

Research on User Reviews Analysis Based on Sentiment Analysis from the Perspective of Social Networks

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Abstract: Based on theories such as user resource relationship theory, attitude perception theory, and user behavior theory, this paper summarizes and explains existing sentiment analysis methods, and seeks practical paths and methods for analyzing and visualizing user reviews from the perspective of social networks. The paper aims to obtain the most authentic and effective feedback from the public. This enables the adoption of correct strategies to guide online public opinion, thereby fully leveraging the information and emotional feedback effects of comments, and promoting the shaping of a good social network environment.

Keywords: Social Network Perspective; Sentiment Analysis; User Reviews

1. Introduction

The rapid development of the Internet has greatly changed people's traditional production and lifestyle, and has had a significant impact on the industrial structure and the way people communicate. This allows the public to participate in political life, supervise public opinion, and freely express their feelings and views on the social platform of the Internet. Supported by new media technology, complex social networks such as Weibo are connected and constructed, making it a large-scale network information sharing platform in China. This is also an important information channel for people to obtain first-hand information data, which can reflect various aspects of social sentiment and public opinion. Under the dual influence of the macro social environment and public psychology, the impact and wide range of public opinion information it generates have attracted attention from all sectors of society. When external stimulating information and public opinion appear, emotional public opinion caused by online users will accelerate the spread of

negative emotions and malicious public opinion. Therefore, timely intervention and correction are needed. Through the analysis of user comments and emotions from the perspective of social networks, the hidden emotions and emotions behind social topics can be excavated and visualized. This can help to understand and monitor the cognitive attitudes and emotional states of the general public, better guide the dissemination of positive ideas, and shape a clean and positive online environment.

2. Classification and Characteristics of Online Comments

In the context of informatization, Internet users can freely participate in online topic discussions and express their views and opinions on the Internet. According to the different recipients of comments, online comments can be divided into three categories: film and television reviews, current affairs news reviews, and product and service reviews. Film and television reviews refer to people's online comments after watching a certain film. Different movies and TV dramas have different emotional orientations towards the audience, so user reviews also show different emotional tendencies, and the difficulty of conducting emotional analysis on film and television reviews is relatively high; [1] Product and service reviews are evaluations made by consumers based on their own consumption experience, which have certain guidance and reference value for both merchants and users. Merchants can use this as a basis to predict and understand consumer consumption concepts and tendencies; Other users use it as reference information for their own product purchases. Generally speaking, the emotional inclination of product and service reviews is more obvious; Current affairs news reviews are comments made by online users on current news events, and the resulting behavioral tendencies and emotional attitudes are called online public opinion, with relatively obvious emotional

tendencies.

3. Overview of Social Network Theory

Social network is a virtual network constructed based on the six degree separation theory, with the purpose of interacting with resources, socializing, and entertainment, relying on network platforms, through real or non real name methods, and using interpersonal relationships between users as a link. The user resource relationship theory, attitude perception theory, and user behavior theory are the three main theories of social networks and the theoretical basis of this paper. The user resource relationship theory holds that social networks are composed of users and resources, and their purpose is to provide users with socially utilitarian services. Their operational form is resource service to users, and users produce resources; User behavior theory believes that user behavior is based on the actions taken by individuals after self weighing and thinking, and that users influence each other's attitudes and imagery towards participating in a certain event; Attitude perception theory refers to the influence of social identity, perceived ease of use, user performance and effort expectations, user willingness, perceived entertainment, etc. on the willingness of users to participate in group activities, determining their actual participation in social networks. [2]

4. Emotional Analysis Methods and Steps

4.1 To Select Information Source

In order to conduct sentiment analysis on user comments in the Internet platform, it is necessary to select the corresponding information source. That is, on social media platforms, e-commerce platforms, and online media, comprehensive analysis, evaluation, and examination of user reviews on specific events, services, and products are conducted. From the vast amount of comment information, network user comments with certain emotional analysis value, research value, and authenticity are selected.

4.2 Information Preprocessing

The text obtained through the first step of information source selection cannot be directly used for sentiment analysis, but needs to be preprocessed and filtered to become a data format that can be recognized by computers.

Firstly, emoticons that interfere with analysis in the text should be removed; Secondly, Chinese word segmentation technology should be used for text segmentation processing. In English expression, a single word is usually used to fully express meaning, while a single character in Chinese cannot. Therefore, two or more words are needed to form a word to express semantics. This requires internet users to combine a sequence of words together in order to articulate their intentions. Due to the lack of spacing and symbols between Chinese characters, they are used to divide characters. Therefore, computers cannot accurately recognize words and require Chinese word segmentation before proceeding with subsequent operations; [3] Finally, stop words should be removed. Discontinuous words are pronouns, adverbs, and modal particles used in a text to connect information. These vocabulary words are not helpful for sentiment analysis, so they need to be screened out during the analysis process.

4.3 Emotional Analysis

After completing the steps of information source selection and information preprocessing, one can officially enter sentiment analysis. During the sentiment analysis process, appropriate methods need to be selected. The following are several common sentiment analysis methods.

The first is an emotion analysis method based on an emotion dictionary. The sentiment analysis method based on sentiment lexicons first needs to statistically analyze the sentiment words involved in the text data, and match the corresponding sentiment values of the sentiment tendencies contained in the sentiment words with a single word as the measurement unit, so as to weighted sum and compare the sentiment values of the entire sentence and text paragraphs. At the same time, factors such as the syntactic structure and grammar rules of the comment object can be combined to summarize the emotional orientation and value of the entire sentence. By using sentiment lexicon analysis, more detailed analysis of word and sentence emotions can be conducted, resulting in more accurate analysis results. It is worth noting that the application of sentiment dictionary analysis methods is based on sentiment dictionaries, so the completeness of sentiment dictionaries directly affects and determines the results of sentiment analysis.

The second is sentiment analysis methods based

on machine learning. The sentiment analysis method based on machine learning is the process of applying classification rules to texts, performing feature processing, and dividing their emotional tendencies. If the emotional tendencies in the comment data are divided into two types: negative and positive, making sentiment analysis a binary classification problem. Currently, commonly used sentiment analysis learning algorithms for comments include Naive Bayes model, support vector machines, and logistic regression algorithms.

The third is feature extraction. After Chinese word segmentation processing, the text still has a very large volume and a high dimension of feature quantity, which is not conducive to accurate processing and sentiment analysis by analysts. Therefore, based on application scenarios and various feature selection methods, selecting appropriate feature selection methods and performing appropriate dimensionality reduction on segmented text can help facilitate the smooth progress of sentiment analysis. One is to use the word frequency method to statistically analyze the frequency of all words appearing in comments, deleting the word with the lowest frequency and reducing the feature space dimension; The second is the TFIDF algorithm, which calculates the ratio of the number of occurrences of each word to the total word count. It removes words that are below or above the threshold and uses the remaining content as features to represent the text; [4] The third is the information gain method. Whether a certain feature word appears in the text to determine the category of the text, the amount of information provided, and the more information the feature word text provides, the more obvious its distinguishing effect will be.

5. Guiding Strategies for Positive Emotional Public Opinion

5.1 To Control the Source of Information

On the one hand, official media should do a good job in information control. When some social events occur, China News Network, People's Daily, CCTV News, and other core nodes in the public opinion dissemination network need to publish accurate and truthful information to reduce the problem of information asymmetry. Attention should be paid to occupying the high ground of public opinion, controlling the power of speech in one's

own hands, and not providing living space for misleading and provocative speech; On the other hand, government departments should establish and improve information disclosure systems, strengthen the management of online information, and actively handle public opinion events. We should focus on analyzing and monitoring the behavior and emotional dynamics of users participating in online public opinion, comprehensively understand the origin and evolution process of online public opinion, and respond accordingly. This can eliminate public doubts and problems, reduce public dissatisfaction, and minimize the hidden risks of emotions and emotions.

5.2 To Real Time Monitor and Timely Correct User Emotion Tendencies

By using appropriate sentiment analysis methods to obtain user emotional tendencies from user comments, it is beneficial to successfully complete tasks such as public opinion surveys, product recommendations and optimization, and public opinion control. Large scale public opinion events on the internet usually have certain signs before they occur, and are not unfounded. Therefore, relevant departments can establish a comprehensive warning mechanism to classify public opinion dynamics into different levels. When the analysis results show that some users have strong negative emotions and negative emotional tendencies, and their numerical results exceed the threshold, it is necessary to focus on and take timely measures to alleviate the situation and prevent it from developing towards a more serious direction.

5.3 To Improve the Knowledge and Media Literacy of Netizens

Individual media literacy refers to the public's ability to think and identify the authenticity of online information; Intrinsic knowledge literacy reflects an individual's level of understanding of the problem. A public group with good knowledge and media literacy is often able to provide fair and objective evaluations of events and make self regulating statements when participating in online comments. [5] Therefore, relevant departments should strengthen media literacy education for internet users, so that they can consciously regulate and manage their behavior and speech. This can continuously enhance people's ability to distinguish the authenticity of different online information,

enhance their rational factors, and avoid the "silent spiral" effect caused by low media literacy of users.

6. Conclusion

With the continuous popularization and development of Internet technology, mobile social network has become the main public opinion arena for people to obtain, collect and disseminate information and express their feelings and attitudes. The network public opinion formed by it is more diverse and complex, becoming a gathering place for social hot topics. Therefore, it is necessary to monitor and timely correct the emotional tendencies of online public opinion users. And this requires the joint efforts of the government, media staff, and others, each performing their own duties, conducting rich and diverse emotional exploration, and doing a good job of coordination and handling on this basis. This enables quick response and clarification of negative information, actively guiding the dissemination of positive information.

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