Featuring artists analysis on Spotify

Social Media Analytics

Table of contents

01 Community Detection

02 Exploration

03 Enrichment

04 Demo

01

Community Detection

Spotify Artist Feature Collaboration Network

- Link
- Nodes = 135k musicians
- Edges = 300k collaborations

LOUVAIN

Detect different featuring communities, their main genres, and how they collaborate.

LOUVAIN

1. Initialization: node (v_i) = community
2. Main loop:
   a. Remove v_i from its community
   b. Insert v_i in a neighboring community maximizing ΔQ
3. Repeat Step 2 until convergence

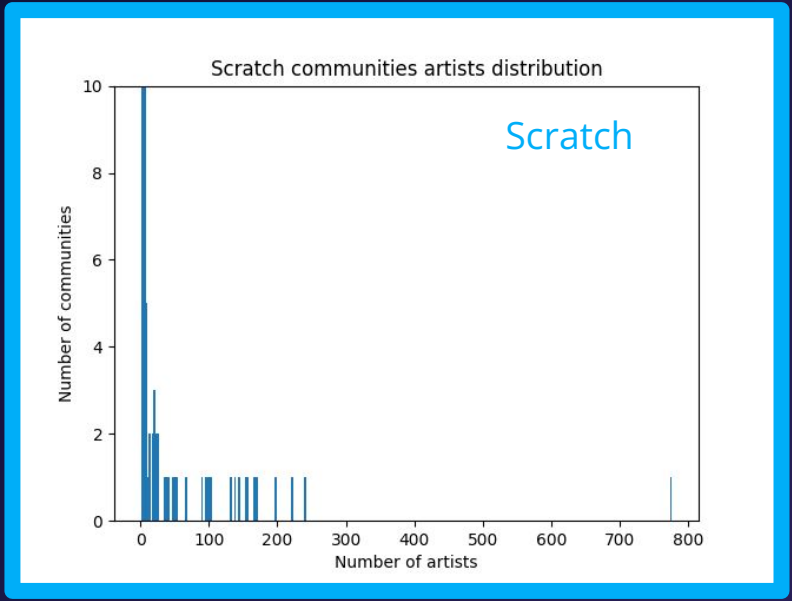
O(m log n)

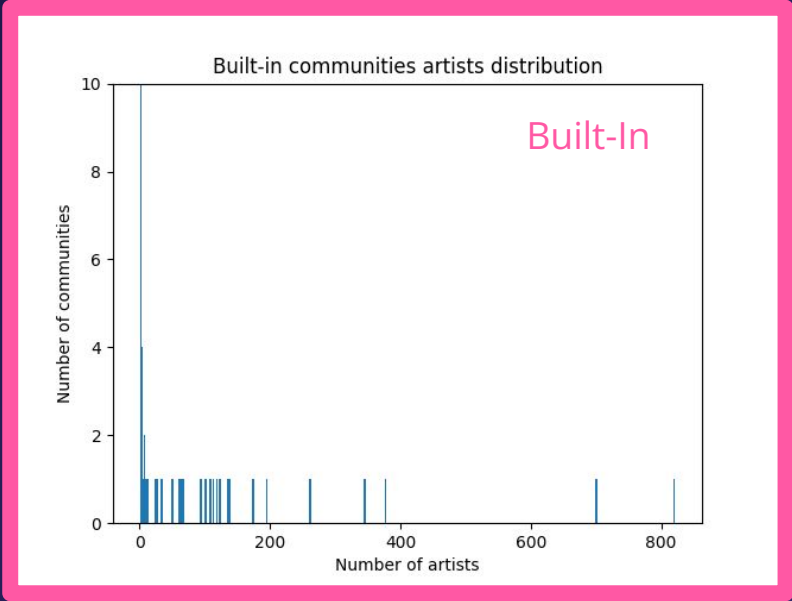
O(n)

Bottom-up Based on Collaborations Convergence ensured

Performance Analysis

Louvain Implementation	NetworkX	Scratch
Runtime	0.5 seconds	314.04 seconds
Total communities	46	193
State	Randomized	Deterministic
Normalized Mutual Information Score (NMI)	0.810	

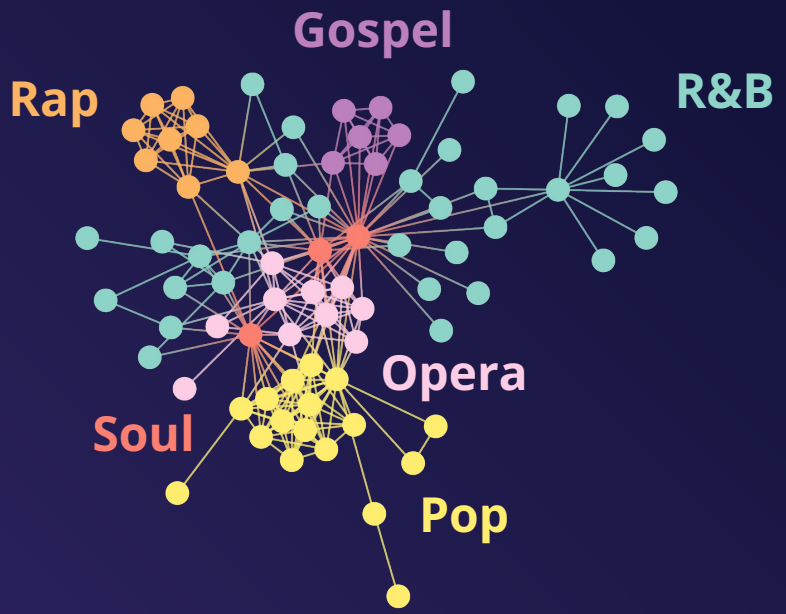

Scratch communities artists distribution
Scratch
Number of communities
Number of artists
0
2
4
6
8
10
0
100
200
300
400
500
600
700
800

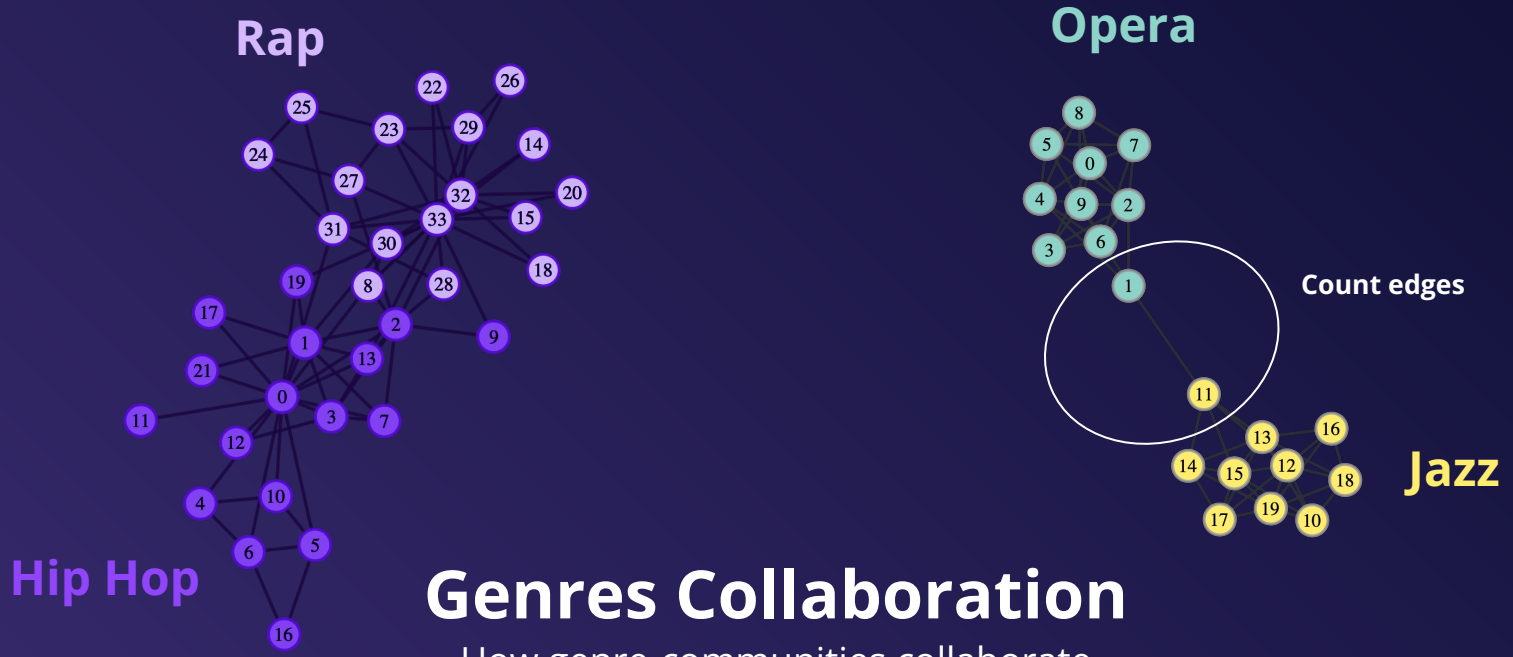

Built-in communities artists distribution
Built-In
Number of communities
Number of artists
0
2
4
6
8
10
0
200
400
600
800

02 Exploration

Community-Genres

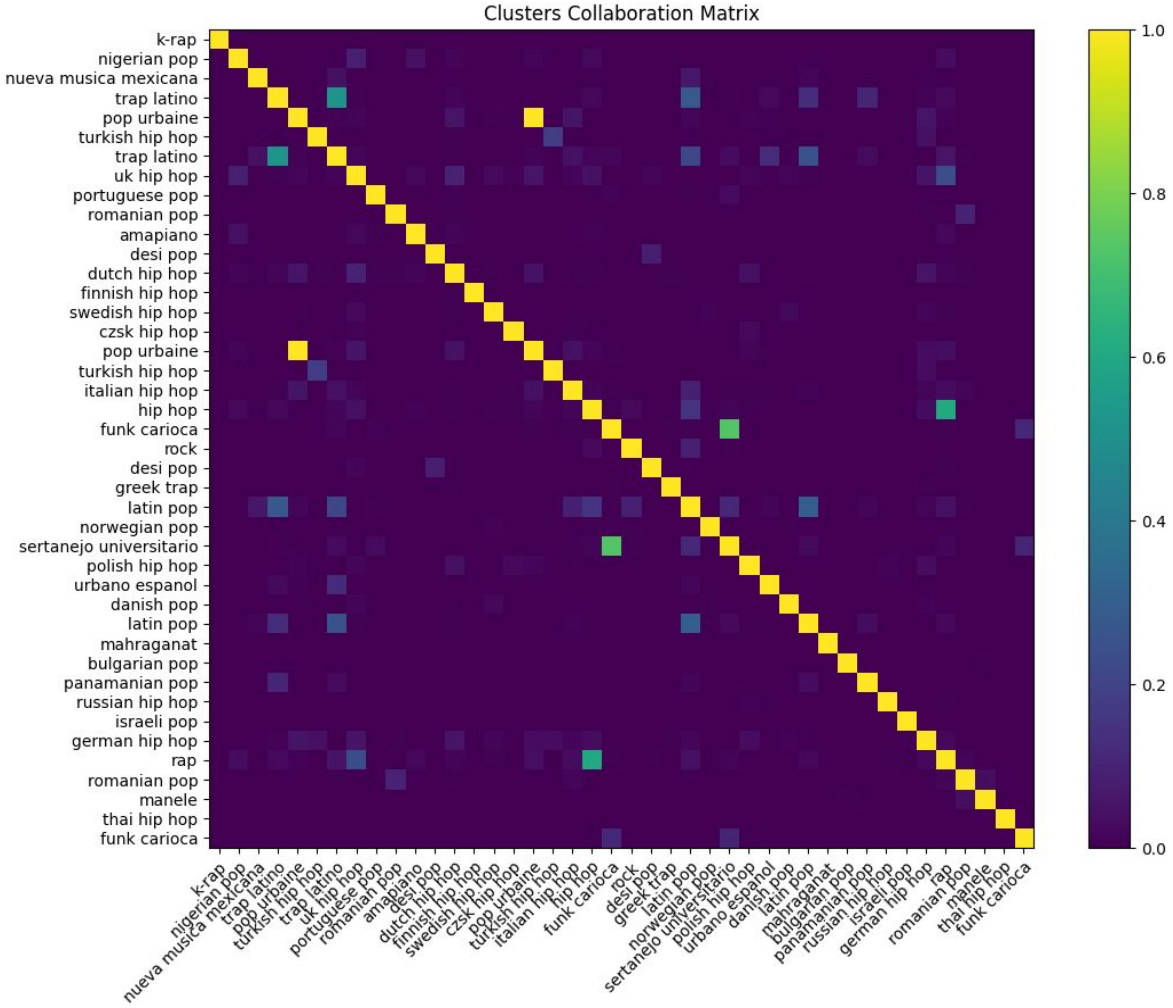
Compute the most frequent genre inside each community



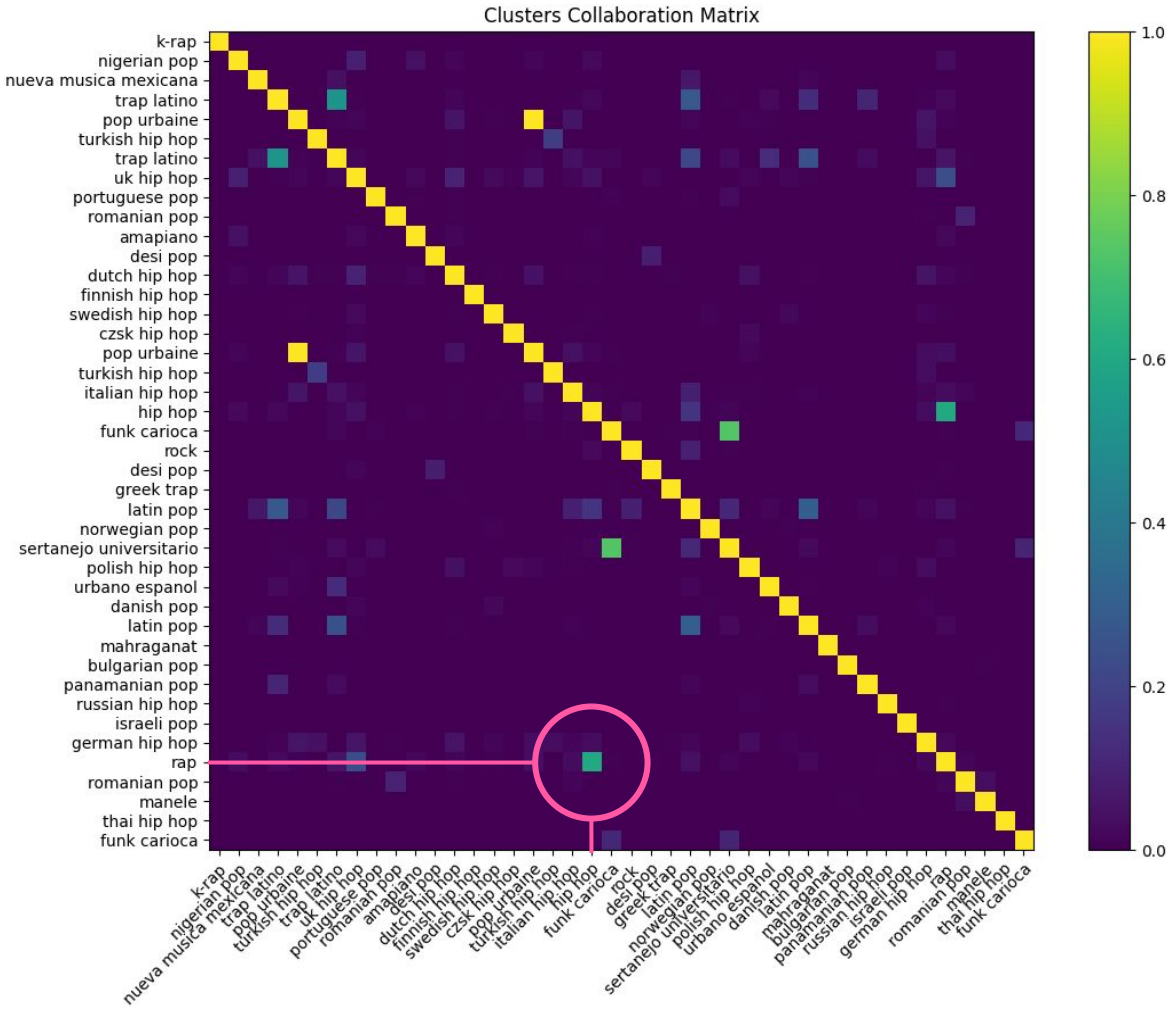


Genres Collaboration

How genre-communities collaborate

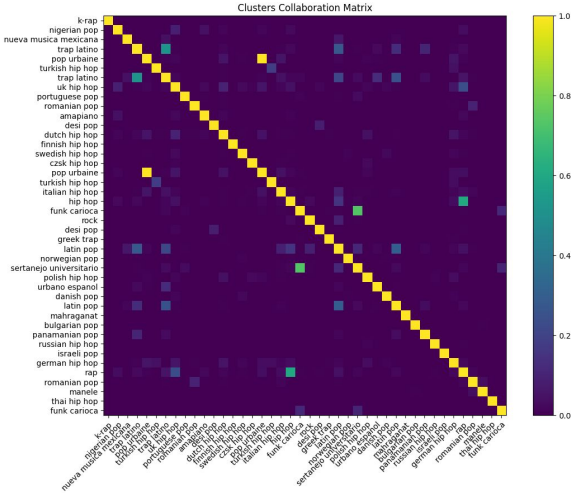


Genres Collaboration Matrix



Genres Collaboration Matrix

Genres Collaboration Matrix



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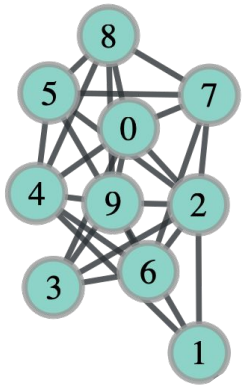
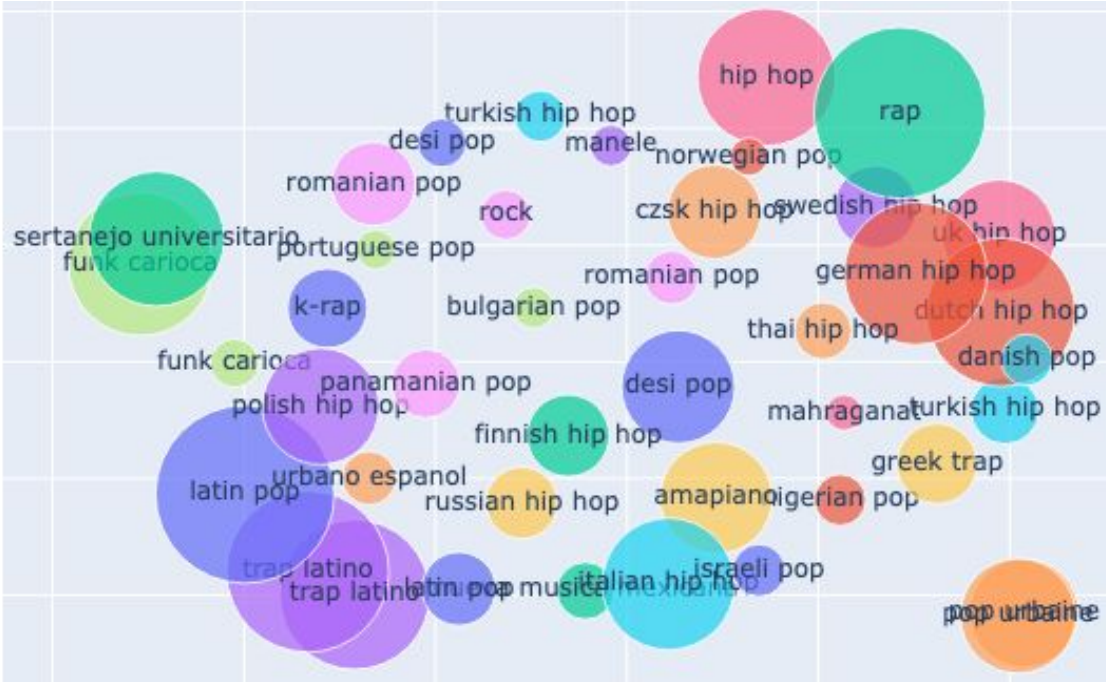
Genres Cardinalities



Opera
= 10

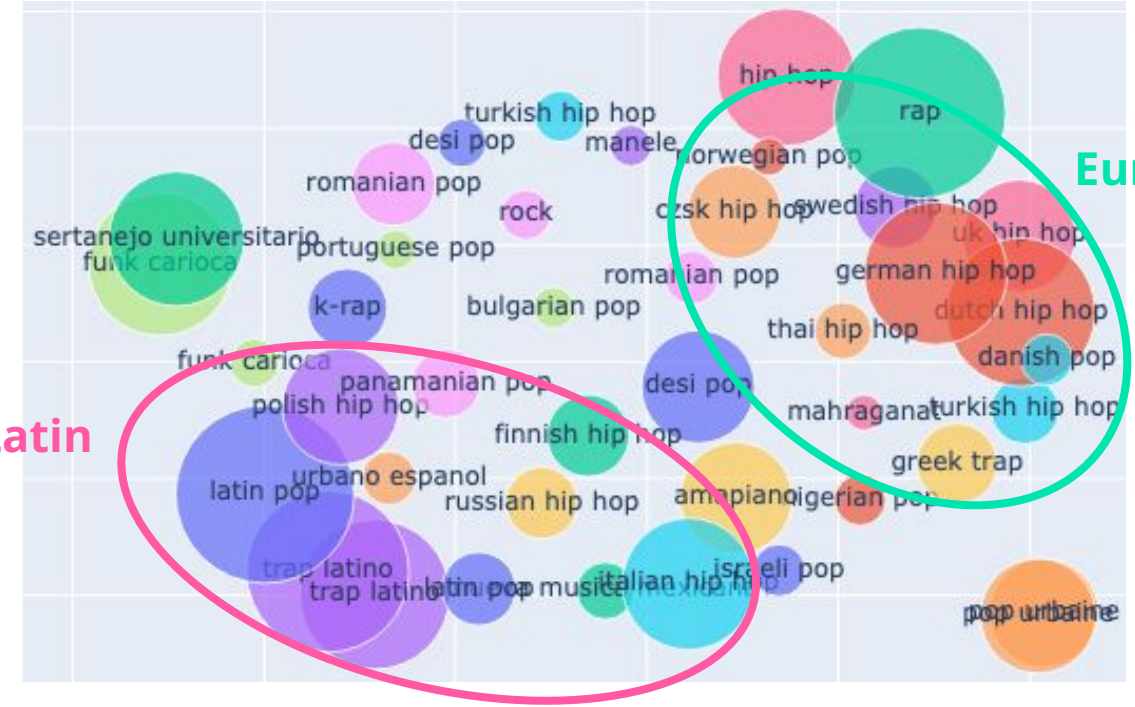
Community-Genres visualization



Size = #artists

Closeness = #collaborations

Community-Genres visualization



Size = #artists

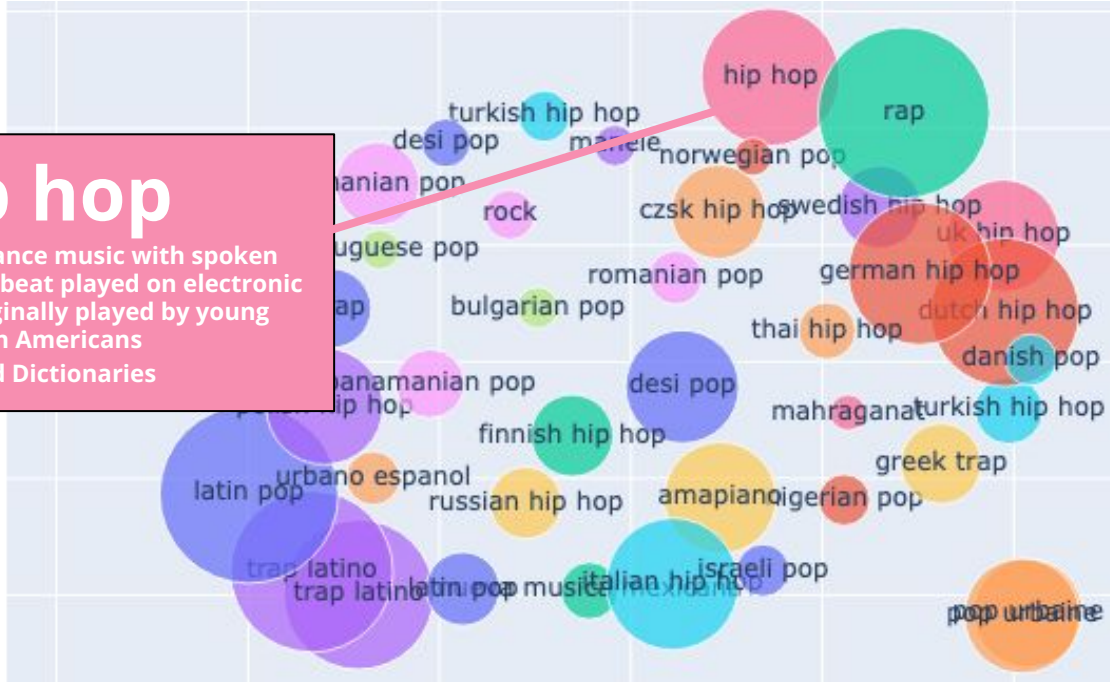
Closeness = #collaborations

Community-Genres visualization

hip hop

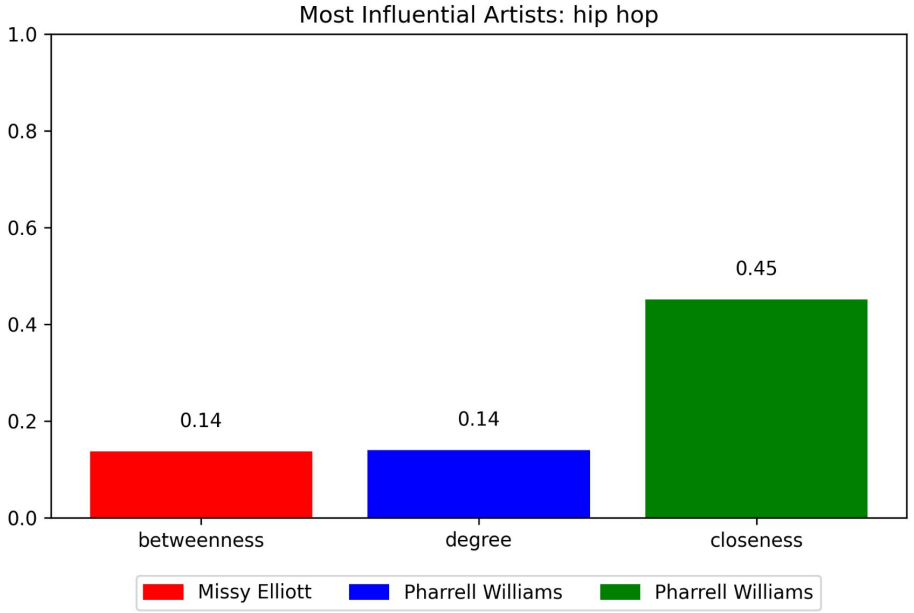
type of popular dance music with spoken words and a steady beat played on electronic instruments, originally played by young African Americans

- Oxford Dictionaries



Size = #artists

Closeness = #collaborations



Most Influential Artists

Artists with many collaborations or more prone to collaborate in the future

03 Enrichment

Songs

- Link
- 600k songs

Song attributes

id	name	popularity	duration_ms	explicit
artists	id_artists	release_date	danceability	energy
key	loudness	mode	speechiness	acousticness
instrumentalness	liveness	valence	tempo	time_signature

Community-Genres visualization

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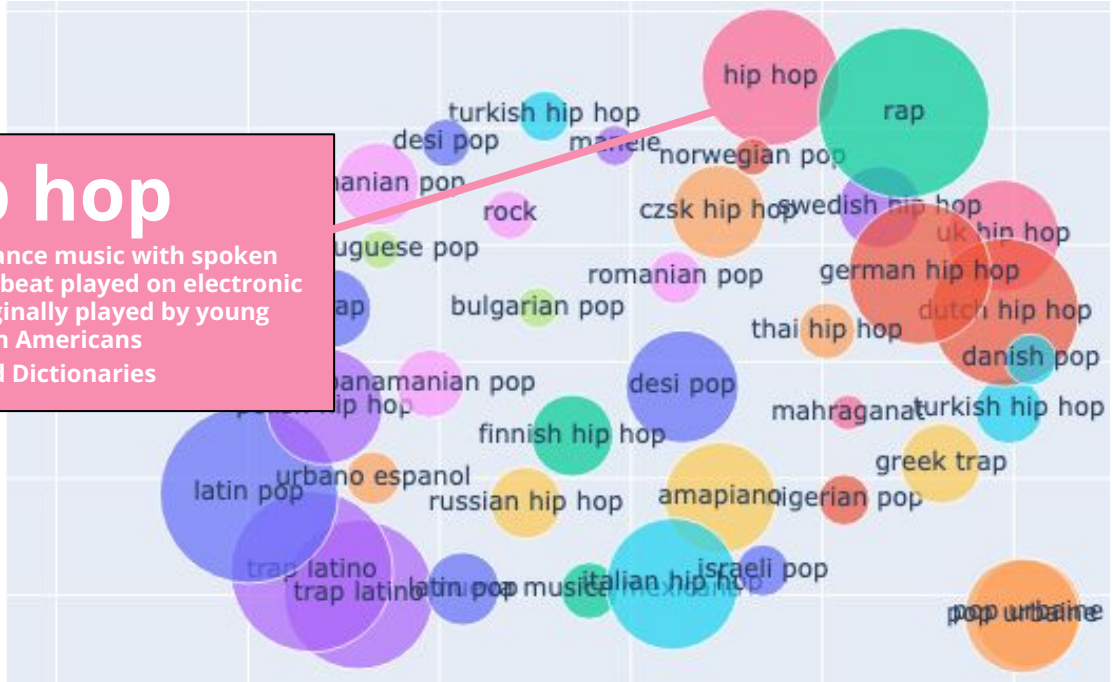
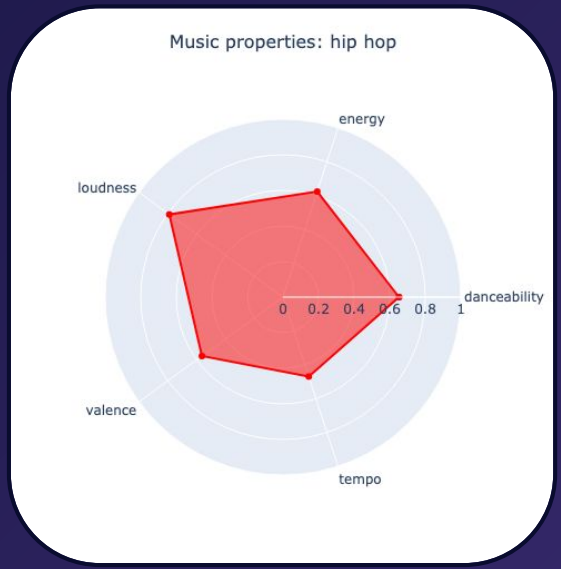


Size = #artists

Closeness = #collaborations

Words cloud

Most used words in titles of songs produced by artists in each cluster.



Songs' compositional **qualities** and perceptual **properties**.

Thank you!

Clap and don’t ask tough questions ;-)

CREDITS: This presentation template was created by **Slidesgo**, and includes icons by **Flaticon** and infographics & images by **Freepik**

Mercury is small
Mercury

04 Demo