



Match My Music

A Song Recommender System Matching Your
Theme Song to More Theme Songs

Corpus

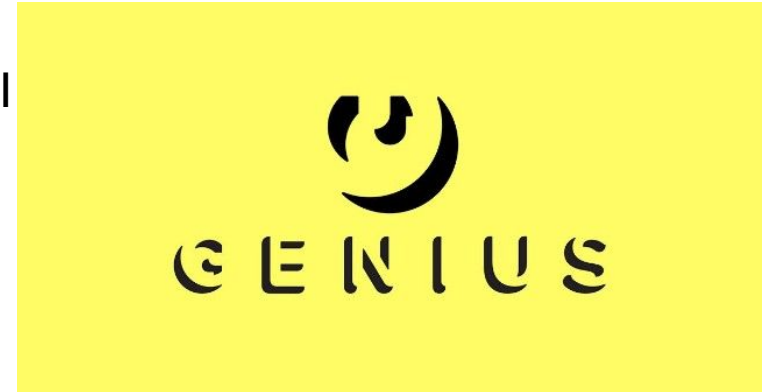
1. `spotipy` : python Spotify API

Crowdsourced sentiment -

happy, sad, angry, chill

2. `lyricsgenius` : python client for Genius.com API

Lyrics search of songs from Spotify





Spotify Song List

→ Song Duplicates

Artist/Title

Also multiple years for same song

→ Mood Multi-Class

Only kept songs classified by 1 emotion

→ Missing Year

→ 2.2M to 112k



Added Lyrics

Only to remove so many...

→ non-English

Focus on English language

Remove non-ASCII characters

→ Lots of Garbage

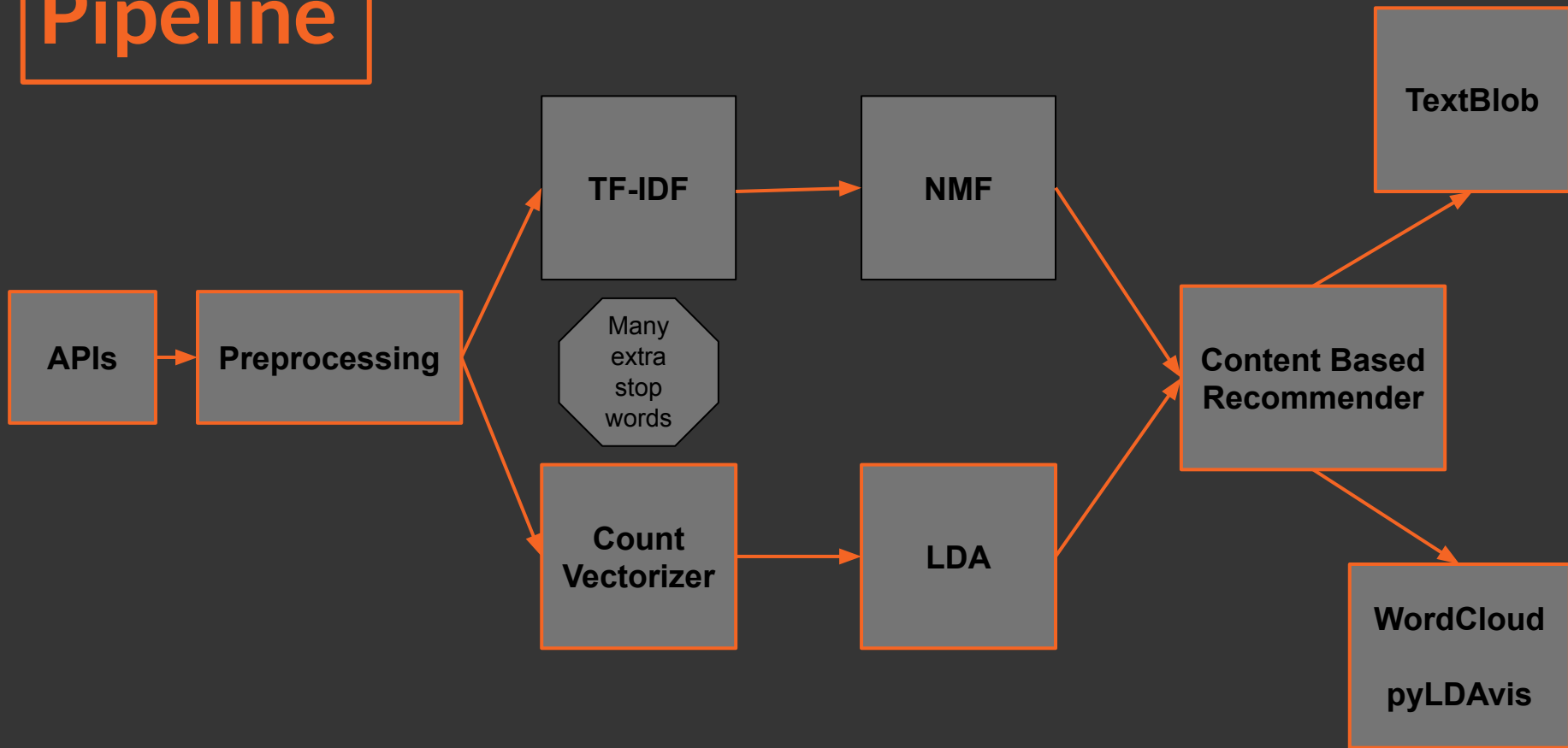
Spam, transcripts, song lists, Congress sessions,

→ General Lyrics Cleaning

[Verse 1] (He sang:) (She sang:) [Chorus]

→ 112K to 47k

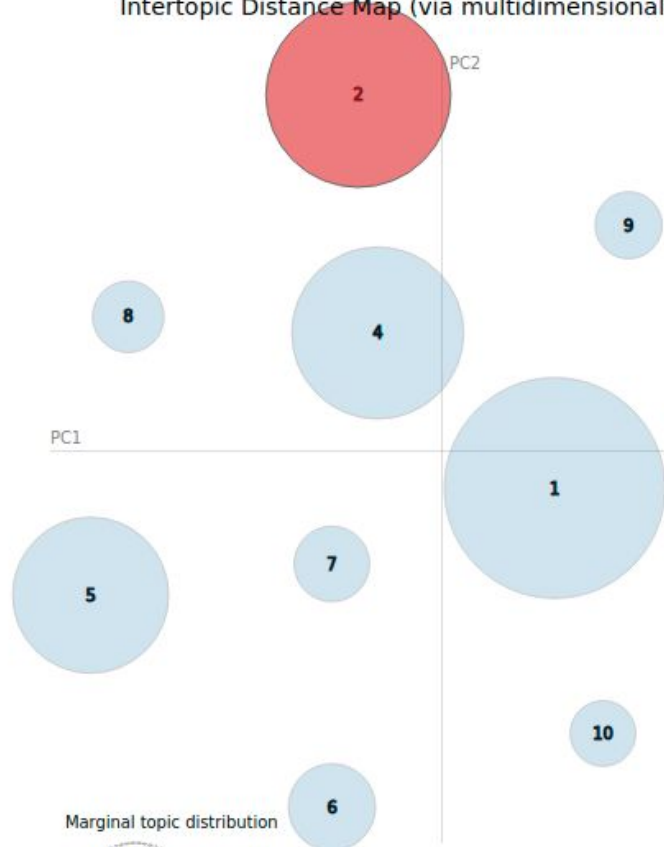
Pipeline



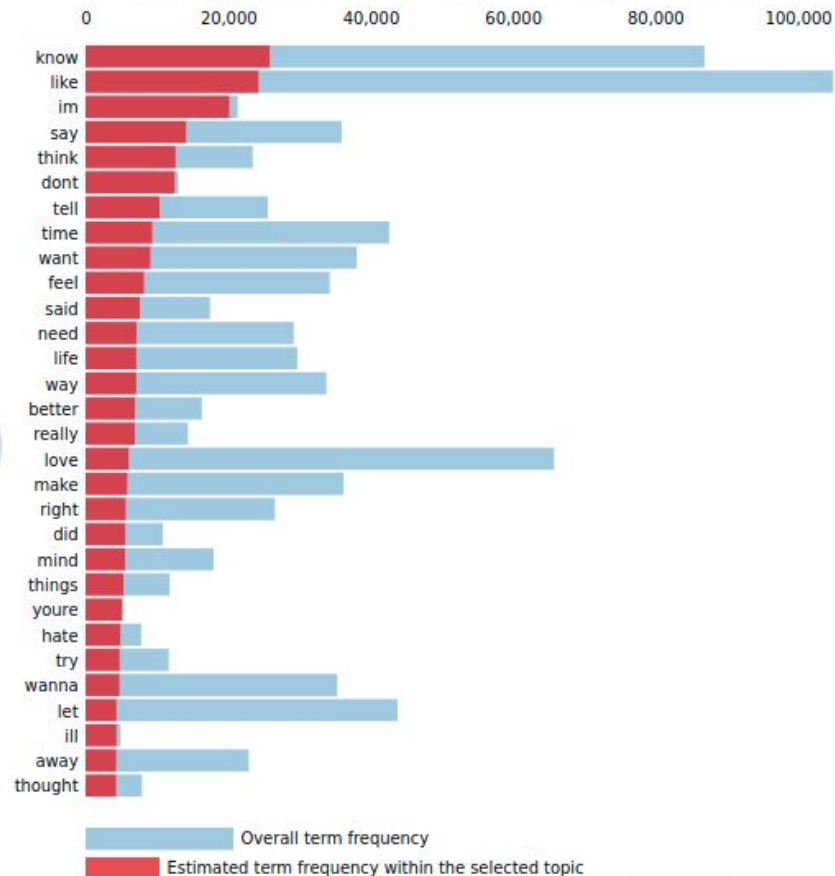
LDA



Intertopic Distance Map (via multidimensional scaling)



Top-30 Most Relevant Terms for Topic 2 (17.5% of tokens)



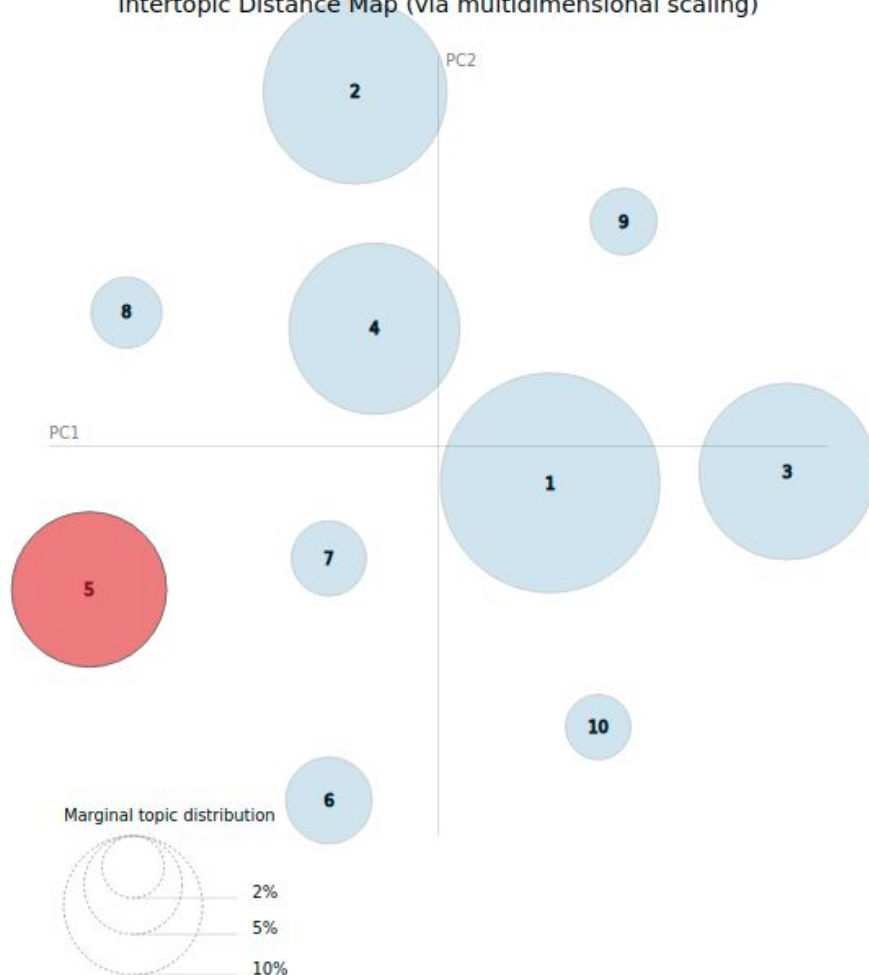
1. $\text{saliency}(\text{term } w) = \text{frequency}(w) * [\sum_t p(t | w) * \log(p(t | w)/p(t))]$ for topics t ; see Chuang et al. (2009)

2. $\text{relevance}(\text{term } w | \text{topic } t) = \lambda * p(w | t) + (1 - \lambda) * p(w | t)/p(w)$; see Sievert & Shirley (2014)

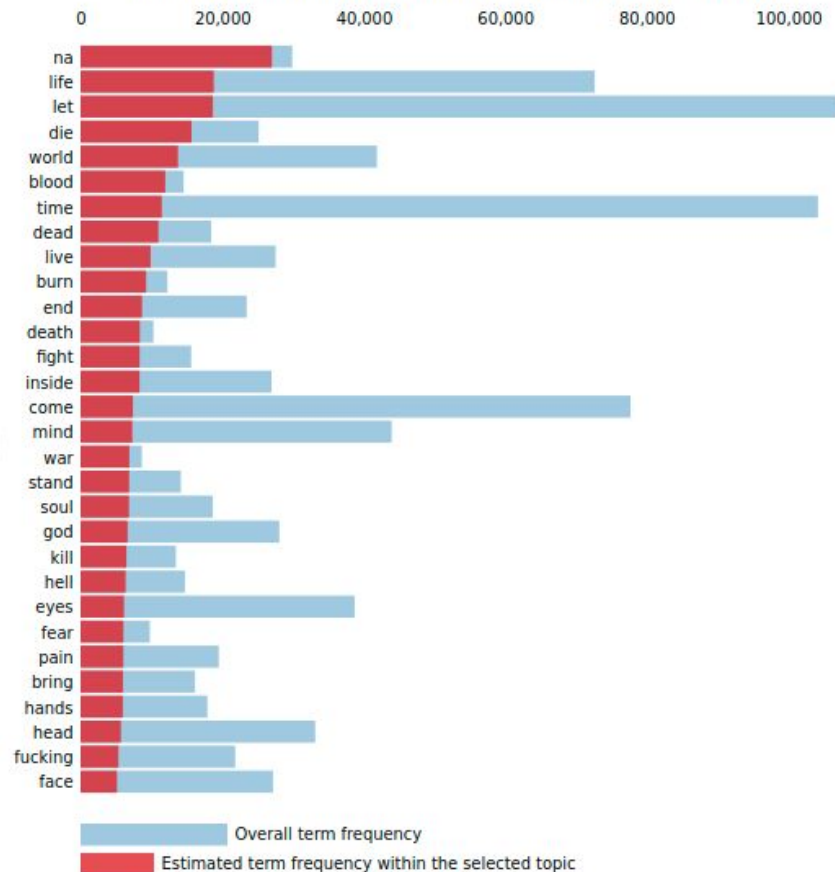
LDA



Intertopic Distance Map (via multidimensional scaling)



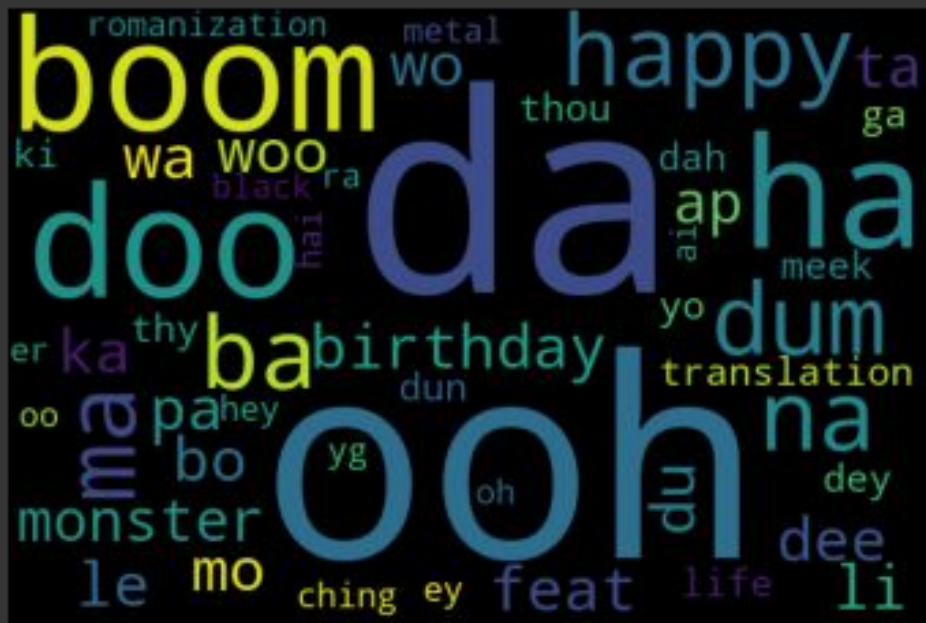
Top-30 Most Relevant Terms for Topic 5 (12.5% of tokens)



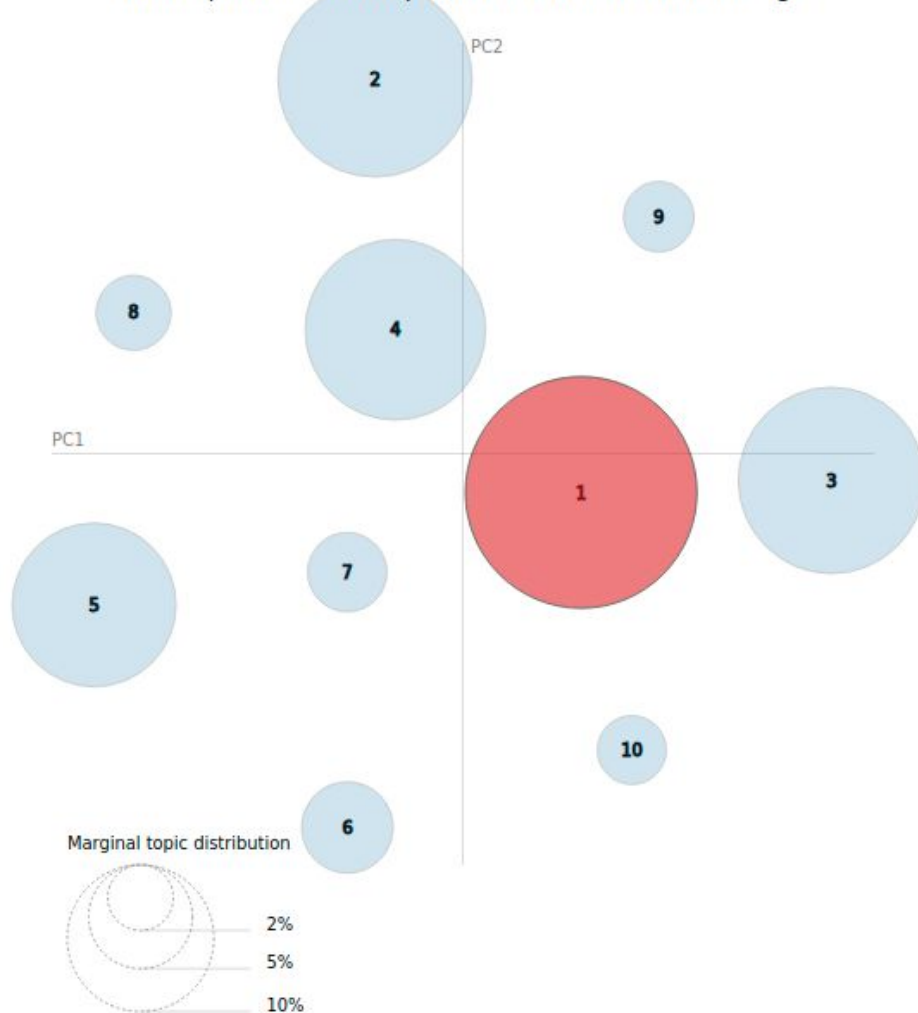
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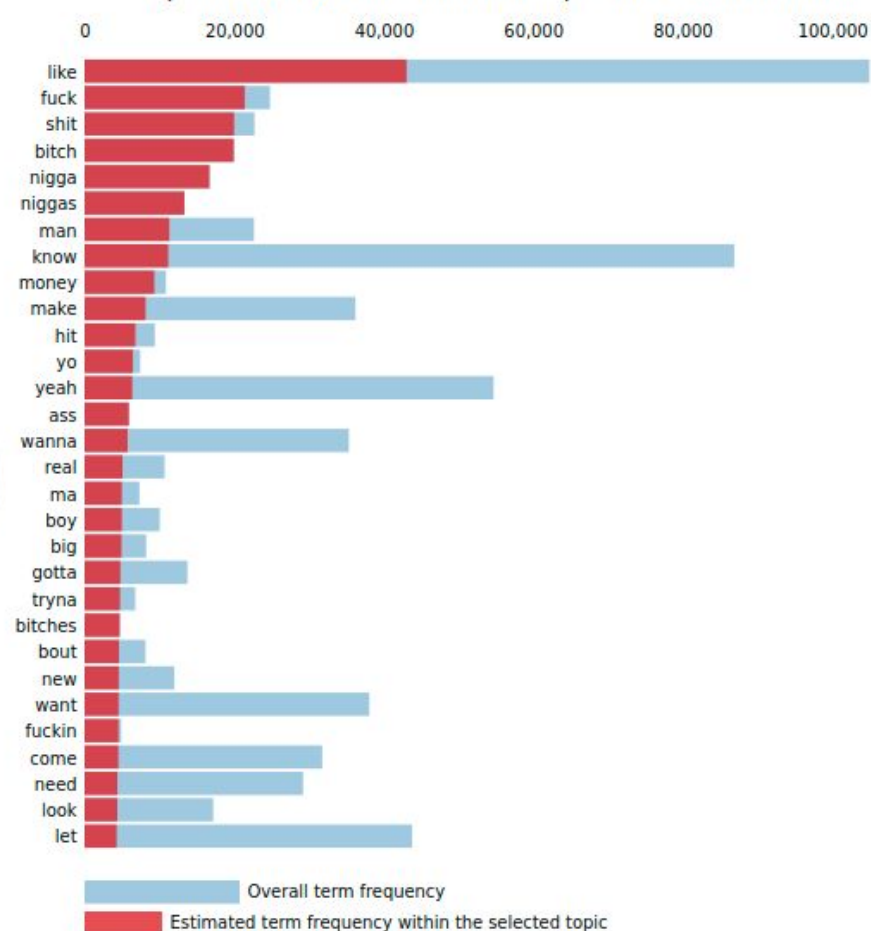
LDA



Intertopic Distance Map (via multidimensional scaling)



Top-30 Most Relevant Terms for Topic 1 (24.9% of tokens)



1. $\text{saliency}(\text{term } w) = \text{frequency}(w) * [\sum_t p(t | w) * \log(p(t | w)/p(t))]$ for topics t ; see Chuang et al.

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LDA



Song Recommender

	Artist	Title	Lyrics
0	Rick Astley	Never Gonna Give You Up	We're no strangers to love You know the rules ...
1	Imagine Dragons	Believer	First things first I'ma say all the words insi...
2	Toad The Wet Sprocket	Walk On The Ocean	We spotted the ocean at the head of the trail...
3	The Rolling Stones	Jumpin' Jack Flash	One two! I was born in a crossfire hurric...
4	Ramones	I Wanna Be Sedated	Twenty-twenty-twenty four hours to go I wanna...
5	Frank Sinatra	Theme From New York, New York	Start spreadin' the news I'm leavin' today I ...
6	Justin Timberlake	CAN'T STOP THE FEELING!	I got this feeling inside my bones It goes el...

Artist	Title	Mood	Lyrics
Thomas Rhett	Learned It Fr	sad	How to be proud of that town ain't nobody heard of Had a big dream, seventeen, some day how to
Tucker Beatha	Rock On	happy	Girl I really did mean it when I wished you the best Good to hear you're killing it way out we
Brett Kissel	Girl in a Cow	happy	I like a girl raised on a farm Dusty old boots and Daisy Duke charm In a beat up truck Im ridi
Tori Amos	God	angry	God sometimes you just dont come through God sometimes you just dont come through Do you need

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Artist	Title	Mood	Lyrics
Angel Olsen	Creator, Dest	angry	I watch from a tower in the back of my mind I watch from a window as the living walk by down be
Sticky Finger	Cool & Calm	happy	Oh, when these feelings run high, I'm gonna feel alive Like the rebirth that comes from within
FKJ	Learn to Fly	chill	Hey yo I heard it across the grapevine Sweet taste of the alibi, yeah It's a dangerous scene
Parkway Drive	Home Is For T	angry	If home is where the heart is Why do I feel so fucking heartless? The crumbling skyline Cuts a

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Toad The Wet	Walk On the 0	happy	We spotted the ocean at the head of the trail Where are we going so far away? And somebody tol
Abandoned By	Act as If	angry	And here's the cold truth You'll amount to nothing And while I am setting the world on fire You
Hayne	Cold Winters	sad	I won't trouble you with these thoughts Never tell you how hard I fought To leave you behind me
Patty Griffin	Not Alone	sad	She sees him laying in the bed alone tonight Only thing touching him's a crack of light Pieces

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The Rolling S	Jumpin' Jack	happy	One two! I was born in a crossfire hurricane And I howled at the morning drivin' rain Bu
Sik-K	19 CAYENNE FR	angry	Keep goin', keep goin Keep goin', keep goin' Keep goin, keep goin' , keep goin' I don't nee
Crichy Crich	Freak Distrik	angry	I'm straight from the mix, your bitch is my mistress She uses my dick to take off her lipstick
slowthai	Psycho	angry	Woo! Let's start purging! Look at the way I walk, look at the way I talk Where is the peppe

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Ramones	I Wanna Be Se	angry	Twenty-twenty-twenty four hours to go I wanna be sedated Nothing to do nowhere to go-o-oh I wa
Ramones	The KKK Took	angry	She went away for the holidays Said she's going to L.A But she never got there She never got th
Air	Cherry Blossom	chill	I don't want to be shy Can't stand it anymore I just want to say 'Hi' To the one I love Cherry
Guitar Shorty	A Little Less	angry	Come on baby, I'm tired of talking Grab your coat and let's start the walking A little less co

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Frank Sinatra	Theme From Ne	happy	Start spreadin' the news I'm leavin' today I want to be a part of it New York, New York Thes
Flatland Cava	A Life Where	sad	In a life where we work out, there's a house up on a hill A front porch going all of the way r
Joe Purdy	Wash Away	happy	I got troubles oh, but not today Cause they're gonna wash away They're gonna wash away And I ha
Feeling	Wonderwall	chill	"chorus: You won't be half a man if you cry So cry But you don't cry You don't cry You hear my

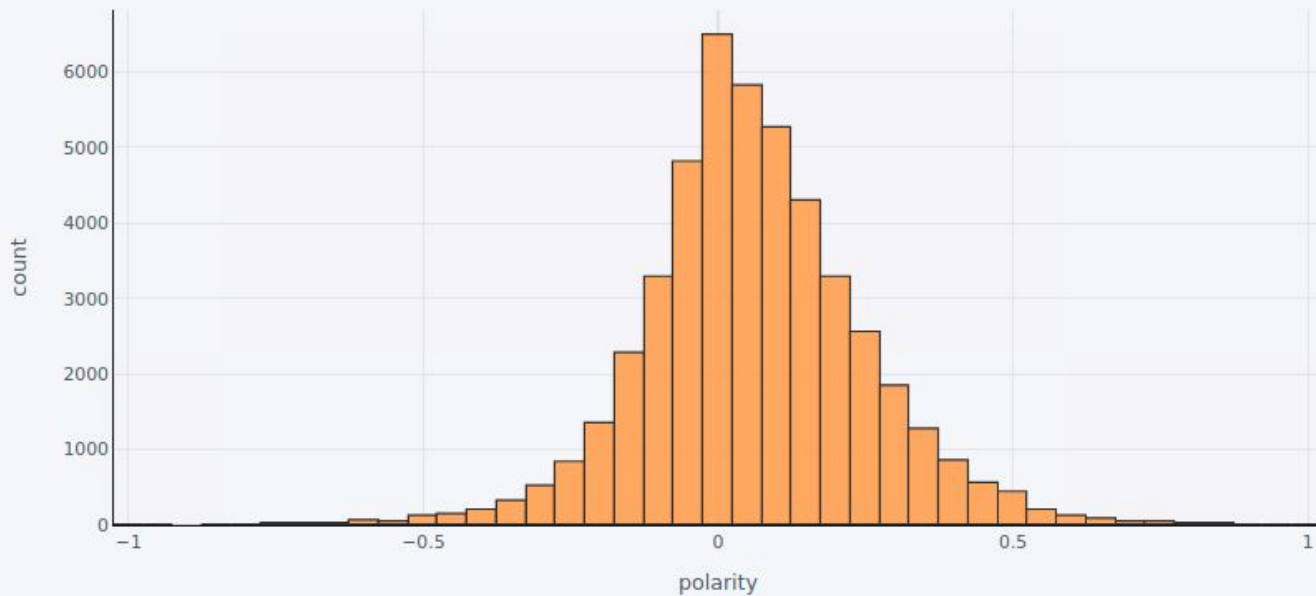
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Artist	Title	Mood	Lyrics
Justin Timber	CAN'T STOP TH	happy	I got this feeling inside my bones It goes electric wavy when I turn it on And if you want it
Biig Piig	Perdida	chill	I just wanna lay here And smoke my cig And drink my wine I think I'm gonna lay here Until my h
KNK	SUNSET	angry	Sunset, for-for y'all Su-sunset, for-for y'all Sunset, for-for y'all Su-sunset, for-for y'all
Nicole Scherz	Baby Love	chill	I remember like it was yesterday First kiss and I knew you changed the game You have me exactl

TextBlob - Sentiment Analysis

Sentiment Polarity Distribution

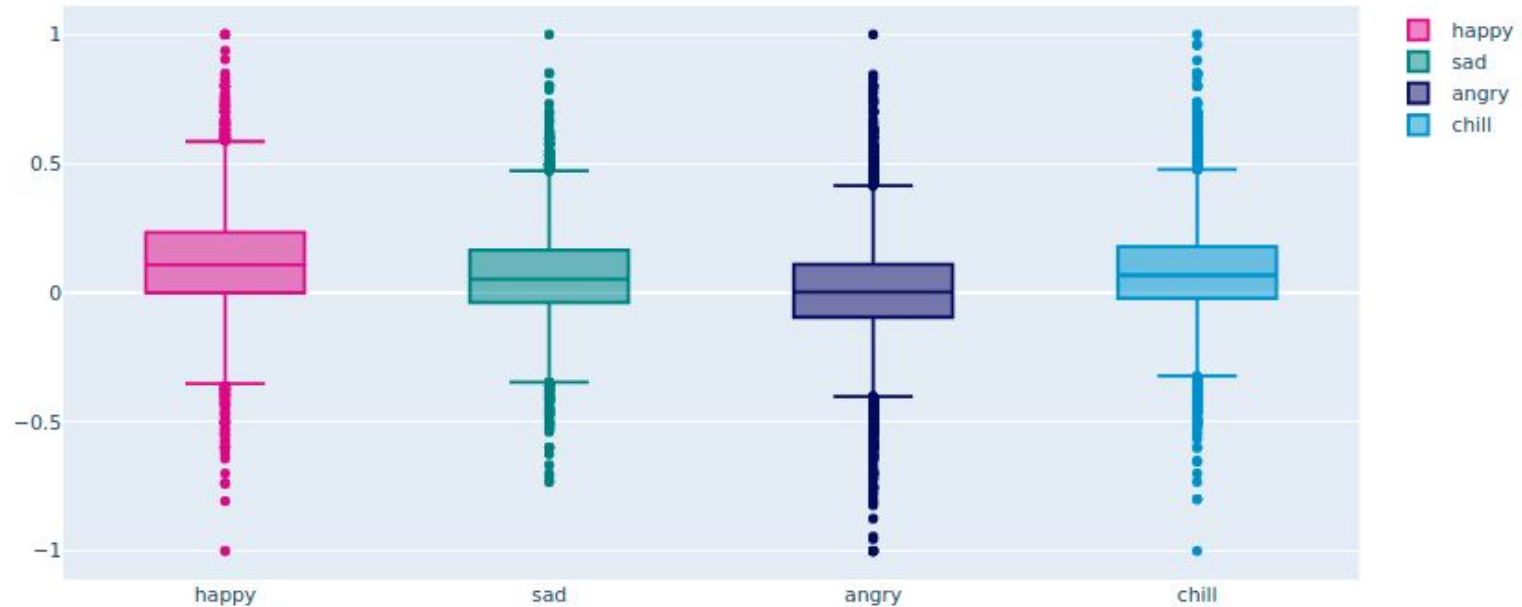


TextBlob - Mood Distribution



TextBlob - Sentiment & Mood

Sentiment Polarity Boxplot of Emotion/Mood





Future

→ **Tweak topics more**

Topic model hyperparameters

Filter non-English words

→ **Filter initial song list more thoroughly**

→ **Use mood label & Spotify music features to enhance recommendations**

→ **Use supervised learning**

Appendix
