Project Proposal

Predicting the Mood of a Song

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Domain

Often, people will find themselves wanting to listen to a certain style of song based on their own emotional state. Someone looking to workout will want high intensity, energetic songs. Someone who just went through a breakup will probably want slower, ballad-type songs. In that sense, songs can characterize certain moods or emotions due to their own intrinsic factors. For this project, I intend to create a classification model that can listen to an audio sample of a song, and determine what kind of mood or emotion the song depicts. The model will be trained off of audio samples pulled from Spotify via the API, and will utilize supervised learning. The samples will be pulled out from pre-selected Spotify playlists curated towards each mood or emotion.

An **MVP** would be capable of utilizing the innate factors about songs that Spotify's API provides for classification purposes. It should also be capable of reading audio samples and extracting some features about the song out. It won't have every audio feature available for usage however. In addition, the MVP should have an automated model that can quickly run through the process and make adjustments as needed.

Data

VARIABLE	TYPE	DESCRIPTION	USED IN MODEL?
MOOD	String	The classification variable	Target Variable
SONG NAME	String	Song Identifier	N
ARTIST NAME	String	Artist Identifier	N
TOKEN	String	Unique song identifier utilized for Spotify API	N
SAMPLE	Array	A short audio sample, converted into an array for analysis purposes	N
MEL-FREQUENCY CEPSTRAL COEFFICIENTS	Array	An array that represents the power spectrum of an audio sample. Essentially describes the shape of the sound	Y
CHROMA FREQUENCIES	Array	Feature that splits the audio sample up into each of the 12 semitones	Y

SPECTRAL CENTROID	Int	Indicates where the center of mass of the sound sample is located	Y
ZERO CROSSING RATE	Int	Rate at which sound switches from positive to negative, or vice-versa	Y
SPECTRAL ROLL-OFF	Float	Measure of the shape of a signal	Y
MODALITY	Boolean	Determines whether the song is in Major or Minor key	Y
ENERGY	Float	A value that tries to measure how intense the song is	Y
TEMPO	Int	Measures how fast the song is in Beats Per Minute (BPM)	Y
VALENCE	Float	Measure of the positivity of the song	Y
INSTRUMENTALNESS	Float	A value for how much of the song involves vocals, and how much is more purely instrumental sounds	Y
LOUDNESS	Float	Measures how loud the song is in decibels (dB)	Y
SPEECHINESS	Float	Measures how much of the song is spoken word as opposed to singing	Y
TOTAL			13 Variables Utilized