

Non-English Film Engagement on IMDb

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ABSTRACT

As media is increasingly globalized, the success in recent years of films like *Parasite* and *All Quiet on the Western Front* demonstrate the widespread potential for Non-English language films in the English-speaking market. The Internet Movie Database (IMDb) is a comprehensive, U.S.-based online database of information primarily pertaining to films and television shows. Its reviews and ratings systems offer a way to measure user engagement, which can represent a mode of success that is different from more traditional measures such as ticket sales and awards.

With this project, we aim to explore user engagement with non-English language films listed on IMDb. We will begin by preprocessing and integrating several different datasets available from IMDb. From there, we will develop models to determine if there are certain conditions such as genre, language, or release date that lead to greater user engagement. We hope that this research will lead to interesting patterns and shed new light on this topic.

CCS CONCEPTS

• Applied computing → Arts and humanities • Information systems → Data management systems • Information systems → Data mining

KEYWORDS

Data mining; Database systems; International films; movies; IMDb

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1 Problem Statement and Motivation

There is a lack of research on the relationship between film languages and their success, whether that be measured by star ratings, box office income, or number of ratings. We believe that non-English language films likely provide a plethora of high-quality movies that are less likely to be watched because of their original language.

We have developed six key research questions for this project:

- Do non-English films have fewer reviews and ratings, regardless of their average rating?
- Do certain genres of movies do better (better could be ratings or gross/net profit) when released at certain times of the year (by month)?
- Do certain languages do better when it comes to ratings/reviews overall?
- Does the number of language speakers impact the average number of ratings per film for that language?
- Do international films have higher ratings due to fewer view counts?
- Which films are “underrated gems,” that have high ratings, but relatively low view counts?

We hope that our research can find patterns within non-English film engagement that can shed light on the willingness of users to watch content from countries outside of their own. English films became a dominant force in international markets since the Second World War and continue to have an increasingly large share of the international film market. By identifying the factors that contribute to the success of films in international markets, this study can inform filmmakers, distributors, and

other industry stakeholders about the factors that influence the popularity of films, as well as help viewers find their next favorite movie.

2 Literature Survey

The IMDb dataset has been used a number of times, primarily for exploratory analyses conducted on older iterations of the dataset. An exploratory data analysis on IMDb movie titles searching for overall trends in popularity was performed and can be accessed here: <https://www.kaggle.com/code/slayomer/eda-on-imdb-film-dataset>. Another exploratory analysis focused specifically on the popularity of Netflix titles on IMDb, which can be accessed here: <https://www.kaggle.com/code/keswanirohit/netflix-visualization-and-eda>. Finally, the IMDb dataset was also used to create a movie recommendation system for users: <https://www.kaggle.com/code/jasonlei0420/ds5230-movie-recommendation-system>. It is worth noting that some of the exploratory analyses may prove useful once we have applied our models in that we can compare the engagement patterns in non-English Language films with engagement patterns over all films.

3 Proposed Work

Firstly, the IMDb dataset will be organized. Cleaning unnecessary rows and columns to research for this project, and blank entries. For example, the data will be removed from television cast and n/a data. Combining multi datasets to enable finding user engagement with non-English language films listed on IMDb.

Second, exploring the organized dataset finds interesting patterns and relationships among attributes. For example, the data will have some linear regression correlation, similar group results by clustering, or nothing to relate some attributes by correlation matrix.

At last, in a conclusion, the explored patterns are to be displayed as graphs, and charts. The result is also evaluated on how accuracy leads to the

result of the research. For example, we can examine the accuracy by measuring ROC/f1 score.

4 Data Set

Our data sets can be downloaded from this URL: <https://datasets.imdbws.com/>, and the documentation can be found here: <https://www.imdb.com/interfaces/>. We currently suspect that we will be using the following data sets from IMDb: title.basics.tsv.gz, title.ratings.tsv.gz, and title.akas.tsv.gz. The other available data sets relate to cast and crew information, as well as episode details for TV shows, which are outside the scope of this project.

IMDb houses data for over 10.1 million titles and almost 630,000 films. Our first data set, the ratings data set, contains just 3 data points: “tConst” (the unique identifier), an average ratings, and the number of unique votes.

Our second data set, Basics, has 9 attributes, including tConst. Using this data set, we will be able to start the data reduction process using the following attributes: isAdult (a boolean to mark if it’s an adult or non-adult title) which we will use to remove all adult content, titleType (such as TV show, episode, film, short film, etc.) which we will use to eliminate non-feature films from the data set. Here we also have the bonus of having an endYear attribute, which in theory should only be used for television shows and be empty for everything else. This might help us catch errors. When we move to modeling, we will use this data set to access genres of films, the year the film was released, and the runtime.

Lastly, the third data set we will access is the akas (also known as) data set. This will tell us the language of the film, the regions in which the original title is used, as well as allowing us to access both the original title and the translated title.

5 Evaluation Methods

There are four main steps that we plan to do to evaluate our results. They are statistical analysis, accuracy checks, data visualization, and critical evaluation.

5.1 Statistical Analysis

For statistical analysis we will utilize clustering, regression, pattern mining, as well as other potential methods as we learn more techniques in class and become more familiar with the dataset.

5.2 Accuracy Checks

For accuracy checks we will develop test cases and comparison sets to ensure accurate data processing.

5.3 Data Visualization

For data visualization we will utilize graphs, plots, and other visual tools to evaluate and recognize patterns that may be found in our dataset.

5.4 Critical Evaluation

For critical evaluation we will scrutinize results for misleading strong association rules.

6 Tools

6.1 Github

We will be using Github repository to store and keep track of all of our project milestones and class assignments related to the project.

6.2 Discord

We will be using Discord for daily team communication and discussions. As well as relaying any blocks that may occur and how to effectively resolve issues.

6.3 Google Doc/Presentation

We will be using Google doc/presentation for related class project assignments, as this effectively allows multiple people to edit at the same time.

6.4 Python

We will be using the Python programming language to find trends/patterns related to the problems and questions we have for our dataset. Within Python we will be using Numpy and Pandas to help us navigate through and run calculations as needed in our dataset. We will

also potentially be using Matplotlib to help visualize any discoveries made.

6.5 Tableau

We will be using Tableau to help us visualize any simple and interesting patterns related to our dataset.

7 Milestones

We have identified 5 key milestones for conducting our data analysis.

1. Data cleaning, integration, and reduction by 31/3/23 - We will have cleaned and processed the data to prepare it for analysis. This includes tasks such as removing duplicates, eliminating all non-feature films, handling missing values, and transforming data into a consistent format.
2. Search for patterns by 7/4/23 - We will have analyzed the data to identify patterns and relationships between variables.
3. Develop and test models by 21/4/23 - We will have built models to predict outcomes or explain relationships in the data and tested these models to ensure they are accurate and reliable.
4. Apply models to data set by 28/4/23 - We will have used models to make predictions and draw conclusions about the IMDb data.
5. Visualizations by 28/4/23 - We will have created visualizations to present the findings of the analysis in a clear and meaningful way. These visualizations will be able to help stakeholders understand the results of the analysis.

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