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Forecasting Movies to User Using Bidirectional GRU and Remora

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ABSTRACT

Expressing reviews in the form of sentiments or ratings for item used or movie seen is the part of human habit. These reviews are easily available on different social websites. Based on interest pattern of a user, it is important to recommend him the items. Till today, a lot many recommendation systems are designed using several machine learning algorithms. Still, faster convergence speed, prediction accuracy, suitable optimization are the hurdles for the recommendation systems that must be resolved using hybrid algorithms. In this paper, we propose a system that uses Bidirectional Gated Recurrent Unit (BiGRU), the latest variant of Recursive Neural Network (RNN) collaborated with Remora Optimization Algorithm (ROA).

Keywords: K-means, recommendation system, recommender system, datamining, clustering, movies, Collaborative filtering, Content-based filtering, remora, Bidirectional GRU.

Introduction:

People are strongly connected to social media for sharing their emotions and reviews on different websites. These emotions are in the form of sentiments or ratings for a product or service. As a result, a huge amount of data is generated and is being studied to predict, recommend a user any product or service for his interest. The movie rating database with users and different parameters for movies is available on several popular websites like Kaggle. Decisions made by support of multiple stronger historical impressions to resolve an issue are always superior to the decisions made with single impression by any user. Rather than collecting all of the reviews or ratings, only the users having stronger relevance of ratings between them are collected. Many researchers have taken efforts to enhance recommendation system using different machine learning techniques like GA, Neural Network (NN), Support Vector Machine (SVM) and many more. In this paper, we proposed a movie recommendation system, based on BiGRU algorithm optimized through ROA. BiGRU algorithm is applied to 100 k IMDB dataset. The parameters userid, movieid and rating are considered only through preprocessing. Similarity between the users for rating similarity of same movies and also the weighting dissimilarity between the same movies are obtained. The weights for finding similarity between the users are optimized using ROA and finally top 10 movies are recommended to a user based on his interest pattern. The results are compared with the output from GA, MMDL and FFNN. It is observed that BiGRU shows better results obtained for all testing parameters we used for comparison.

Purpose of planned system

Prediction is concerned with future certainty; forecasting looks at how hidden currents in the present signal possible changes in direction for companies, societies, or the world at large. Thus, the primary goal of forecasting is to identify the full range of possibilities, not a limited set of illusory certainties. The purpose of business forecasting is to develop better strategies based on these informed predictions. Past data is collected and analyzed via quantitative or qualitative models so that patterns can be identified and can direct demand planning, financial operations, future production, and marketing operations.

Literature Review

The film industry is one of the biggest contributors to the entertainment industry's unpredictability in success and failure. Because of quick digitization and the rise of internet-based life the film business is developing significantly as the average number of movies produced per year

is greater than 1000, therefore to make the movie profitable, it becomes a matter of concern that the movie succeeds. The success rate is the fraction or percentage of success among several attempts, and also, the average task success rate can be calculated either per participant or per task that users complete correctly. BiGRU and REMORA have been extensively used in forecasting and prediction studies, it can, therefore, be employed for predicting the success and failure of the movies also. This study brings the understanding that the prediction of movie success is indeed possible with high percentages of accuracy, therefore, using a prediction engine, producers can evaluate beforehand if the movie is worth investing in and accordingly make their decisions. The accuracy of a predictive model depends a lot on the extraction and engineering of independent variables. When it comes to studying movie success, three types of features have been explored: audience-based, release-based, and movie-based features .

Proposed System

Describes the proposed system, explaining how modules and components integrate and communicate to bring about the working application of the proposed system. The systems design is developed to satisfy the requirement of modern collaborative filtering recommendation system architecture including computational structures and model training algorithms. The system design will also capture the major functional building blocks needed to understand the process of building an online book recommender software system. The architectural design of the proposed system is illustrated in figure 1

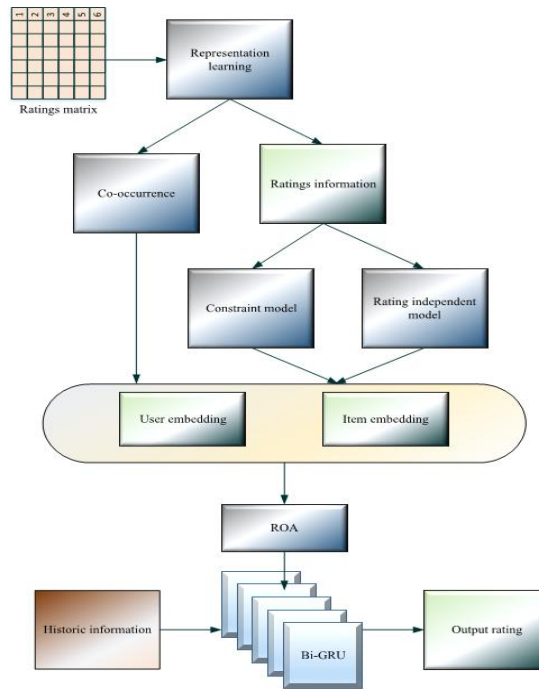


Fig. 1 System Architecture

Flow DiagramDescription

Rating Matrix:

User, Movie, Ratings, Different movie ideas are enlisted in a tabular format.

Representation Learning:

Here User id verses movie id matrix will be generated and ratings for particular movie by user is shown. Unrated movies for particular user will be kept as blank rating.

Co-occurrence:

It is obtainedby intersection operator. It shows number of similar movies rated by two user.

Constraint model:

This model is obtained by considering the users who have rated similar movies with same ratings are considered.

Rating Independent Model:

In this the users who have rated similar movies with different ratings are considered.

Dataset

A system can work based on such types of data as content, historical data, or user data involving views, clicks, and likes. The data used for training a model to make recommendations can be split into several categories. This dataset contains user ratings for movies of different genres.

Future Scope

We proposed ROA for BiGRU to recommend movies to user, based on his interest pattern. Then the obtained results are tested for the parameters like MAE, RMSE, accuracy, F measure, precision and recall. We compared these results with GA, MMDL, FFNN and we found that BiGRU with ROA has 97% accuracy, 97.5% F measure, 97% precision, 98% recall which is greater than rest of all and MAE 0.03, RMSE 0.17 which are lowest than all remaining. Hence, we conclude that BiGRU with ROA has better performance for movie recommendation. In future, ROA can be used for newest machine learning algorithm for movie recommendation.

Conclusion

Recommender systems are a powerful new technology for extracting additional value for a business from its user databases. These systems help users find items they want to buy from a business. Recommender systems benefit users by enabling them to find items they like. Conversely, they help the business by generating more sales. Recommender systems are rapidly becoming a crucial tool in E-commerce on the Web. Recommender systems are being stressed by the huge volume of user data in existing corporate databases, and will be stressed even more by the increasing volume of user data available on the Web. New technologies are needed that can dramatically improve the scalability of recommender systems.

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