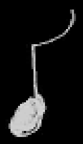
How does artistly work?



danceability	speechiness	tempo	more
.6302	.7000	120	...

Every song on Spotify has different music metrics associated with them.

2 weeks

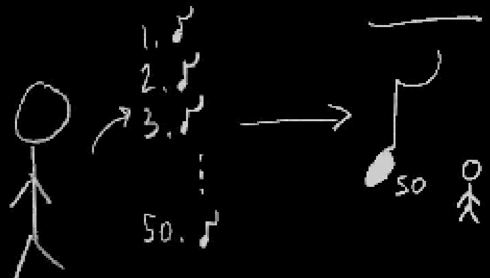
Spotify keeps track of your most listened to songs over different ranges of time.

$$\bar{♪}_n = c_1 \times \begin{array}{cccc} f_1 & f_2 & f_3 & f_4 \\ \hline .123 & .456 & 100 & \dots \end{array} + c_2 \times \begin{array}{cccc} .111 & .222 & 120 & \dots \end{array} + \dots = \begin{array}{cccc} f_1 & f_2 & f_3 & \\ \hline .120 & .400 & 105 & \dots \end{array}$$

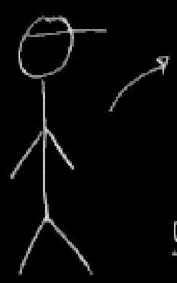
We can create a vector, $\bar{♪}$, that represents a weighted average of a users' music taste.

$c_1 > c_2 > \dots > c_n$

This means the most popular song for a user is responsible for the highest contribution to $\bar{♪}$.



Now, we can associate a Spotify user with a vector that describes their ideal values for different Spotify music features.



1. ♪$_1$
2. ♪$_2$
3. ♪$_3$

⋮

50. ♪$_{50}$

Now, we have an artist on Spotify with songs ♪$_i$, and discography ♫$_n$.
For each song in this artist's discography, let's compare it to our users' list of ideal song features, ♩$_{50♀}$.

	f_1	f_2	f_3	f_4	f_5	f_6
♪$_i$						

	f_1	f_2	f_3	f_4	f_5	f_6
♩$_{50♀}$						

If we find the standard deviation of each feature, σ_{f_i}, in our artists' discography, then we can compute the z-score of our desired ideal feature values.

$$z_{f_i} = \frac{♪[i] - ♩_{50♀}[i]}{\sigma_{f_i}}$$

Then, we can sum all our z-scores across all m features to get a number that represents a distance between this particular song and our idea of an ideal song, α_i.

The distance between the k^{th} song in an artists' discography

$$\alpha_k = \sum_{i=1}^{m} z_{f_i}, \Rightarrow \sum_{i=1}^{m} \frac{♪[i] - ♩_{50♀}[i]}{\sigma_{f_i}}$$

The sum of all z-scores across m features

The song with the smallest value for α is the most similar to ♩$_{50♀}$