 Spotify recommendation system is composed of 3 different algorithms which makes it 3 times better than 1 algorithm.

* Collaborative filtering
* Natural language processing system
* Sonic profiles

Collaborative Filtering has nothing to do with the music itself.

* Located in the Spotify giant matrix realm, they store a giant matrix, its roughly 433,000,000 million rows by 80,000,000 million columns indexing every single user and every single song on platform recording how often each person listens to each song.
  + This matrix allows them to objectively determine which users are most similar.
    - If one row is hitting all the same columns as another row => that means those two users are listening to the same songs.
    - If one of the rows have an active column that the other one doesn’t have, that song would theoretically be good to recommend.
* Spotify can’t rely entirely on Collaborative Filtering because it’s not very accurate especially when it comes to people’s multi-faceted music tastes as it tends to just generally promote popular music while burning songs that don’t have a ton of listening data to work with.

That’s where Natural Language Processing System comes in

* This is because one of the best ways to categorize songs is with words and it turns out the internet has a whole bunch of them. Therefore, Spotify is constantly gathering text associated with the songs.
  + It will look at texts on its own platform, stuff like song title, playlist description and lyrics, but it will also pull data from the rest of the internet. Spotify scrapes song reviews, news article, comment section, etc. all of this goes into building an association word bank for each song and artist on its platform.

Spotify Sonic Profiles

* For each song on the platform, Spotify generates time frequency representation.
  + Warmer colours mean louder decibel levels, so for example, at exactly 12 seconds into the song, these are the frequencies that are most present. This representation is then dumped into a neural network.
  + The neural network isolates all the major features of the song stuff like its Key, Loudness, Time signature, Tempo, Timbre and compares these qualities individually against other songs you like and other song you haven’t heard.
* Then in tandem with the Collaborative Filtering and Natural Language Processing algorithm, these Sonic Profiles are used to precisely hone in on songs that are acoustically similar enough to the kind of music you are already listening to. While also experimenting with the one or two variables to avoid presenting you with anything too stale.