**Rating Prediction based on Social Sentiment from Textual Reviews**

**ABSTRACT:**

In recent years, we have witnessed a flourish of review websites. It presents a great opportunity to share our viewpoints for various products we purchase. However, we face the information overloading problem. How to mine valuable information from reviews to understand a user’s preferences and make an accurate recommendation is crucial. Traditional recommender systems (RS) consider some factors, such as user’s purchase records, product category, and geographic location. In this work, we propose a sentiment-based rating prediction method (RPS) to improve prediction accuracy in recommender systems. Firstly, we propose a social user sentimental measurement approach and calculate each user’s sentiment on items/products. Secondly, we not only consider a user’s own sentimental attributes but also take interpersonal sentimental influence into consideration. Then, we consider product reputation, which can be inferred by the sentimental distributions of a user set that reflect customers’ comprehensive evaluation. At last, we fuse three factors-user sentiment similarity, interpersonal sentimental influence, and item’s reputation similarity into our recommender system to make an accurate rating prediction. We conduct a performance evaluation of the three sentimental factors on a real-world dataset collected from Yelp. Our experimental results show the sentiment can well characterize user preferences, which help to improve the recommendation performance.

**EXISTING SYSTEM:**

* Sentiment analysis can be conducted on three different levels: review-level, sentence-level, and phrase-level.
* Review-level analysis and sentence-level analysis attempt to classify the sentiment of a whole review to one of the predefined sentiment polarities, including positive, negative and sometimes neutral.
* While phrase-level analysis attempt to extract the sentiment polarity of each feature that a user expresses his/her attitude to the specific feature of a specific product.
* Zhang *et al.*propose a self-supervised and lexicon-based sentiment classification approach to determine sentiment polarity of a review that contains both textual words and emoticons. And they use sentiment for recommendation.
* Lee *et al.*propose a recommender system using the concept of Experts to find both novel and relevant recommendations. By analyzing the user ratings, they can recommend special experts to a target user based on the user population.

**DISADVANTAGES OF EXISTING SYSTEM:**

* The existing work mainly focuses on classifying users into binary sentiment (i.e. positive or negative), and they do not go further in mining user’s sentiment.
* The existing approaches mainly leverage product category information or tag information to study the interpersonal influence.
* These methods are all restricted on the structured data, which is not always available on some websites. However, user reviews can provide us ideas in mining interpersonal inference and user preferences.

**PROPOSED SYSTEM:**

* We propose a sentiment-based rating prediction method in the framework of matrix factorization. In our work, we make use of social users’ sentiment to infer ratings.
* First, we extract product features from user reviews. Then, we find out the sentiment words, which are used to describe the product features. Besides, we leverage sentiment dictionaries to calculate sentiment of a specific user on an item/product.
* The main contributions of our approach are as follows:
* We propose a user sentimental measurement approach, which is based on the mined sentiment words and sentiment degree words from user reviews.
* We make use of sentiment for rating prediction. User sentiment similarity focuses on the user interest preferences. User sentiment influence reflects how the sentiment spreads among the trusted users. Item reputation similarity shows the potential relevance of items.
* We fuse the three factors: user sentiment similarity, interpersonal sentimental influence, and item reputation similarity into a probabilistic matrix factorization framework to carry out an accurate recommendation. The experimental results and discussions show that user’s social sentiment that we mined is a key factor in improving rating prediction performances.

**ADVANTAGES OF PROPOSED SYSTEM:**

* In our paper, we not only mine social user’s sentiment, but also explore interpersonal sentimental influence and item’s reputation. Finally, we take all of them into the recommender system.
* The purpose of our approach is to find effective clues from reviews and predict social users’ ratings.
* We fuse user sentiment similarity, inter personal sentiment influence, and item reputation similarity into a unified matrix factorization frame work to achieve the rating prediction task.

**SYSTEM REQUIREMENTS:**

**HARDWARE REQUIREMENTS:**

* System                            :         Pentium Dual Core.
* Hard Disk                       :         120 GB.
* Monitor                          :         15’’ LED
* Input Devices                  :         Keyboard, Mouse
* Ram                               :         1GB.

**SOFTWARE REQUIREMENTS:**

* Operating system           :         Windows 7.
* Coding Language           :         JAVA/J2EE
* Tool                               :         Eclipse
* Database                        :         MYSQL