



Interactive Anime Group Recommendation System



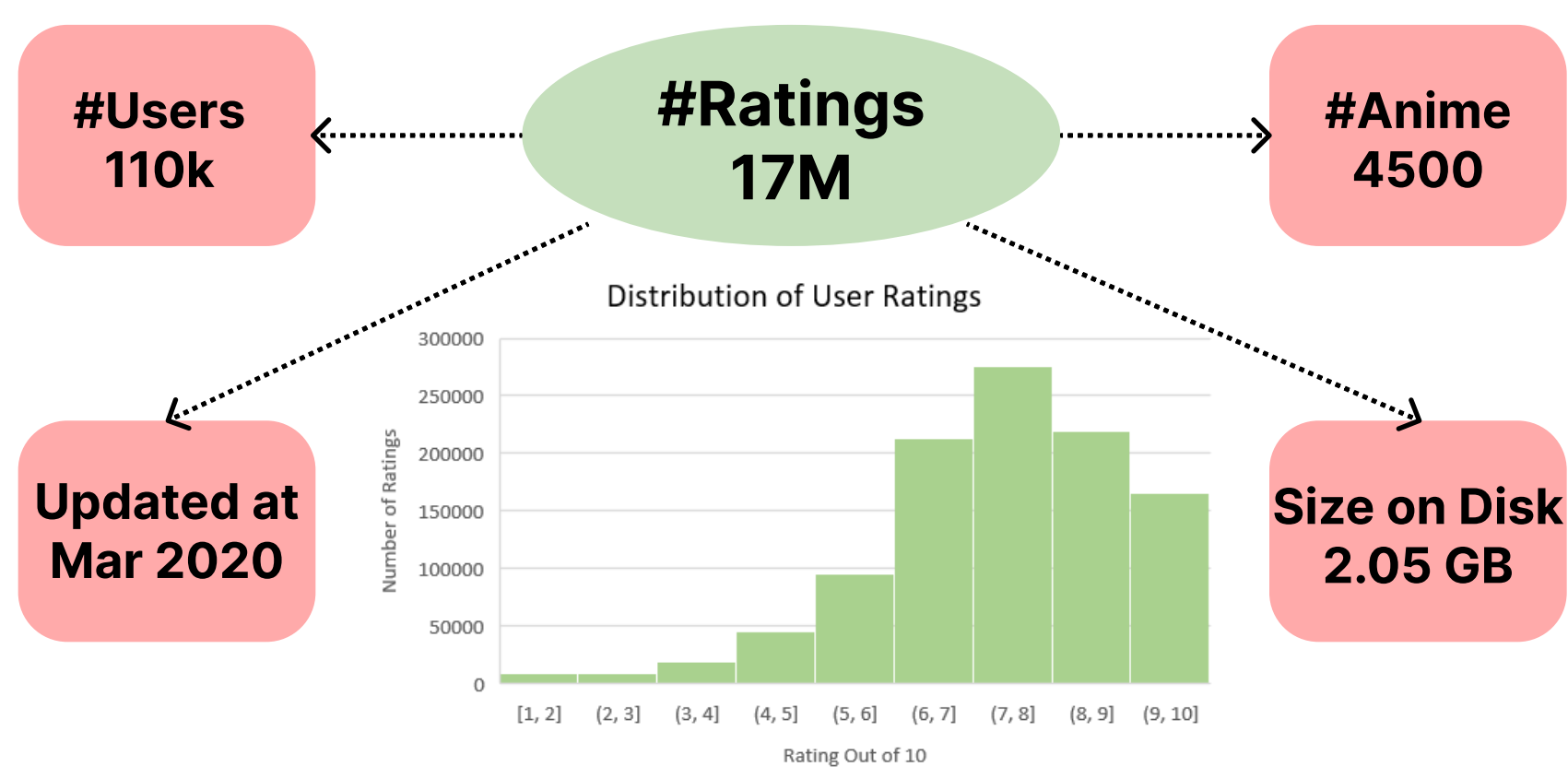
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SUMMARY

Anime are Japanese animated TV shows that are extremely popular around the world. As avid anime fans, we wanted to watch a show together but realized it was difficult to reconcile our differing tastes. Thus we wanted to apply our **machine learning modeling and big data visualization skills** to figure out an effective method of selecting an anime we all like. This can help individuals or groups of people decide what anime to watch using a **recommendation system** with an interactive tool.

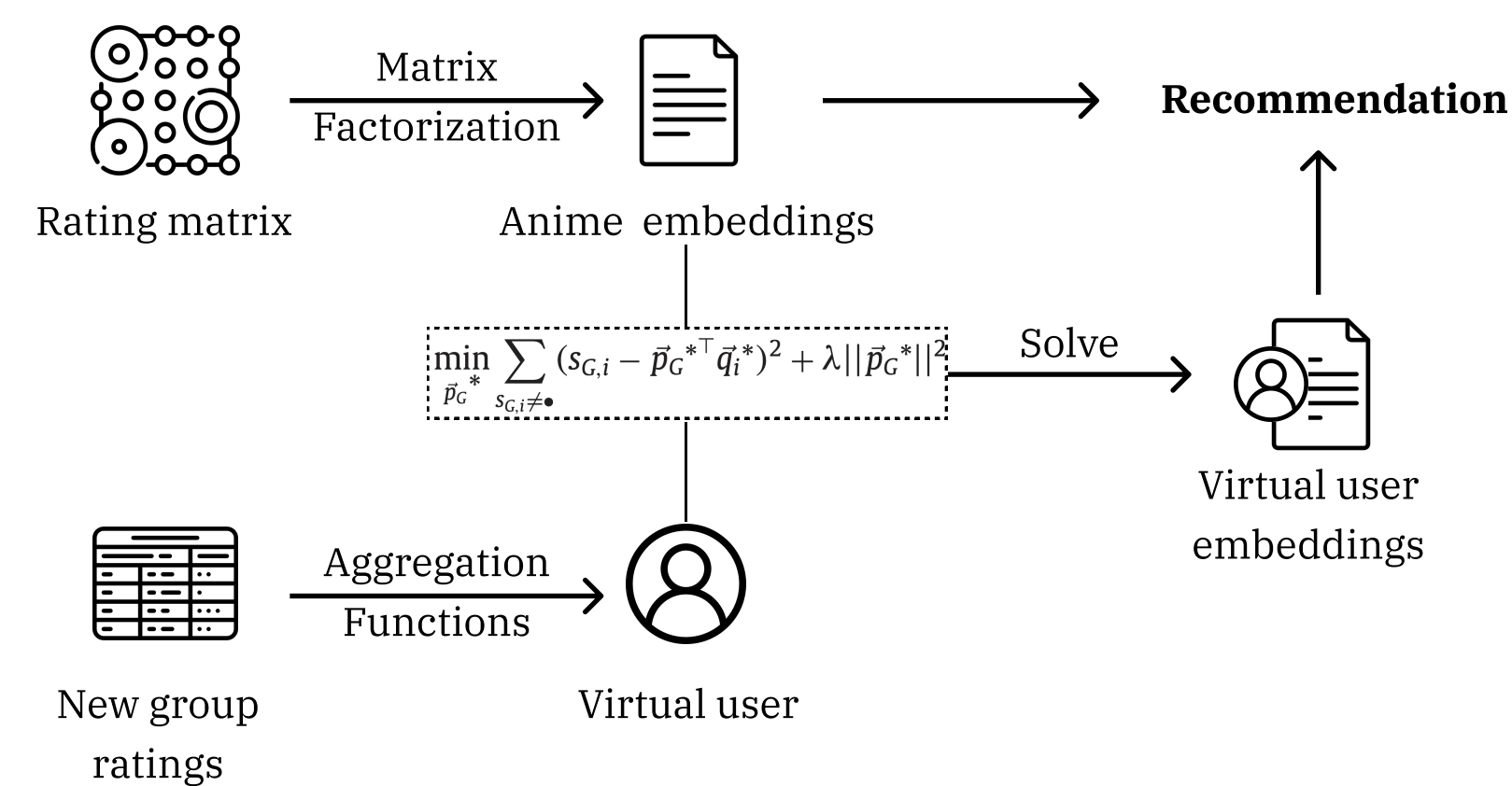
DATASET

We acquired the MyAnimeList data from Kaggle.



ALGORITHMS

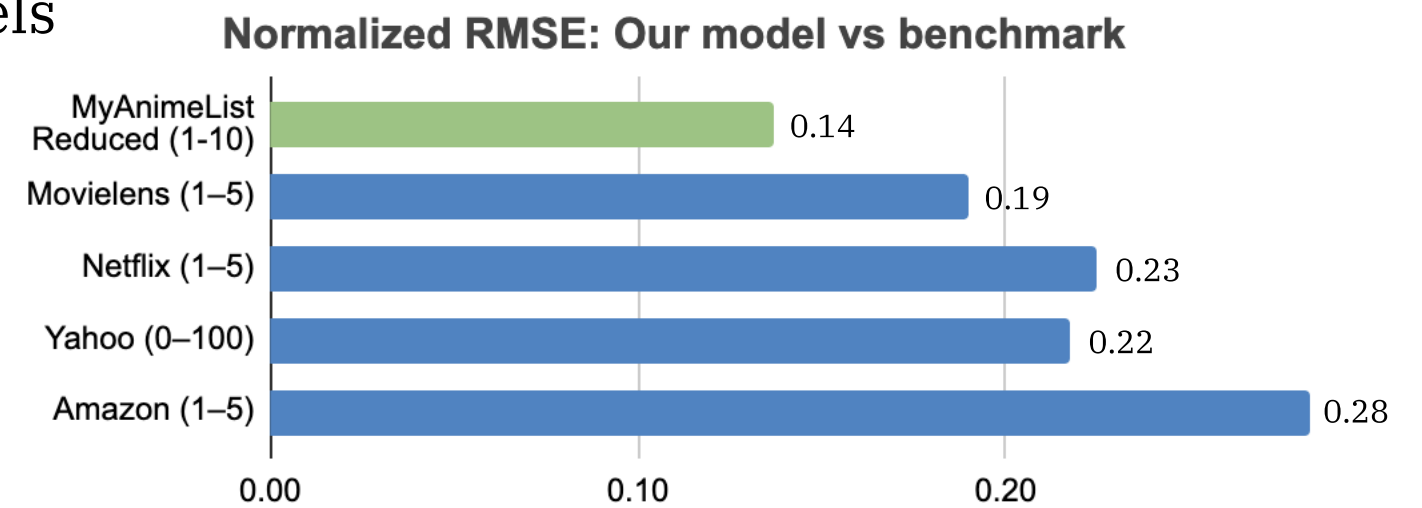
We used a Matrix Factorization approach based on Ortega et al. 2016, and added more aggregation functions, options for regularization factors and made it transparent to the users



EVALUATION

Matrix Factorization Evaluation:

We first evaluated our matrix factorization model against other models

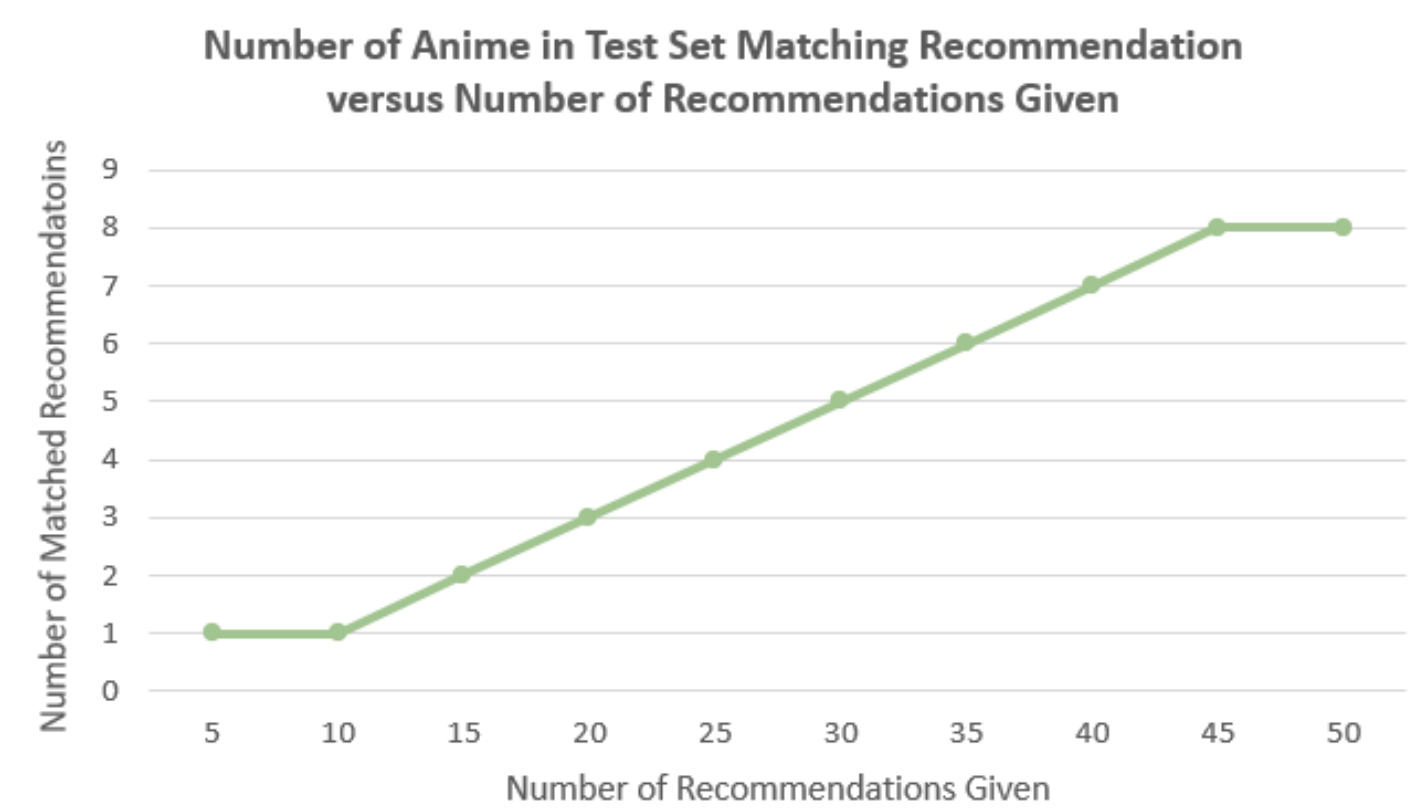


From this comparison, we found that our matrix factorization approach is effective in predicting user ratings for Anime.

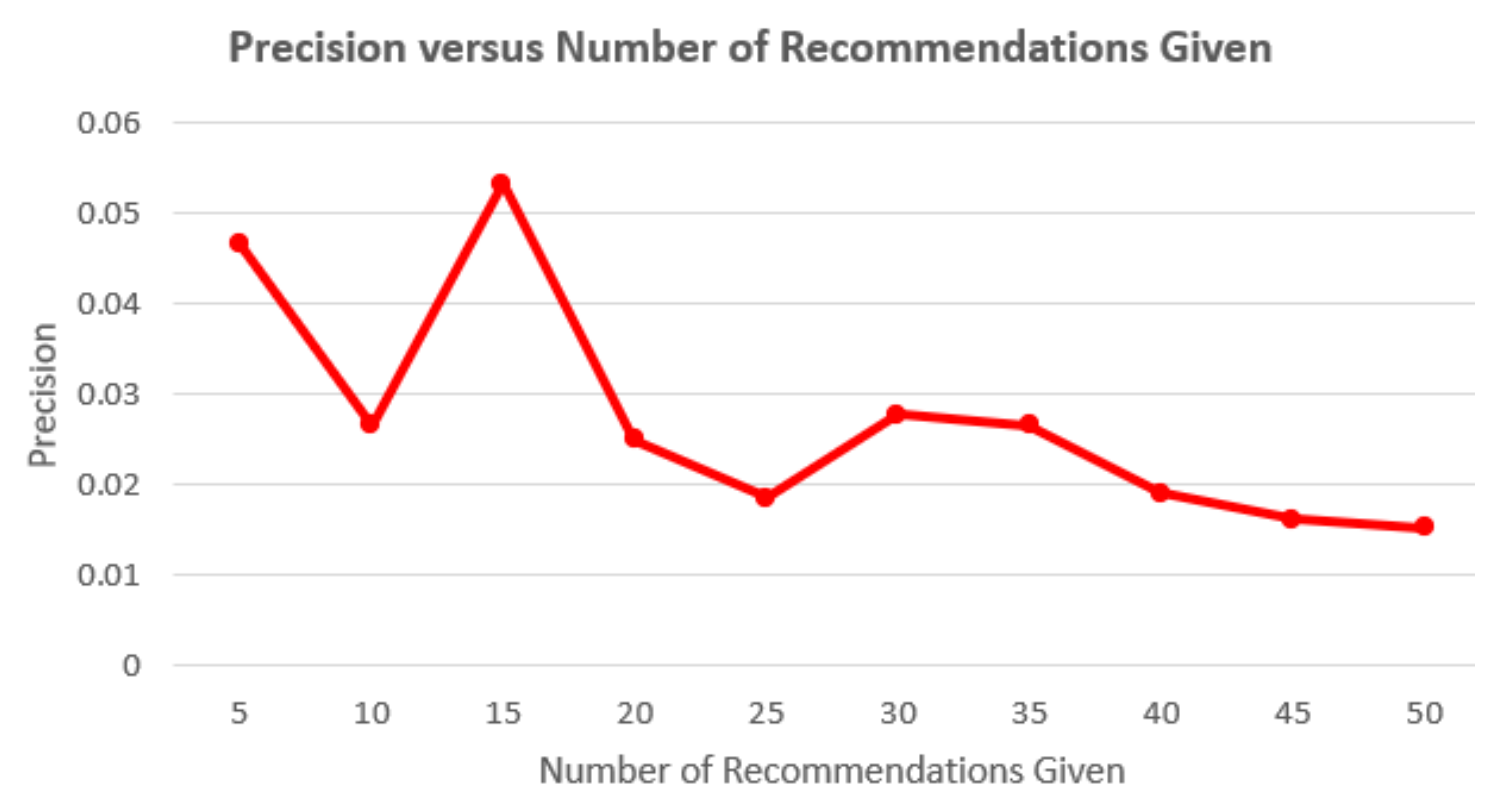
Group Recommendation Evaluation:

Precision is calculated across all group members at once:

$$\text{precision} = \frac{\text{True Positives}}{\text{True Positives} + \text{False Positives}}$$



All test data points appear in the top 50 recommendations, suggesting that our algorithm is producing novel recommendations



The precision of our recommendations is highest when we reveal 5 or 15 recommendations to the user.

INTERACTIVE APPLICATION

Application Forms:

Form 1

Your Name	Rating
Tanmay	8
Naruto	8
Shingeki no Kyojin	9
Demon Slayer	7
Berserk	10
Code Geass	5
Pokemon	9

Form 2

Your Name	Rating
Duncan	6
Bleach	6
One Piece	7
Dragon Ball	9
My Hero Academia	7
Sword Art Online	3
Full Metal Alchemist	6

Application Recommendations:

Recommendation Type: [Combination]

- Virtual User:** Better chance of discovering hidden shared interests between group members
- Combination:** Safer recommendations that value popularity

Aggregation Method: [Mean]

- Min:** Optimize for the least happy user
- Max:** Optimize for the most happy user
- Mean:** Compromise if member's interests are conflicted

Regularization: [Slider]

1) **Shingeki no Kyojin Season 3 Part 2**
Score: 9.14

2) **Fullmetal Alchemist: Brotherhood**
Score: 9.01

3) **Ashita no Joe 2**
Score: 8.97

4) **Code Geass: Hangyaku no Lelouch R2**
Score: 8.91

5) **3-gatsu no Lion 2nd Season**
Score: 8.84

Genres: Action, Military, Adventure
User Predicted Scores:
Kien: 9.42
Ajay Friend: 9.48
Lily's friend: 8.89
Tanmay: 9.1
Tanmay's friend: 7.73
Chase: 9.66