

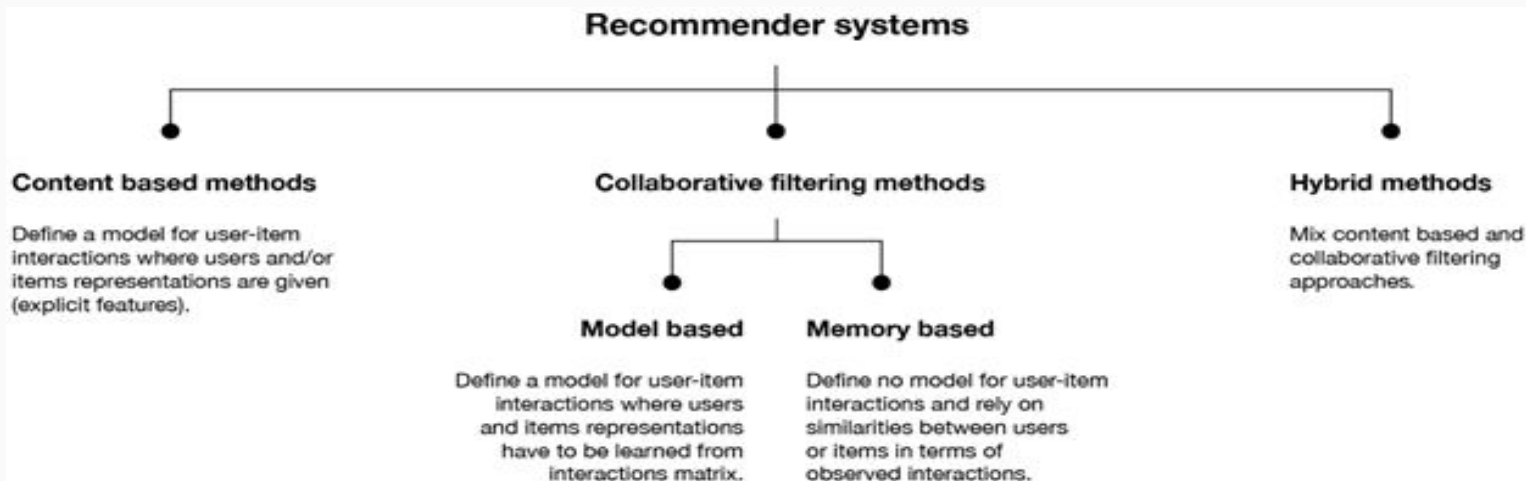
# DSI-13 Capstone Project Movie Recommender System



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# Introduction

The below are the various recommender systems (**RS**) currently used by content providers, online retailers, etc.



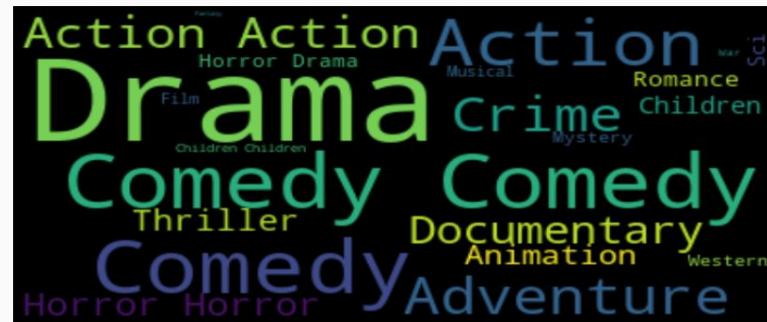
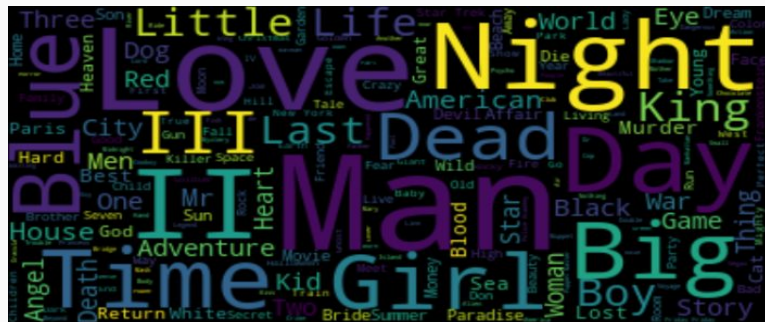
# Introduction (con't...)

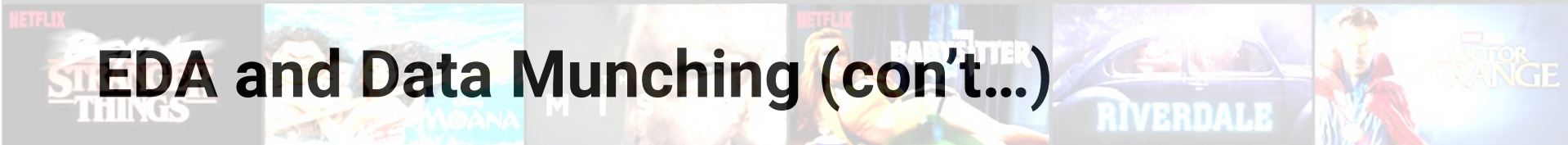
- All 3 modeling approaches will be used for this project.
  - Content-Based Filtering makes recommendation based on user's shopping and browsing habits
  - Collaborative Filtering based on user-to-user or item-to-item to make recommendations
  - Hybrid Filtering combines Content-Based and Collaborative Filtering for better results

# Problem Statement

- Nowadays, users have very short attention span. With more and more players coming into the online video contents space, an effective RS is a must.
- Objective: Develop and identify the best RS that;
  - is fast and responsive
  - is able to predict users' preference fairly accurately and make recommendations
  - easy to measure performance

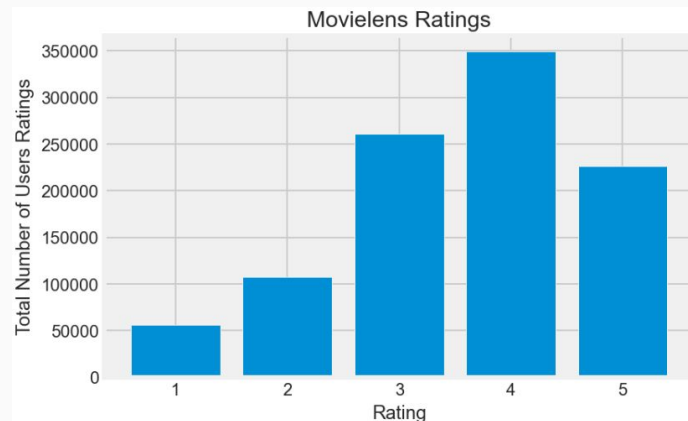
- MovieLens datasets will be used
- Cleaning is required as the datasets are clean
- EDA shows that movie title on Night Love triumphs it all
- Drama, comedy and action genre are the hot picks



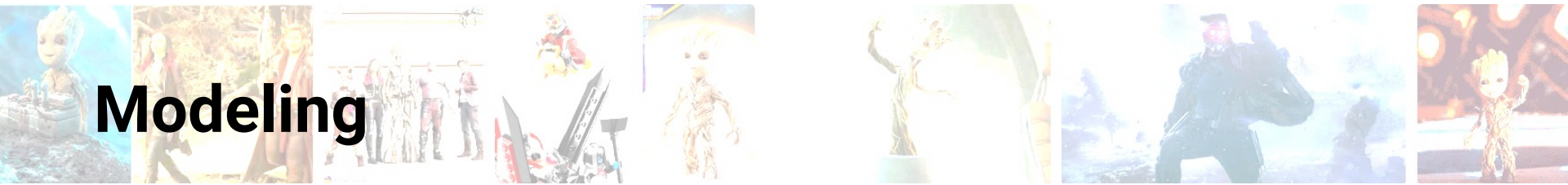


## EDA and Data Munching (con't...)

- Majority of the ratings fall in the 4-star category
- It is a negatively skewed distribution (Mode > Median > Mean)
- The ratings may not be a good indicator whether the movie is good or not as different people have different rating style







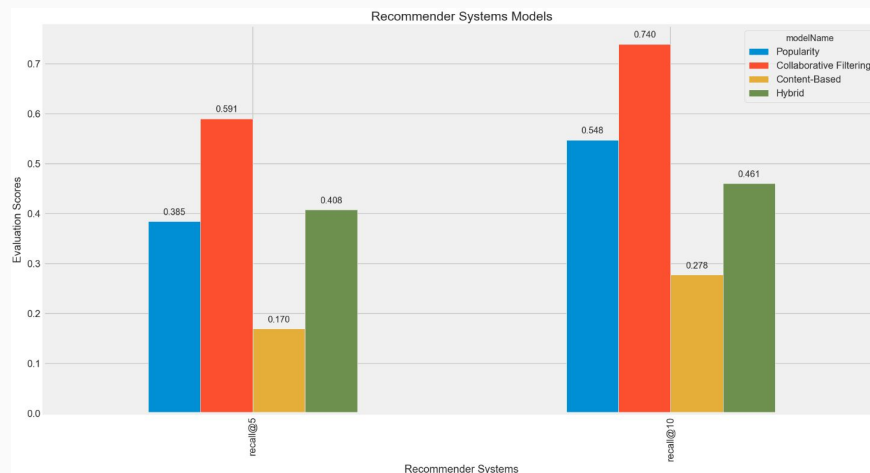
# Modeling

- A simple model using cosine similarity with TF/ IDF added subsequently to see recommender in action
- The below models were developed;
  - Popularity
  - Collaborative Filtering
  - Content-Based Filtering
  - Hybrid (a combination of Collaborative and Content based filtering)

# Evaluation of models

Top-N accuracy Recall@N metrics was used to evaluate the 4 models. Clearly, collaborative filtering is the best.

	recall@5	recall@10
modelName		
Popularity	0.384924	0.547870
Collaborative Filtering	0.590706	0.739545
Content-Based	0.169519	0.277652
Hybrid	0.408239	0.460618







# Conclusions and Recommendations

- Based on metrics, business should implement a RS using collaborative filtering.
- Explore other algorithms such as ALS, KNN, CCO, etc that may yield better performance.
- Able to evaluate performance of a RS other than using metric is very important. Business can consider using A/B testing, Click-Thru-Rate and Conversion Rate.



# Conclusions and Recommendations (con't...)

- Use ROI, monitor churn rate, customer retention rate or even customer analytics to measure RS performance.
- A better approach is to provide good customers' experience so that they keep coming back by recommending a small portion of non-related items that otherwise hidden from the user.

**\*\*\* The End \*\*\***