
Movie Recommender

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Background

- Netflix's recent quarter end results showed a drop DVU (Daily View Per User) and MVU (Monthly Views Per User)
- The goal is to increase user retention by updating the recommendation system to engage current and future subscribers
- Are we curating the *best* recommendations possible for customers?

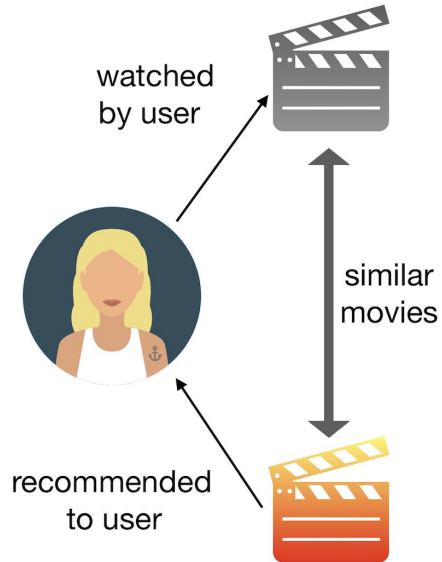


What

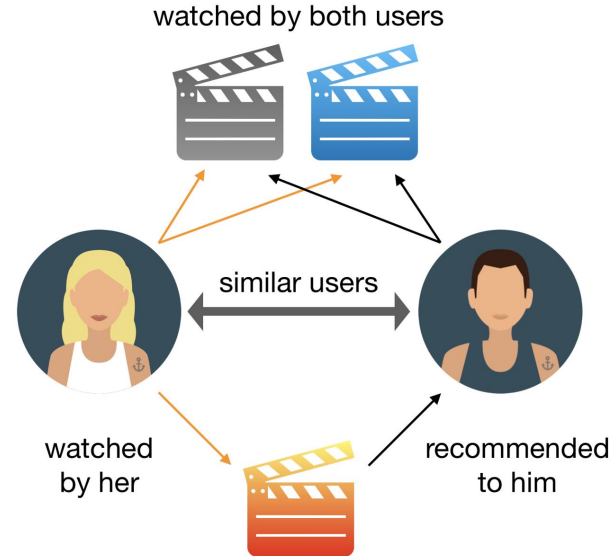
- ❖ The current recommendation system is content based
- ❖ Too much weight is put on movie 'genre', making the recommendation list is incohesive
- ❖ The correlation between films is too vague
- ❖ Currently users scroll endlessly through recommendations before logging off the service

Current Systems

Content Based



Collaborative Filtering



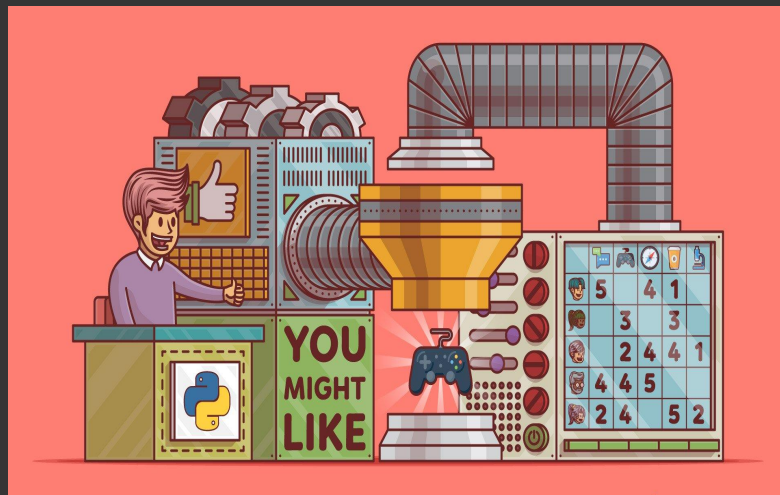
But How!?

- ❖ Upgrade the recommendation system with brilliant...

Machine Learning techniques!

- ❖ With an improved system DVU's and MVU's will increase...

10-15% by next quarter



Approach

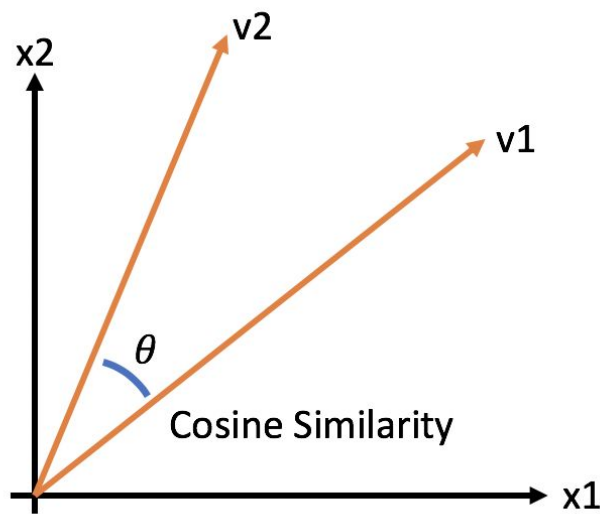
Content Based	Collaborative Filtering	Hybrid
<ul style="list-style-type: none">❖ Use content metrics that shape the 'vibe' of films<ul style="list-style-type: none">➤ Director and lead actor❖ Use keywords that refer to specific elements of the film<ul style="list-style-type: none">➤ 'marriage' for a comedy film with a wedding theme	<ul style="list-style-type: none">❖ Refine metrics for determining the degree to which a user liked a film❖ Improve the algorithm that predicts the rating a User will score a film	<ul style="list-style-type: none">❖ Create a system that combines both Content based and Collaborative Filtering❖ Order the suggestions with a priority on films with a higher predicted user score

Recommended Approach

Content Based Process

- ❖ Mine every bit of informational text in the dataset and create a long string of text for each film.
- ❖ The string for Toy Story looks like this:
 - *jealousi toy boy friendship friend rivalri boynextdoor newtoy toycomestolif tomhanks timallen donrickles johnlasseter johnlasseter johnlasseter animation comedy family pixaranimationstudios*
 - It seems nonsensical for us mortals but the algorithm loves it!
- ❖ Add more weight to the director of the film by repeating his/her name 3 times within the text string
- ❖ Finally, create a text profile for each film which was then used to compare films

Cosine Similarity measures the distance/similarity between films ($v1$ and $v2$)

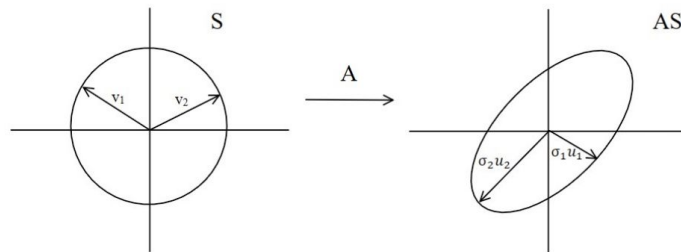
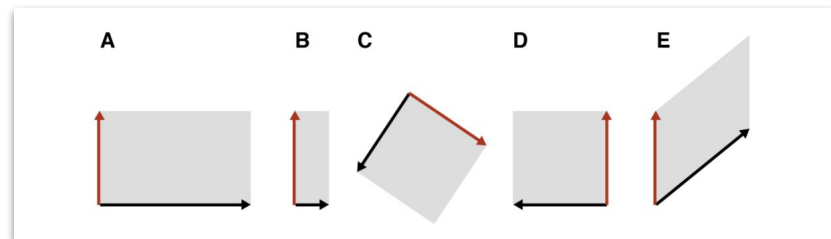


Collaborative Filtering Process

- ❖ Predict the rating a user will give a film based on how similar users have rated that film
- ❖ Compare several algorithms to see which performed the best

The answer? *Singular Value Decomposition*

This method transforms shapes to find points that are similar



Hybrid System

- ❖ Yes, we can have the best of both worlds
- ❖ So *User X* likes *Inception*?
 - Find the top 10 most similar films and rank them by how *User X* is *expected* to rate them (1-5)

Recommended results from *Inception*

Memento 4.34
The Dark Knight 4.29
The Prestige 4.27
Interstellar 4.21
Batman Begins 4.06
The Dark Knight Rises 3.97
Don Jon 3.86
Following 3.82
Insomnia 3.75
Pacific Rim 3.72

Conclusions

- ❖ The customer retention rate is declining and the current recommendation system needs a makeover, let's increase DVU's and MVU's by 10 - 15%
- ❖ The current *content based* and *collaborative filtering* recommender systems are not optimized
- ❖ Employ the newly refined and more robust *Hybrid Recommender!*

Thank you

Additional Documents

White Paper:

<https://github.com/LiftedAquatic/Movie-Recommender-System/blob/main/White%20Paper.pdf>

Code:

<https://github.com/LiftedAquatic/Movie-Recommender-System/tree/main/Notebooks>

Project Repository:

<https://github.com/LiftedAquatic/Movie-Recommender-System>

Original Data:

<https://github.com/LiftedAquatic/Movie-Recommender-System/tree/main/Original%20Data>