

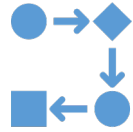
# Music Recommendation System



# Problem definition



Millions of songs and  
digital music

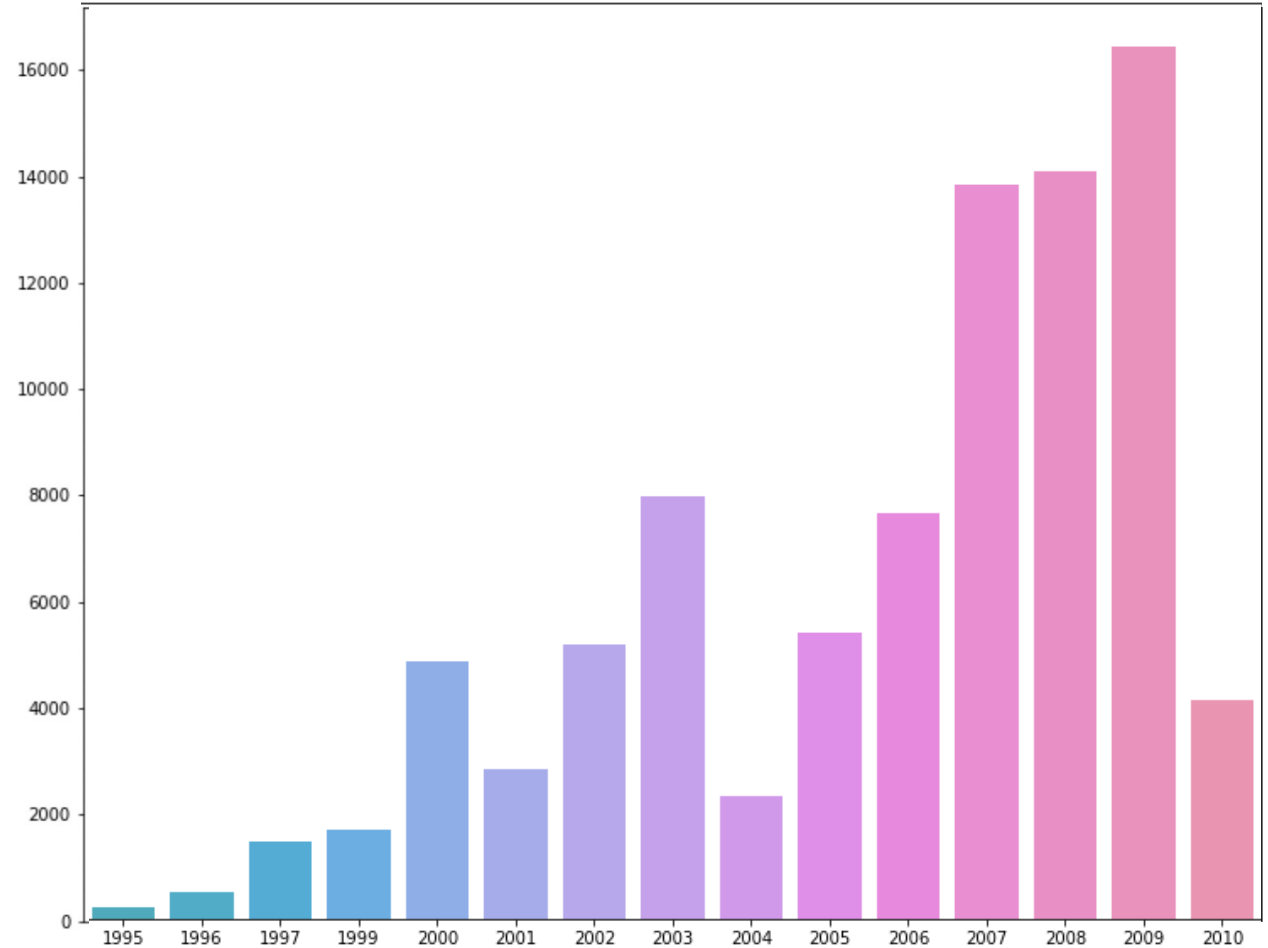


Time-consuming  
process and tedious to  
choose



Cause information  
fatigue

Number of songs played from 1995 to 2010



Problem to  
solve



User's listening history and  
music information

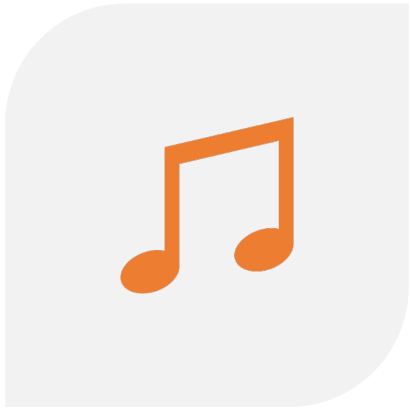


Develop Music Recommender  
system

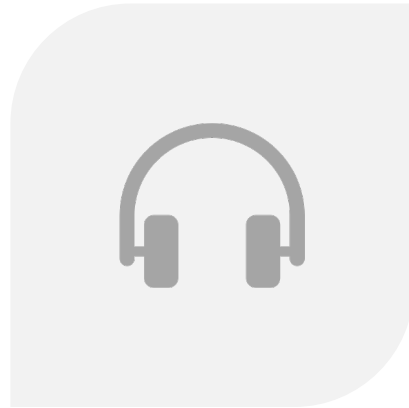


Prediction of songs that the  
user will like and listen to

Business problem



POPULAR PLAYLIST



SIMILAR SONGS



# Solution approach

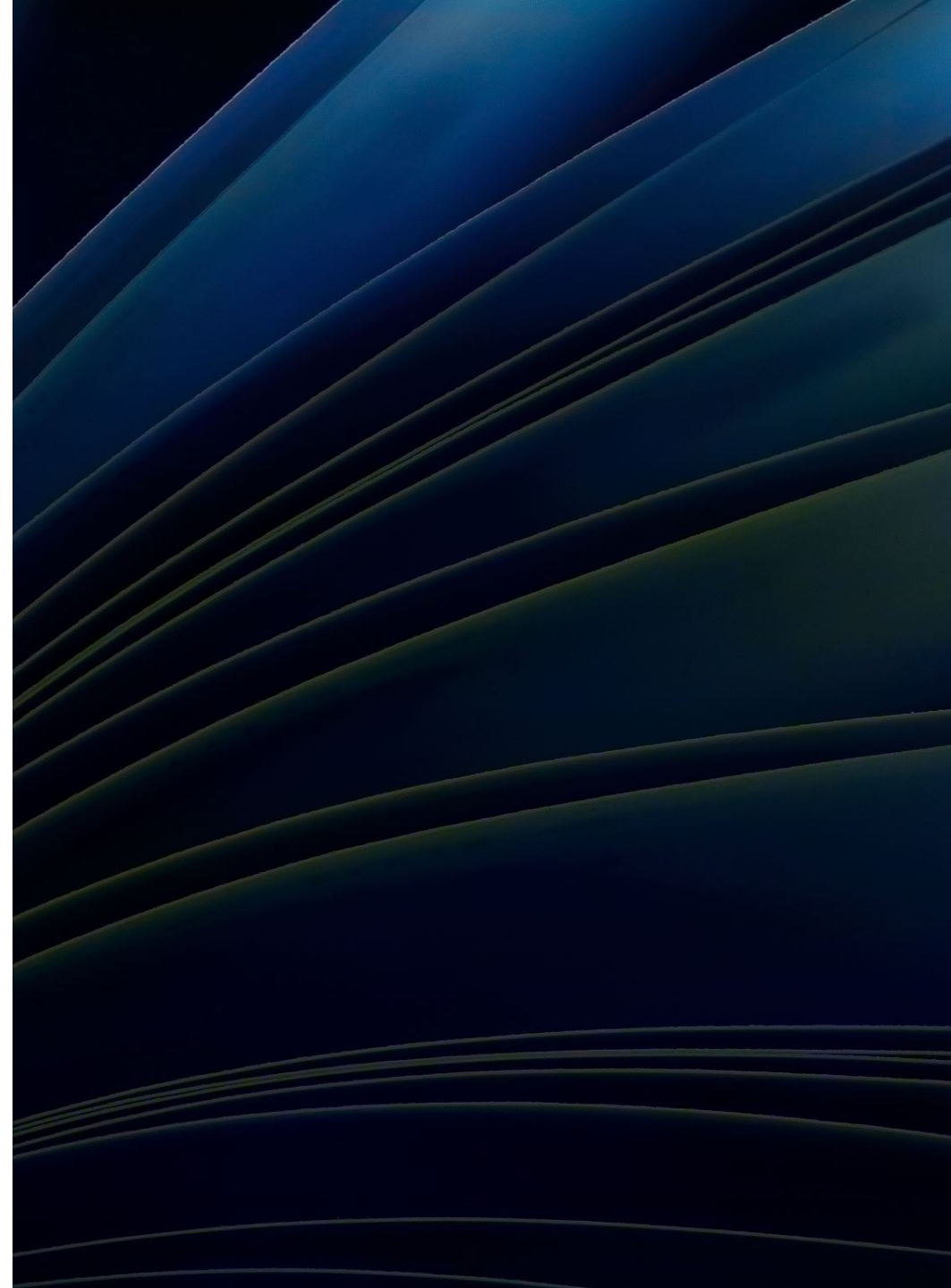
Rank based recommender system

Collaborative filtering

Nearest neighbor technique

Latent factor model

Content-based

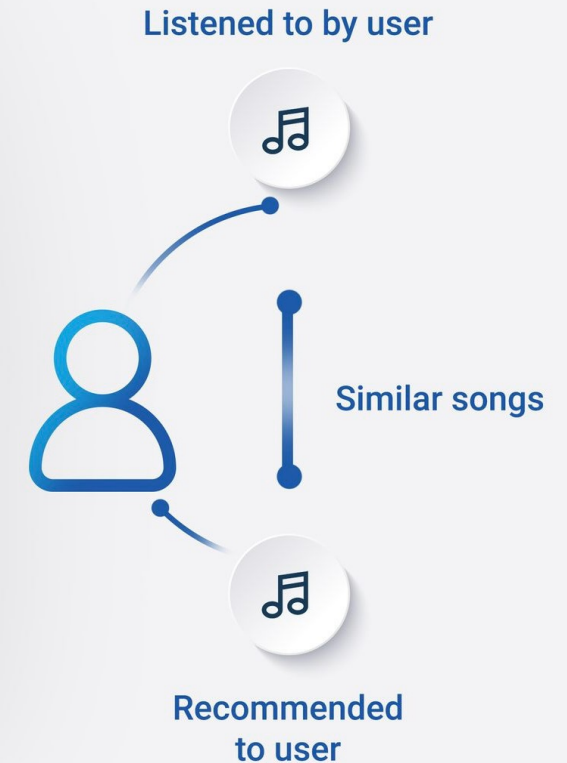


# Proposed Solution design

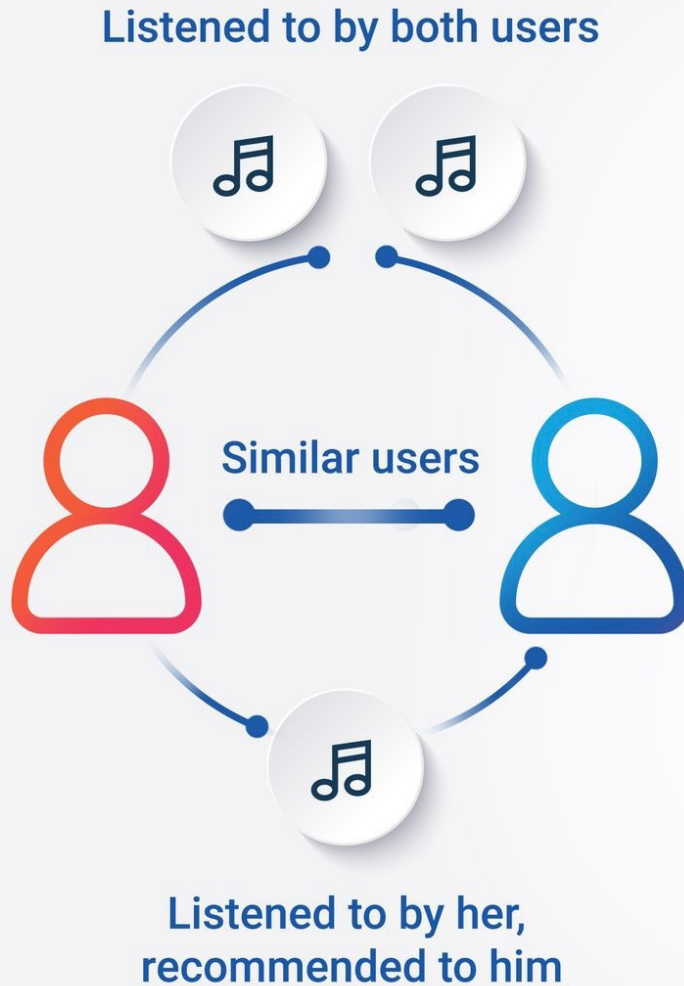
Recommending 10 songs similar to  
Learn to Fly:

1. Everlong
2. The Pretender
3. Nothing Better (Album)
4. From Left To Right
5. Lifespan Of A Fly
6. Under The Gun
7. I Need A Dollar
8. Feel The Love
9. All The Pretty Faces
10. Bones

## CONTENT-BASED FILTERING



## COLLABORATIVE FILTERING



## Final model solution

***Collaborative filtering*** – user-based algorithm with optimized hyperparameters

Precision	41.3%
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Recall	72.1%
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F1-score	52.5%
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We can recommend about 72.1% of all relevant songs.

# Key findings/insights



## **Benefits**

Engaging more users  
Improving user's experience



## **Costs**

Significant investments  
required  
Too many choice



# Risks and Challenges



Lack of song history



Inability to capture changes  
in user behavior



Issue of “synonyms”

# Business recommendations

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Combine different algorithms

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Develop more recommendation algorithms based on different data

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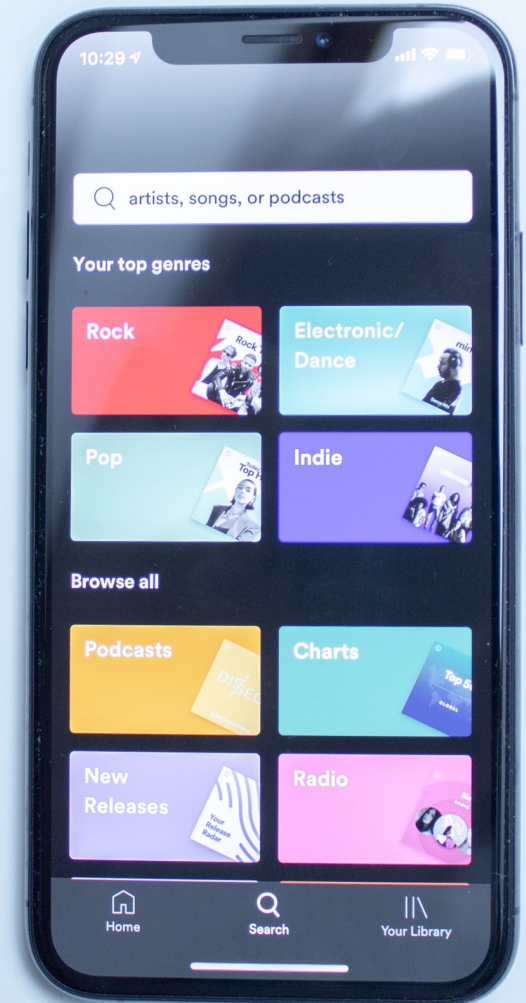
Consider user needs comprehensively.

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Automatically extracting the music features

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Make necessary adjustments to existent models



# Appendix

To illustrate the dataset that we are using

	user_id	song_id	play_count	title		release	artist_name	year
200	6958	447	1	Daisy And Prudence		Distillation	Erin McKeown	2000
202	6958	512	1	The Ballad of Michael Valentine		Sawdust	The Killers	2004
203	6958	549	1	I Stand Corrected (Album)		Vampire Weekend	Vampire Weekend	2007
204	6958	703	1	They Might Follow You		Tiny Vipers	Tiny Vipers	2007
205	6958	719	1	Monkey Man	You Know I'm No Good		Amy Winehouse	2007

# Appendix

Comparison of different models

	User-based	Optimized User-based	Item-based	Optimized item-based
F-1 Score (%)	50.4	52.5	39.7	50.6
	SVD method	Optimized SVD	Cluster-based	Optimized cluster-based
F-1 Score (%)	49.8	50.2	47.2	46.5