

# MOVIE RECOMMENDATION SYSTEM:TOP 5 PERSONALIZED RECOMMENDATIONS

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USING COLLABORATIVE FILTERING WITH MOVIELENS DATASET

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# BUSINESS UNDERSTANDING

## **OBJECTIVE:**

TO INCREASE USER ENGAGEMENT AND VIEWERSHIP WITHIN THE STREAMING PLATFORM,  
PARAMOUNT PLUS.

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WE ARE TASKED TO DEVELOP A MODEL RECOMMENDING THE TOP 5 MOVIES TO EACH USER.  
BASED ON THEIR RATINGS, PREFERENCES AND VIEWING HISTORY.



# DATA OVERVIEW

**DATASET:** MOVIELENS

## **KEY FEATURES:**

USER IDS, MOVIE IDS, RATINGS, TIMESTAMPS

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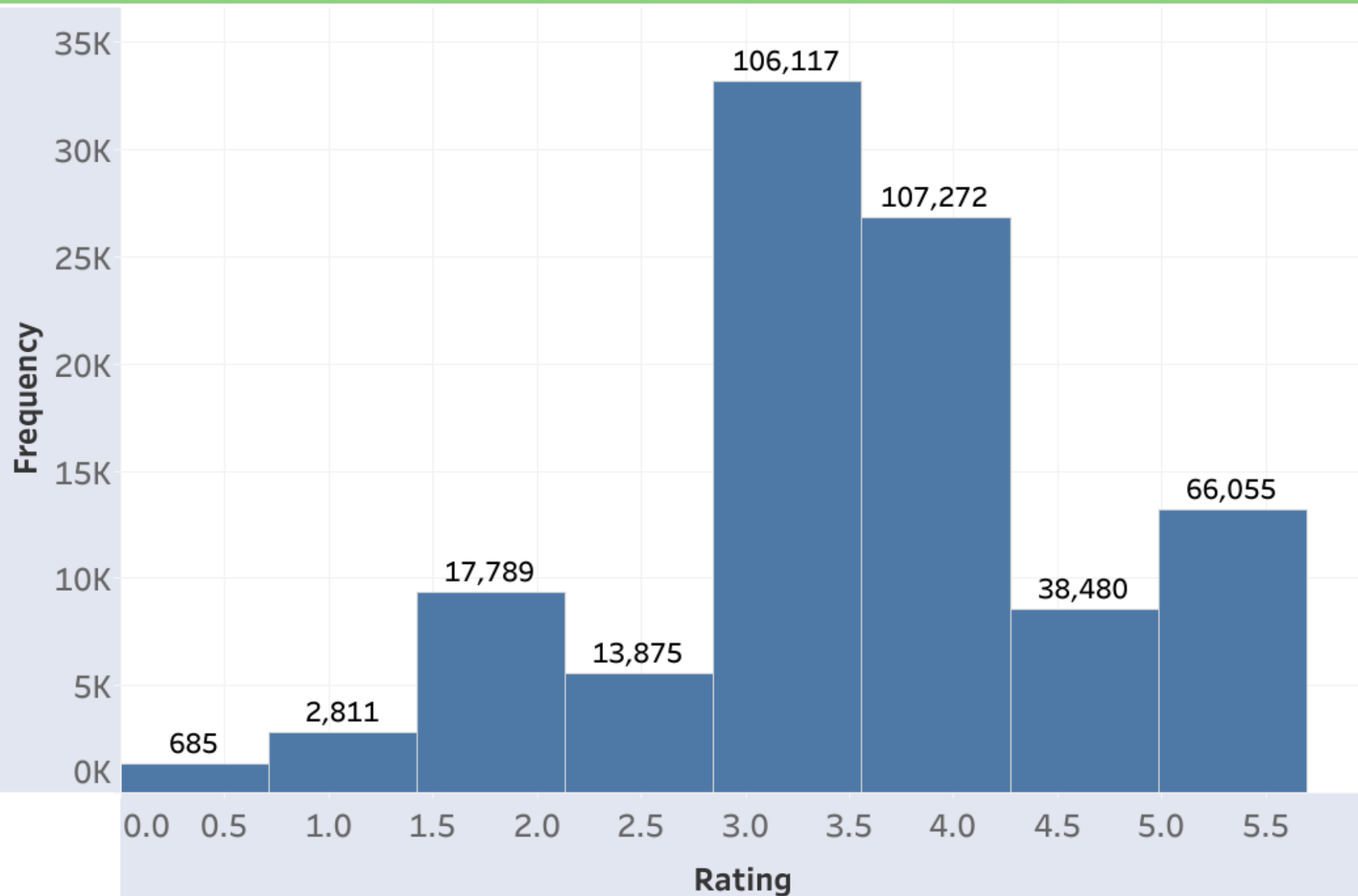
## **METADATA:**

MOVIE TITLES, GENRES

NUMBER OF USERS, MOVIES AND RATINGS



Distribution of Ratings



# METHODOLOGY

## **COLLABORATIVE FILTERING:**

USING SVD TO ADDRESS MATRIX SPARSITY

**APPROACH:** LEVERAGING USER-BASED SIMILARITIES IN RATINGS TO RECOMMEND TOP 5 MOVIES FOR EACH USER.

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**METRICS USED:** RMSE, COSINE SIMILARITY, PEARSON CORRELATION

**COLD START PROBLEM:** HYBRID MODEL

COMBINE COLLABORATIVE FILTERING WITH CONTENT-BASED FILTERING





# EVALUATION METRICS

## CHOSEN METRICS:

- RMSE
  - COMMONLY USED METRIC FOR EVALUATING RECOMMENDATION SYSTEMS
  - SVD
  - A GOOD TECHNIQUE FOR MATRIX FACTORIZATION
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## RSME Mean Value (collaborative filtering)

Metric

RMSE

0.8778

0.0

0.1

0.2

0.3

0.4

0.5

0.6

0.7

0.8

0.9

Mean Value

## RMSE (Hybrid Model)

Metric

RMSE

0.6703

0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65

Mean Value



## KEY FINDINGS

### Hybrid Model

Recommendations for User 5:

	movieId	title \
0	177593	Three Billboards Outside Ebbing, Missouri (2017)
1	5747	Gallipoli (1981)
2	4021	Before Night Falls (2000)
3	1262	Great Escape, The (1963)
4	3201	Five Easy Pieces (1970)

	genres	predicted_rating
0	Crime Drama	4.554485
1	Drama War	4.398870
2	Drama	4.396996
3	Action Adventure Drama War	4.386305
4	Drama	4.380736

Welcome to the Movie Recommendation System!

It looks like you're a new user! Please tell us your preferences.

Based on your preferences, here are some movie recommendations:

	title	genres
5487	Emmanuelle (1974)	Drama Romance
5353	Country Girl, The (1954)	Drama
9118	Witch Hunt (1999)	Crime Drama
2198	Hang 'Em High (1968)	Crime Drama Western
6302	Gridiron Gang (2006)	Drama

# NEXT STEPS

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Analyze the clusters or patterns in ratings.

Use these insights to fine-tune the recommendation model.

improving the quality of recommendations.

# CONCLUSION

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The model recommends movies for users based on their preferences and history. For new users to the platform, it provides options based on the highest ratings given to those films based on the preferred genre.