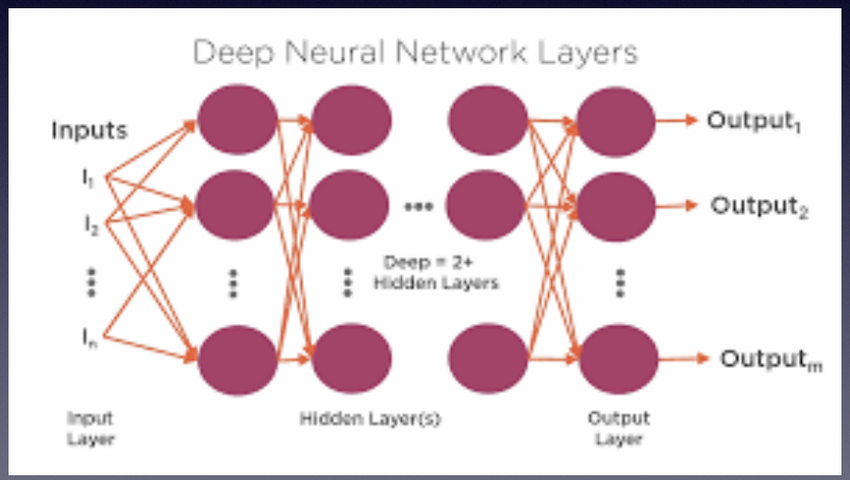




We can start to see a difference between some of the genres when we look at some of the other feature elements within music. These features relate more to the analysis of the musical audio signal.

methodology

- deep learning - using layers to build our model



For this project, a deep learning model was used to classify music into genres. This type of model is designed to continually analyze data with a logic structure similar to how a human would draw conclusions. The elements of the music are used as input for the model and from these, the model learns which genre to best classify a selection of music to.

drumroll please...

- training data - 92% accuracy
- testing data - 71% accuracy

Our model produced a 92% accuracy with the training data and a 71% accuracy with the test data.
Because some songs can be considered as belonging to more than one specific genre of music, this level of accuracy may be considered sufficient.

stay tuned!

- analyze incorrect classifications
- add more features
- Consider more genres

Further work on this project would include investigating which genres tend to be misclassified the most. Possibly adding more elements of music would further help to distinguish one genre from another.
The data could also be expanded to include additional genres of music.

thank you

presentation by jenyl murdock

Thank you for your attention and for allowing me to be here today!