# ANIME DATABASE & RECOMMENDATION SYSTEM

# CONTENTS

- Introduction

- Data overview

- Features

- Conclusion

- Recommendation

- Future work

- Appendix

# INTRODUCTION

- This is an anime database and recommendation system. In this system, you can search any anime in this system by title key words, id, genre, starting year, season of release and so on. The result will show you more details of outcome anime. What's more, the analyze feature can show you how's the anime ranking, distribution of all anime. Last but not least, the recommendation feature will give you a list of recommendation anime basing on your rating of some random anime.

# DATA OVERVIEW

- Data containing and resource:
  - Over 4 thousand anime
  - Over 3 million rating data, including over 70 thousand users and over 4 thousand anime
  - Scraped from https://www.anime-planet.com/
  - https://www.kaggle.com/

# DATA OVERVIEW

- Information of anime
  - anime_id: myanimelist.net's unique id identifying an anime
  - title: full name of anime
  - duration: run time of this anime, no data for serialize anime
  - ongoing: whether this anime keeping update now
  - starYr: the year when it release
  - finishYr: the year when it finish
  - sznOfRelease: the season when it release
  - description: a text to summary this anime
  - studios: which studio create
  - contentWarn: some special warning
  - watched: how many users marked watched
  - watching: how many users marked watching
  - wantWatch: how many users marked watching
  - dropped: how many users marked watching and dropped later
  - poster: a poster or an image link
  - genre: comedy, action, etc.
  - type: movie, TV, OVA, etc.
  - episodes: how many episodes in this show. (1 if movie)
  - rating: average rating out of 10 for this anime.
  - members: number of community members that are in this anime's

# FEATURES OVERVIEW

- Search
  - anime_id
  - title
- Sort
  - Filtrating by
  - Sort by
  - Order by
- Analyze
  - anime_id
  - analyze field
- Recommendation
  - survey

# SEARCH

Search Table

anime ID [          ]

title [Doraemon        ]

[search]

## Search Result:

| anime_id | title | duration | ongoing | startYr | finishYr | sznOfRelease | description | studios | contentWarn | watched | watching | wantWatch | dropped | poster | genre | type | e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2471 | Doraemon (1979) | 11.0 | False | 1979.0 | 2005.0 | nan | Nobita is dumb, lazy, and slow, and as a result of his lack of motivation, any future generations in his bloodline are cursed with poverty! Therefore, to help him in his path to succeed, his great-great-great-great grandson visits him from the 22nd century to give him a gift: a blue mechanical cat named Doraemon who has a 4th-Dimensional pocket full of strange gadgets. Unfortunately | ['Shin-Ei Animation'] | [] | 1599.0 | 1199 | 731 | 1155 | | Adventure, Comedy, Fantasy, Kids, Sci-Fi, Shounen | TV | 17 |

# SORT

## Search Table

**Filtrating by:**

on going `FALSE`
season of release `spring`
genre `Comedy`
anime type `ALL`

**Sorting by:**

sort by `start year`

**Select only when having a sorting feature:**

order by `descending`

`search`

**Search Result:**

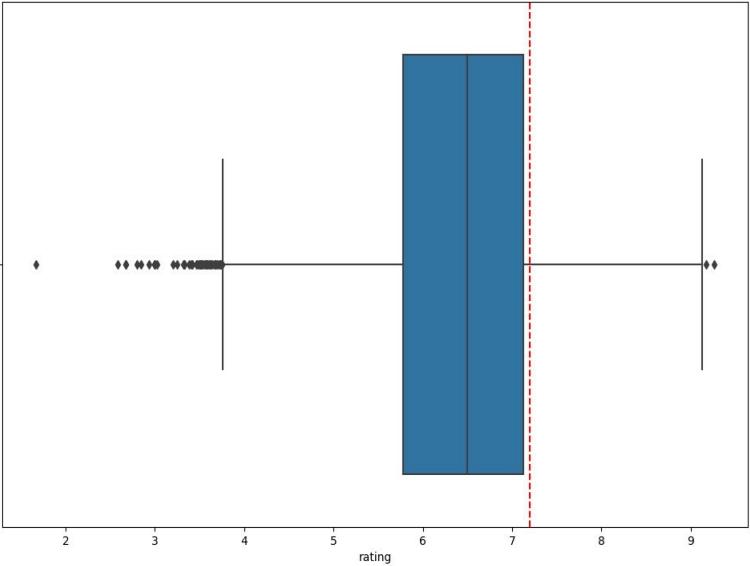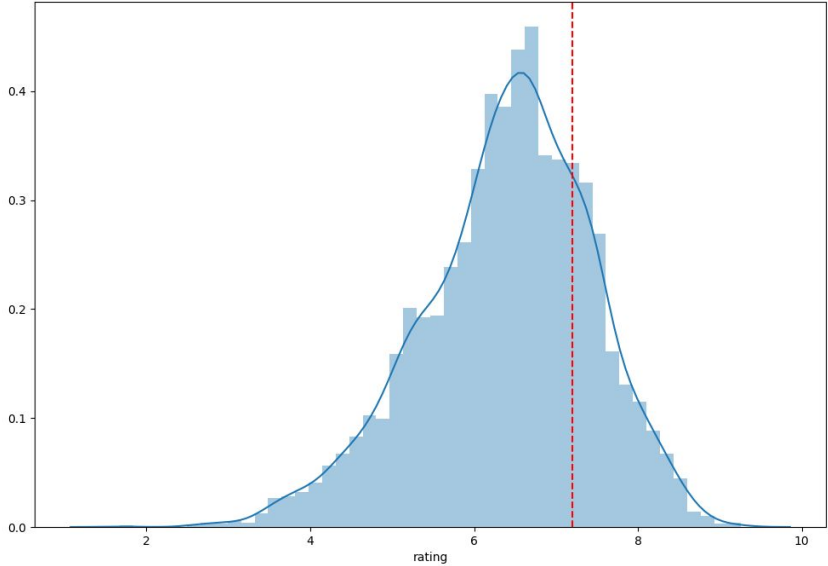| anime_id | title | duration | ongoing | startYr | finishYr | sznOfRelease | description | studios | contentWarn | watched | watching | wantWatch | dropped | poster |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32593 | The Snack World | nan | False | 2017.0 | 2018.0 | Spring | Welcome to SNACK WORLD! This is a nutty universe filled with dreams and adventures. Here, you can find everything from dragons to smart devices. You can even find Chup, the hyperactive hero of this story. Chup's village was destroyed by a total jerk called Sultan Vinegar, who plagues the land with evil jerkiness. Chup sets out on a journey to take revenge on him and pay him back a thousand times over for what he did. | ['OLM Digital'] | [] | 12.0 | 11 | 72 | 3 | |
| 30795 | Bakuon!! | nan | False | 2016.0 | 2016.0 | Spring | Moe and motorcycles have never looked better together in this sports comedy about a group of students in the motorcycle club of their all-girls school. When Hane Sakura sees the wild-hearted Onsa Amano riding a motorcycle to school, Sakura is inspired to join the motorcycle club and get her license. However, nothing could have prepared her for the | ['TMS Entertainment', '8 Pan'] | [] | 1487.0 | 265 | 1047 | 432 | |

anime ID 31211
analyze field rating
search

## Search Result:

| anime_id | title | duration | ongoing | startYr | finishYr | sznOfRelease | description | studios | contentWarn | watched | watching | wantWatch | dropped | poster | genre | type | episodes | rating | members |
|----------|-------|----------|---------|---------|----------|--------------|-------------|---------|------------|---------|----------|-----------|---------|--------|-------|------|----------|--------|---------|
| 31211 | Choegang Top Plate | nan | False | 2013.0 | 2013.0 | Fall | nan | [] | [] | 15.0 | 3 | 20 | 2 | | Action, Comedy, Kids, Sports | TV | 26 | 7.2 | 86 |

ANALYZE

# RECOMMENDATION

## Welcome to use anime recommendation system

**Please rating the following animes:**

**Note: Refresh the page can change the animes set**

| anime_id | title | rating |
|---|---|---|
| | | How do you rate this anime on a scale of 10, press 0 if you have not seen : rating: |
| 33434 | Heybot! | |
| | | How do you rate this anime on a scale of 10, press 0 if you have not seen rating: |
| 5234 | Zettai Yareru Greece Shinwa | |

## Here are some recommendation animes for you:

| anime_id | title | poster |
|---|---|---|
| 31211 | Choegang Top Plate | |
| 32422 | Doukyuusei | |
| 5114 | Fullmetal Alchemist: Brotherhood | |

# CONCLUSION

- In the database system, I totally got three dataset. However, two of them are having a lot of repeated features. At last, I use the dataset from https://www.anime-planet.com/ as the basic one and added more features from the other dataset. Also, I scraped more features in this website and added into it.

- In the recommendation system, I had tried some algorithms(including KNNBasic(), KNNBaseline(), KNNWithMeans(), SVD(), SVDpp(), NMF(), SlopeOne(), CoClustering()) in this recommendation system. At last, CoClustering algorithm gave me a best outcome with RMSE around 2.8485 and MAE around 2.0413 in a rating scale of 10. What's more, this algorithm gave me the shortest training time which is around 42 seconds.

# RECOMMENDATION

- For users:
    - If you have no ideas which anime to watch, you can try Sort or recommendation features. Sort feature can filtrate you prefer scope or just sorting the anime by want watch variables and recommendation features will give you some recommendation anime basing on your rating of the survey anime.
    - If you have some ideas about what you want to watch, you can use search feature. Search anime by key words to see any other related anime

- For analysts:
    - To pass graphs and charts to the front desk, I found two methods. One is saving them on the local machine and supply the path to the front desk. The other one is encode them into base64.
    - It is a pretty real case in our daily life. The training time is much longer than we excepted because of the huge dataset. I suggest than we can slightly dope down our training size base on the dataset size.

# FUTURE WORK

- Algorithm: Try more algorithms from other packages

- Hyper Parameter Tuning: tune more parameters of the models and use random search before grid search

- Exploratory Data Analysis: Exploratory more characteristics and more details in the analyze feature

- Interface: Learn more about the html or other tools to make the UI more nicer

# THANK YOU!

Any Questions?
You can find me at:
Jiarong.chen.1@alumni.stonybrook.edu
https://www.linkedin.com/in/jiarong-jr-chen-ba87b214a/
https://github.com/JRRRRRRR

# APPENDIX

| | algorithm | RMSE | MAE | time |
|---|---|---|---|---|
| 0 | KNNBasic | 3.70913163 | 2.67518716 | 0 days 00:25:14.471239000 |
| 1 | KNNBaseline | 3.4111336 | 2.47642014 | 0 days 00:23:29.751706000 |
| 2 | KNNWithMe: | 2.94897168 | 2.13765971 | 0 days 00:23:59.223370000 |
| 3 | SVD | 3.27090836 | 2.47156648 | 0 days 00:00:55.936358000 |
| 4 | SVDpp | 3.34692286 | 2.54527573 | 0 days 00:01:45.950367000 |
| 5 | NMF | 5.73574006 | 5.10015567 | 0 days 00:00:51.883116000 |
| 6 | SlopeOne | 3.01460698 | 2.20863047 | 0 days 00:00:50.678345000 |
| 7 | CoClustering | 2.8484735 | 2.04126179 | 0 days 00:00:41.710922000 |