

# Anime Data



## PREDICTION AND ANALYSIS

### Introduction

In this project we are going to take you to a small journey into the world of anime data. The aim of the project is to build a recommender system based on users individual viewing history and a rating predictor algorithm.

Our aim is achieved by accomplishing the following goals:

- 1) The anime recommender system is user specific and bases its recommendations on other similar users
- 2) The anime rating predictor's average accuracy is in range of  $\pm 0.5$  points compared to the real rating

In addition we created some graphs and tables to have a better understanding of the anime data we have. To be precise, we have data on 12292 animes and 73514 users.

### Recommender and Predictor algorithms

#### Recommendation:

- Getting the anime view and rating history of a user
- Filtering out all the users who haven't seen the animes that the original user has

- Creating a matrix from the two user and anime databases
- Using Cosine Similarity Nearest Neighbors algorithm to find 10 most similar users to the original

- Based on the 10 most similar users, finding one anime they all like and recommending it to the original user

Preparation  
Process  
Results



#### Prediction:

- Cleaning the anime dataset
- Converting String format data into numerical format

- Splitting the data into training and test sets
- Using Linear Regression modeling algorithm to train the model

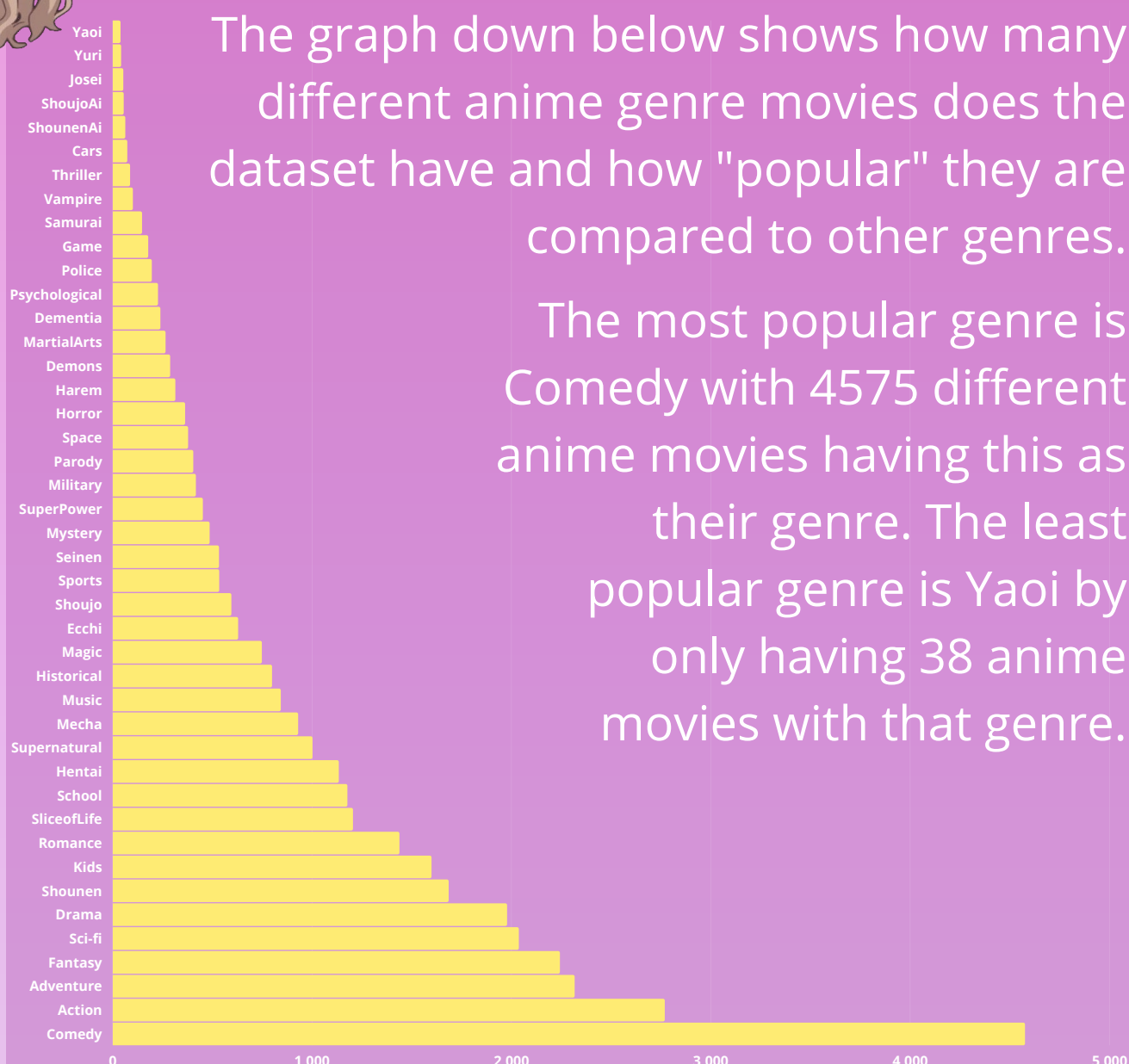
- Testing trained model with the test dataset
- Calculating the MSE
- Using the model to start predicting rating of the animes given by the user



### Genre distribution graph

The graph down below shows how many different anime genre movies does the dataset have and how "popular" they are compared to other genres.

The most popular genre is Comedy with 4575 different anime movies having this as their genre. The least popular genre is Yaoi by only having 38 anime movies with that genre.



### Test results

#### Recommendation:

For the recommendation test the authors used their own data, as well as the data of multiple friends who volunteered to help. It turned out, that for everyone it recommended something that they actually wanted to watch at some point.

As an example, these animes were watched and rated by one of the test subjects: Kimi no Na wa, Koe no Katachi, Kotonoha no Niwa, Sen to Chihiro no Kamikakushi, Boyousoku 5 Centimeter.

Based on that the algorithm recommended: Tonari no Totoro

#### Prediction:

Anime name	Prediction	Real
Hotaru no Haka	8.1	8.51
Gakkougurashi!	8.18	7.64
Skip Beat!	7.65	8.14



### Critical user's favourite

Anime name	Number of good votes	Overall rating
Steins;Gate	27	9.17
Death Note	21	8.71
Fullmetal Alchemist: Brotherhood	20	9.26
Fate/Zero	19	8.51
Neon Genesis Evangelion	18	8.32
Neon Genesis Evangelion: The end of Evangelion	17	8.45
Suzumiya Haruhi no Shoushitsu	17	8.81
Sen to Chihiro no Kamikakushi	17	9.93
Clannad: After Story	17	9.06
Usagi Drop	17	8.56
Fate/Zero 2nd Season	17	8.73

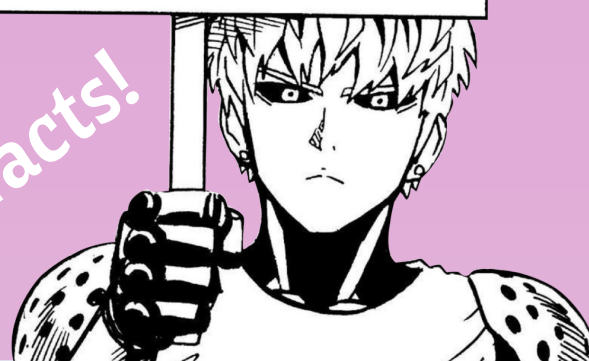
This table shows what movies were liked (rated 7.0+) by users whose average ratings to animes were less than 5.

There were 197 users of that type.

Number of good votes shows how many of those users watched and rated the anime 7.0 or above.

- 5.33% of users don't rate any animes
- 1.91% of animes have an average rating below 4.0
- 4.74% of animes have an average rating above 8.0
- Users don't rate 18.9% of animes they watch

Fun facts!



#### Links of sources

- <https://www.kaggle.com/CooperUnion/anime-recommendations-database>
- [https://www.pngkit.com/png/full/78-784985\\_studying-anime-girl-doing-homework.png](https://www.pngkit.com/png/full/78-784985_studying-anime-girl-doing-homework.png)
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- [https://64.media.tumblr.com/5f4569dd3d6dee2dd52d673948431f26/tumblr\\_ny0pj0umk61scr1c9o1\\_r1\\_1280.png](https://64.media.tumblr.com/5f4569dd3d6dee2dd52d673948431f26/tumblr_ny0pj0umk61scr1c9o1_r1_1280.png)
- <https://ehden.elixir.ut.ee/img/ut-logo.300786cc.png>
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- [https://sisu.ut.ee/sites/default/files/iaotartu2020/files/tartu\\_ylikool-logo\\_valge-cmyk-08\\_copy.png](https://sisu.ut.ee/sites/default/files/iaotartu2020/files/tartu_ylikool-logo_valge-cmyk-08_copy.png)
- <https://github.com/Tyrkson/AnimeDSProject>