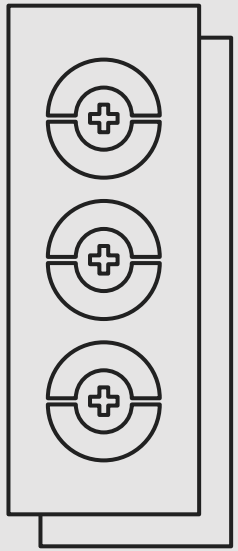
MUSIC RECOMMENDER SYSTEMS

Students: Lovleen Virdi, Kyler Shu, Chris Haleas, Zoya Khwaja

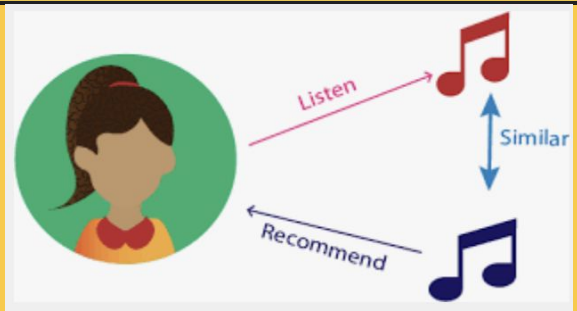


WHAT ARE RECOMMENDER SYSTEMS?

SOME EXAMPLES

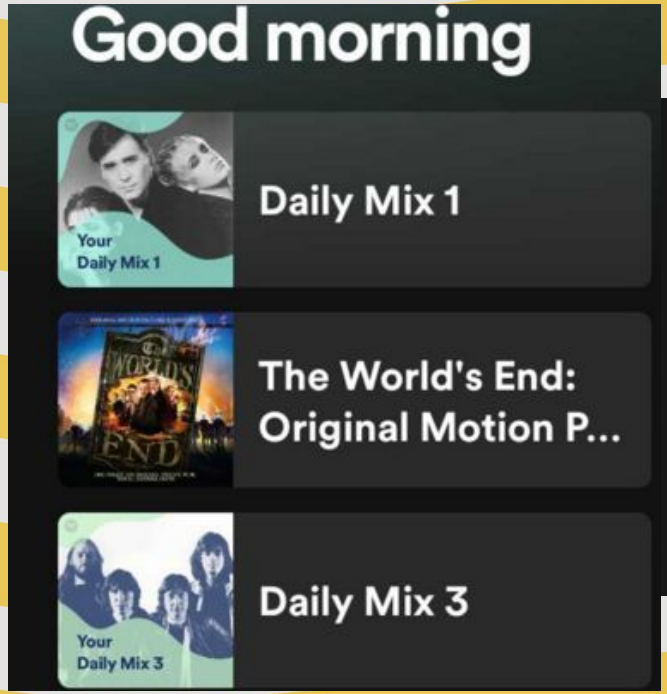
Netflix

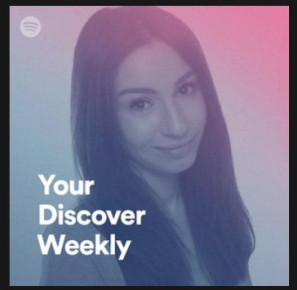
Amazon



WHAT ARE MUSIC RECOMMENDER SYSTEMS?

MUSIC RECOMMENDER SYSTEMS USED IN SPOTIFY





Discover Weekly
Your weekly mixtape of fresh music. Enjoy new discoveries and deep cu...
PLAYLIST • BY SPOTIFY

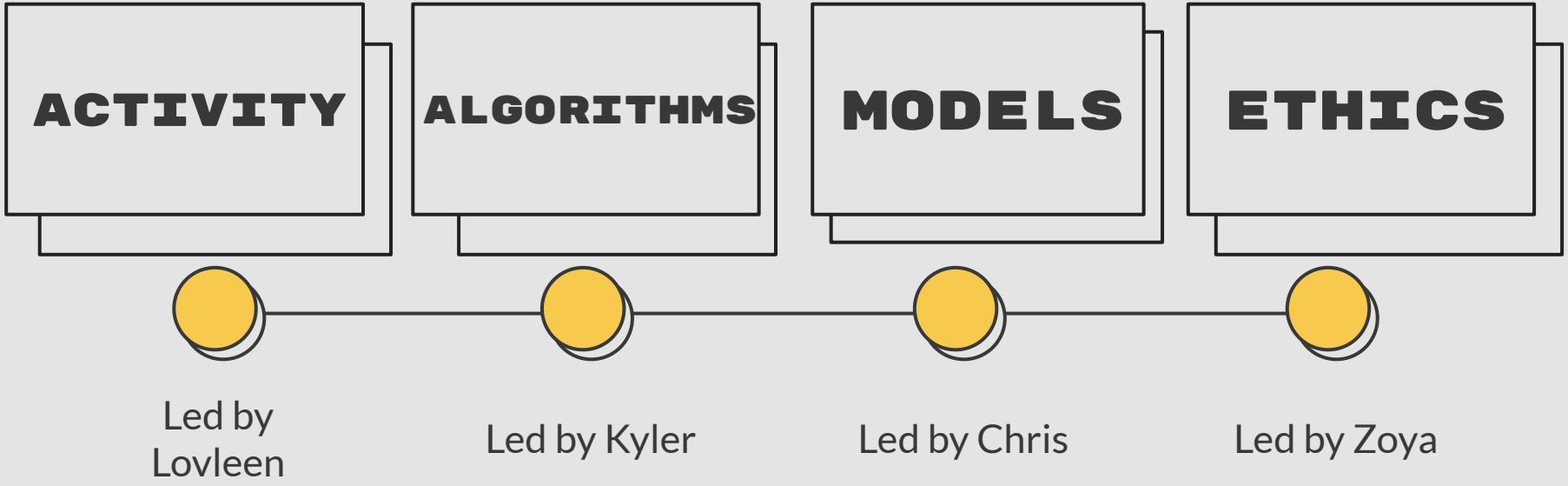
Daily Mix 1
Ty Segall, Jay Reatard, Elvis Costello & The Attractions and more

Daily Mix 2
David Garrett, Lindsey Stirling, Simply Three and more

Daily Mix 3
Zacari, Jay Rock, ScHoolboy Q and more

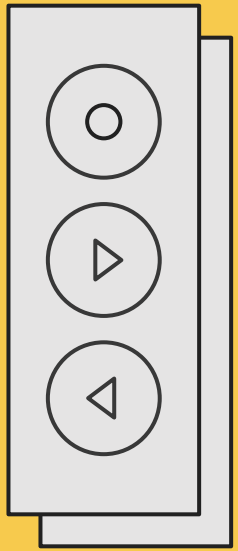
WHAT WE LEARNED THIS WEEK

TODAY'S AGENDA



ACTIVITY

FEEL FREE TO ANSWER IN THE CHAT



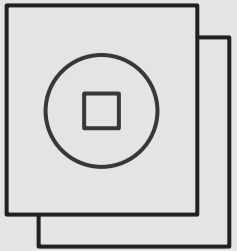
Please make sure to put your answers in the chat

NAME: JOHN
AGE: 22
SEX: MALE
FAVORITE GENRE: POP
FAVORITE SONG: LET IT GO- DJ KHALED FT. JUSTIN BIEBER

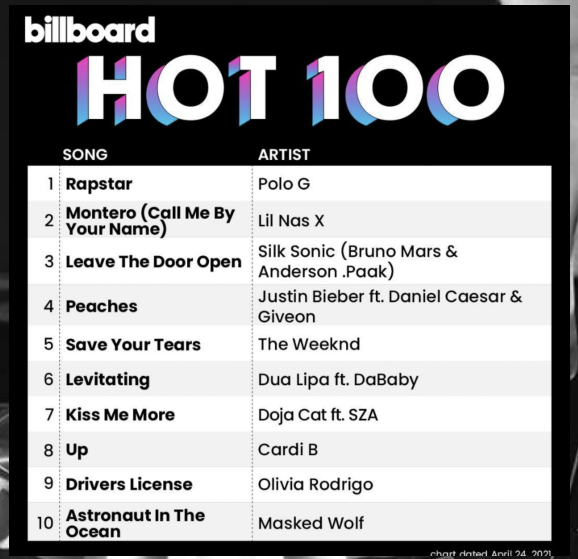
WHAT ARE SOME LIMITATIONS TO THIS?

TYPES OF RECOMMENDER SYSTEMS

- Popular Recommendations
- Content-Based Filtering
- Collaborative Filtering



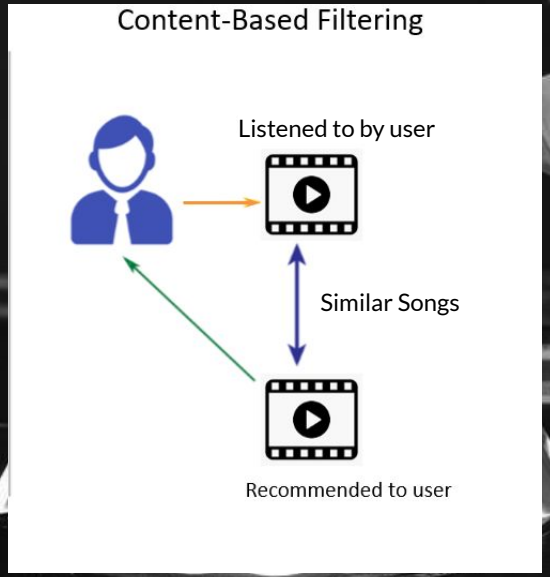
POPULAR RECOMMENDATIONS

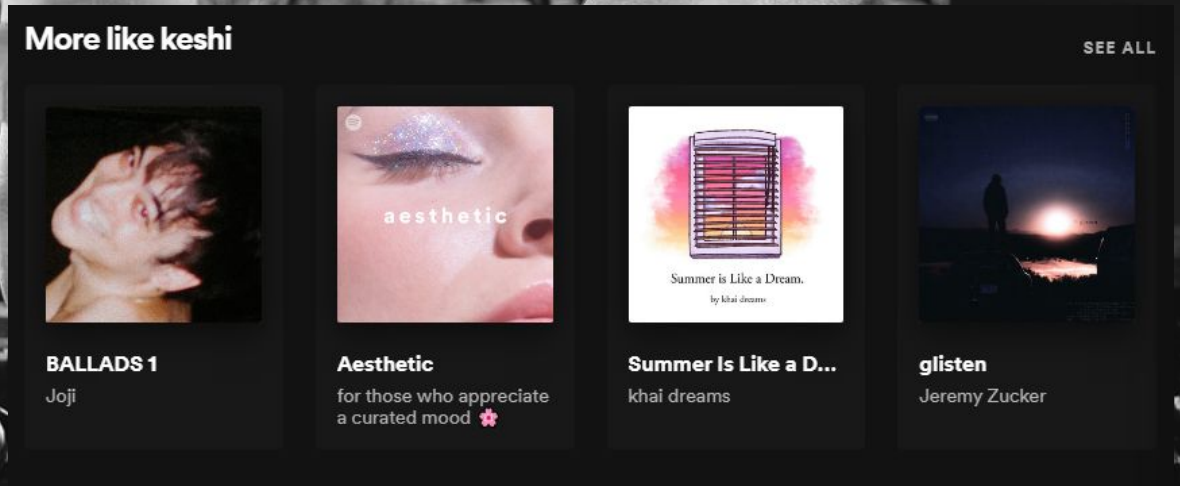


	SONG	ARTIST
1	**Rapstar**	Polo G
2	**Montero (Call Me By Your Name)**	Lil Nas X
3	**Leave The Door Open**	Silk Sonic (Bruno Mars & Anderson .Paak)
4	**Peaches**	Justin Bieber ft. Daniel Caesar & Giveon
5	**Save Your Tears**	The Weeknd
6	**Levitating**	Dua Lipa ft. DaBaby
7	**Kiss Me More**	Doja Cat ft. SZA
8	**Up**	Cardi B
9	**Drivers License**	Olivia Rodrigo
10	**Astronaut In The Ocean**	Masked Wolf

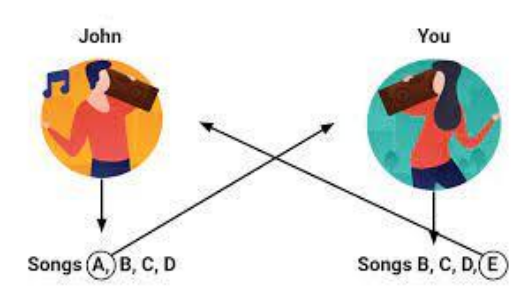
chart dated April 24, 2021

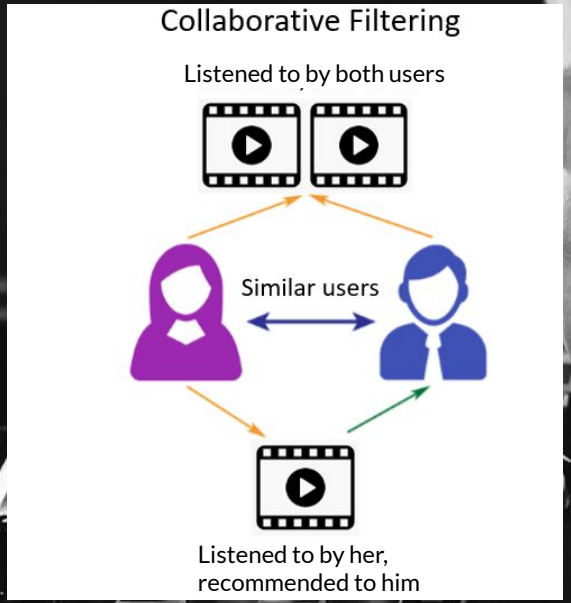
CONTENT-BASED FILTERING





COLLABORATIVE FILTERING





MODELS WE USED

A BRIEF OUTLINE

Feature Analysis from Data

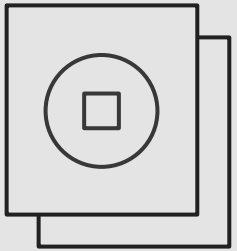
Logistic Regression

Predicting Hit Songs

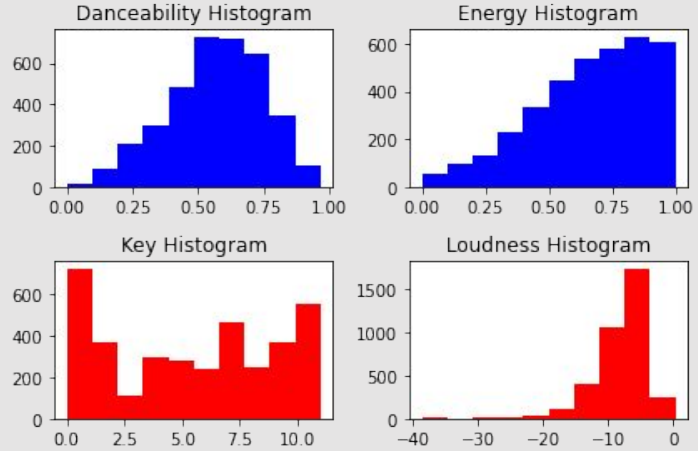
Vectorization of Data

Similarity (Content-Based Filtering

K-Nearest Neighbors



FEATURE EXPLORATION

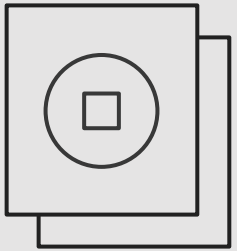


Quantitative:

- Key
- Loudness
- ...

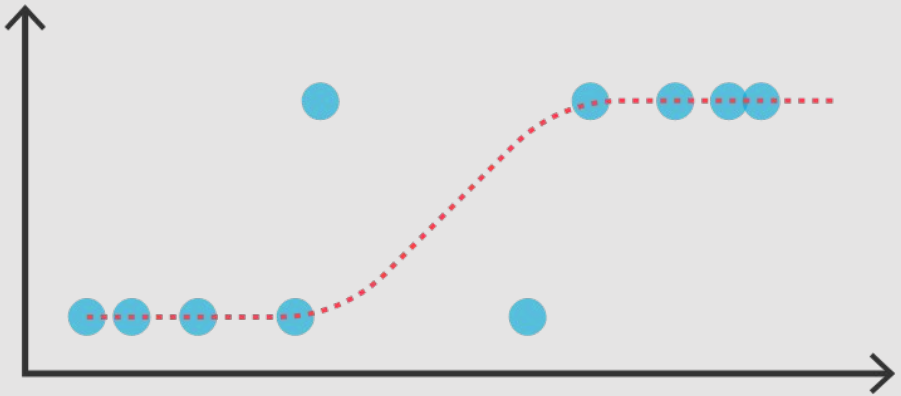
Qualitative:

- Danceability
- Energy
- ...



LOGISTIC REGRESSION

- Model learns based on training data
- Returns value 0 or 1



```
[3643 rows x 11 columns]
      Label
0         1
1         0
2         0
3         0
4         0
...     ...
3638      0
3639      1
3640      1
3641      0
3642      0

[3643 rows x 1 columns]
```

SELECTING THE BEST FEATURES

NON-HIT SONG

Energy, liveness, speechiness, valence, instrumentallness

HIT SONG

Danceability

Tracks with larger negative coefficients strongly correlate with non-hit songs

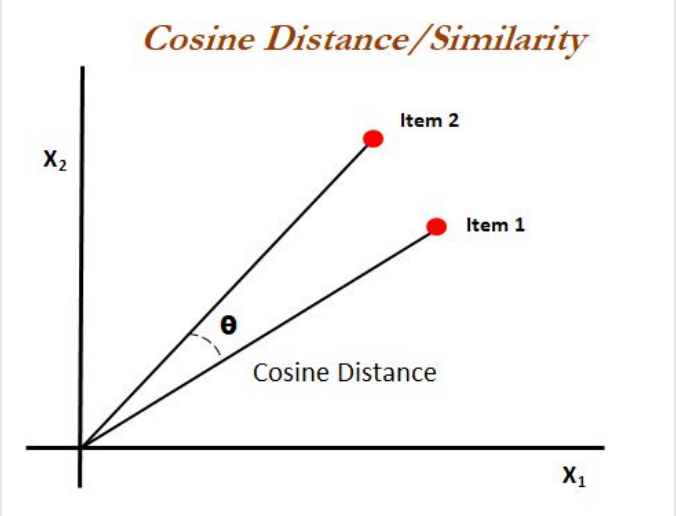
Tracks with larger positive coefficients strongly correlate with hit songs

CONTENT-BASED FILTERING: SIMILARITY

1. Vectorize Data
2. Compare Cosine Distance
3. Find Cosine Similarity

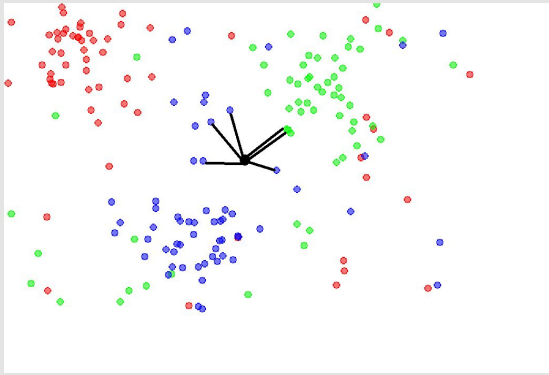
1.0	0.02	0.72	0.30
0.02	1.0	0.05	0.0
0.72	0.05	1.0	0.24
0.30	0.0	0.24	1.0

```
[[0.         0.         0.         ... 0.         0.66058764 0.74      ]
 [0.         0.         0.         ... 0.         0.63424519 0.44      ]
 [0.         0.         0.         ... 0.         0.88247214 0.73      ]
 ...
 [0.         0.         0.         ... 0.         0.75582573 0.        ]
 [0.         0.         0.         ... 0.         0.58358663 0.67      ]
 [0.         0.         0.         ... 0.         0.41742655 0.        ]]
```

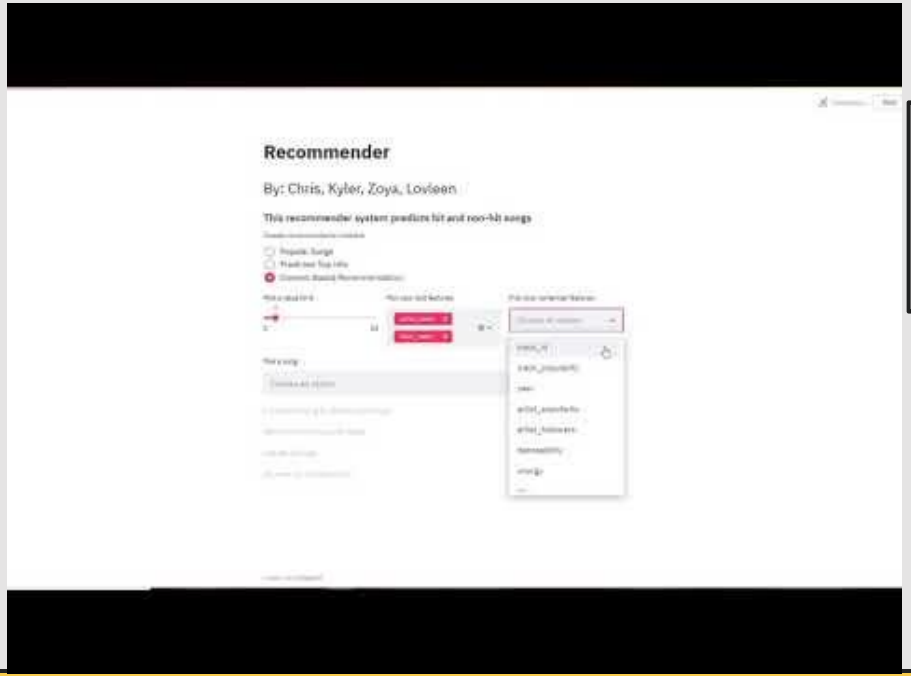


USING K-NEAREST NEIGHBORS (KNN)

- Vectorize Data
- Find K most similar songs to a specific song

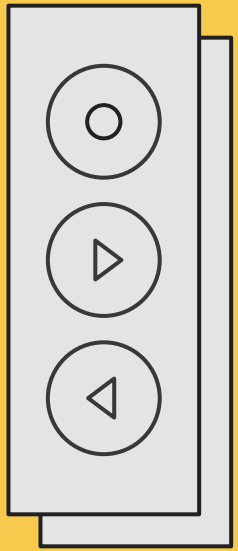


RECOMMENDATION SYSTEM DEMONSTRATION



DISCUSSION QUESTION:

WHAT ARE POTENTIAL RAMIFICATIONS OF AI BEING INVOLVED IN AN ART FIELD?



ETHICAL CONSIDERATIONS

LOSS OF ARTISTIC CREATIVITY

LESS EXPOSURE FOR SMALL ARTISTS

COMMERCIAL SUCCESS EXPLOITATION

LIMITED OPEN MUSIC DATA

THANKS !

Thank you to the Inspirit AI team for creating this amazing program!

Special thank you to our Instructor Favour Nerrise!

Feel free to ask any questions