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Digital Humanities and Film Analysis: A Study of the Intersection of Text Mining and Sentiment Analysis

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ABSTRACT

Digital technology is becoming an essential prerequisite for participation in all aspects of film creation, production and research in the present era. In this regard, we propose a cross-study and validation analysis of digital humanities and film analysis: text mining and sentiment analysis. According to the requirements of the current analysis, we first briefly describe the meaning of digital humanities, and then complete the research on the relationship between digital humanities and film from three aspects: to increase the innovation of technological application, to improve audience experience and interaction, and to promote the development and integration of related industries. Based on this, with the guidance of in-depth analysis of film and television content and emotion, tendency insight, we will explore the practical effect of cross-fertilization of text mining and emotion analysis through audience feedback and market trend prediction, cultural and artistic innovation and inheritance, as well as sustainable development of technology, so as to promote the digital humanities and the film and television industry to enter into a new stage of development.

Keywords: Digital Humanities; Cinematic Analysis; Text Mining; Sentiment Analysis; Intersectional Analysis; Cinematic Development;

INTRODUCTION

With the rapid development of information technology, digital humanities has gradually become a new hotspot in academic research. Digital humanities is mainly a methodology [1] that uses digital technologies and tools to conduct in-depth research in the field of humanities. As an important form of humanistic art, film has rich connotations and diverse forms, providing a broad stage for digital humanistic research [2] . Especially in the cross field of text mining and emotional analysis, the combination of digital humanities and film analysis shows great potential and value [3] . Text mining is mainly a method of extracting useful information and knowledge from a large number of text data, and has achieved remarkable results in many fields. In combination with film analysis, text mining can help us mine the audience's preferences, emotional tendencies, and narrative structure of films from massive data such as film scripts, film reviews, and social media reviews [4] . This information not only helps to understand the internal logic of the film and the psychology of the audience, but also provides strong support for film production and publicity. Emotional analysis is also an important branch of text mining, which focuses on automatic recognition and classification of emotional tendencies in text [5] . In film analysis, emotional analysis can quickly, accurately and comprehensively analyze the audience's emotional response to the film, thus revealing the emotional expression and appeal of the film. Through the emotional analysis of film reviews, we can understand the audience's overall evaluation of the film, their preference for the characters and their acceptance of the story [6] . All of these have important reference value for film producers, which is conducive to better understanding audience demand and market dynamics [7] . Therefore, the intersection of digital humanities and film analysis has promoted the development of text mining and emotion analysis technology to a certain extent, and also provided new perspectives and methods for film art research. Using digital technology and tools, we will further explore the internal information and emotional expression in film texts, constantly summarize and analyze the essence and laws of film art in combination with the changes in the background and social environment, promote the integration of humanities and information technology, promote the innovation and development of academic research, and contribute new forces to film art research and digital humanities development [8] .

1 BRIEFLY DESCRIBE THE DIGITAL HUMANITIES CONNOTATIONS

Digital humanities is increasingly receiving widespread attention in the academic world. It is rich in content, involves the intersection of many disciplines, and aims to utilize digital technology to promote the development of humanities research. The core of digital humanities lies in the integration of "digital" and "humanities". Including big data analysis, artificial intelligence, virtual reality, etc., it provides a new perspective and method for humanities research [9]. Through these technologies, humanities data can be mined and analyzed more deeply, and hidden patterns and laws can be revealed [10]. At the same time, digital humanities also emphasizes humanism and humanistic care, focusing on human culture, history, values and other aspects, aiming at better transmission and promotion of humanism through digital technology. Digital humanities has a wide range of application value [11]. In the field of literature, it can help analyze the style, theme and evolution of literary works; in the field of history, it can help us reconstruct historical scenes and reveal the real face of historical events; in the field of art, digital humanities can provide us with a new way of creation and appreciation experience [12]. In addition, digital humanities can also be applied to education, museums, libraries and other fields to promote the dissemination and popularization of humanities knowledge [13]. However, it should be noted that the development of digital humanities also faces some challenges [14]. How to ensure the correct application of digital technology to avoid misleading and distorting humanities research; how to balance the relationship between digital technology and humanism to maintain the uniqueness and depth of humanities research - these are all issues that need to be considered and solved in the field of digital humanities [15]. Therefore, as a dynamic and potential field [16]. Digital humanities brings new opportunities and challenges to humanities research by means of digital technology, and provides powerful support for better understanding and transmission of human culture [17].

2 A STUDY OF THE RELATIONSHIP BETWEEN DIGITAL HUMANITIES AND CINEMA

2.1 Increasing innovation in the application of technology

The development of "digital humanities and cinema" is actually a hot topic that is both cutting-edge and in-depth, and has recently received much attention and influence. Currently, with the innovation of digital technology, its application in humanities research and filmmaking continues to broaden, bringing unprecedented opportunities for innovation [18]. Under the background condition of digital humanities, the innovation of technology application provides a broader world for its research [19]. Traditional humanities research mostly relies on literature and field investigation, although it can accomplish the expected analytical results, the overall limitations and constraints of the standards are fewer, which makes it difficult to achieve the expected results in the final film production processing [20]. The introduction of digital technology enables researchers to utilize advanced tools such as big data and artificial intelligence to deeply mine and analyze massive cultural data, classifying and screening out the best data and information in the process, providing better references and references for post-production and film adjustments [21]. This not only improves the efficiency and accuracy of research, but also reveals many humanistic phenomena and laws that were difficult to find before [22].

In addition, the innovation of technology application also plays a pivotal role in movie production and processing. With the continuous development of special effects technology, virtual reality, augmented reality and other technologies, the presentation of the movie screen becomes more and more realistic, and the audience seems to be able to feel every detail of the movie in an immersive way [23]. The use of these technologies not only enhances the enjoyment of the film, but also provides more possibilities for the creation of the film, making the film story more colorful [24]. In addition, the combination of digital humanities and film in terms of technological innovation is also reflected in the interaction and integration between the two. On the one hand, the research results of digital humanities can provide inspirations and materials for movie production, making the content of the movie more in-depth and comprehensive; on the other hand, as a kind of mass cultural product, the wide dissemination of movies also provides more data sources and feedback mechanisms for digital humanities research [25].

2.2 Improving audience experience and interaction

The improvement of audience experience and interactivity has increased the closeness of the relationship between digital humanities and movies to a certain extent. Combined with the increasing diversification of audience needs, the movie industry is facing the new challenge of improving audience experience and interactivity. As an interdisciplinary field, digital humanities provides more rich contents and forms for movies. As shown in figure 1 below.

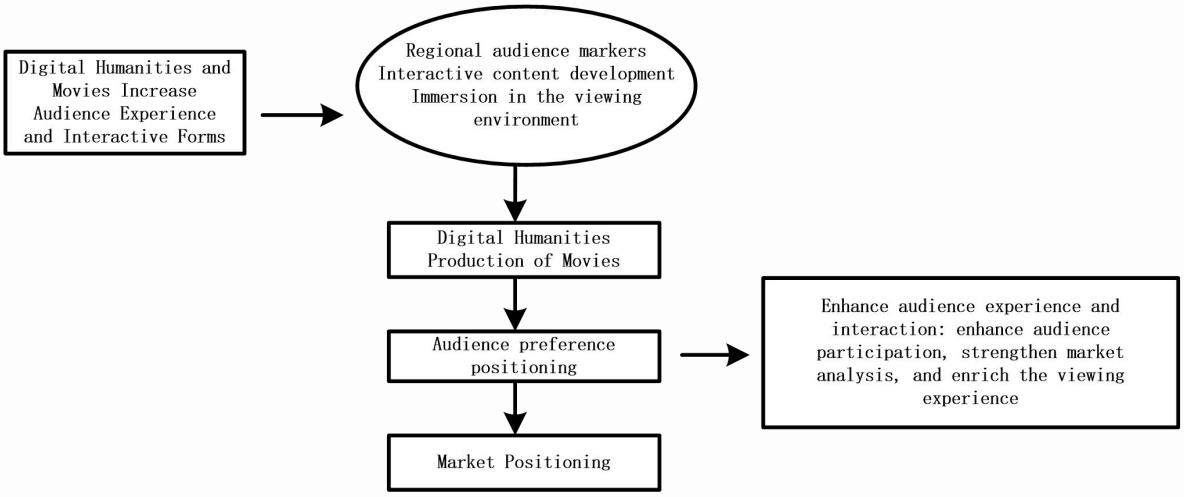

Figure 1 Diagram of digital humanities and film increasing audience experience and forms of interaction

Combined with Figure 1, we realize the design and practical implementation of digital humanities and movies to increase audience experience and interaction. By deeply exploring the connotation of humanities, the movie can touch the audience's emotion and trigger resonance. At the same time, the application of digital technology makes the movie picture more delicate and the sound effect more shocking, which brings an immersive viewing experience for the audience. This experience not only makes the audience satisfied visually, but also sublimated emotionally. In terms of interactivity, the integration of digital humanities and movies provides more opportunities for the audience to participate.

Through the digital platform, the audience can participate in real-time discussions on the movie production process and interact with the director, actors and other creators. This kind of interaction not only enhances the audience's sense of participation, compared with the traditional way, can further promote the movie production closer to the audience's needs. Digital humanities can also through big data analysis and other means, accurately grasp the interests and preferences of the audience, providing more accurate market positioning for film production. Based on this, improving audience experience and interaction also helps to enhance the commercial value of the movie and promote the development of movie art. With the help of digital humanities, the movie industry can continue to innovate and bring audiences a richer and more diversified viewing experience. The audience can also better understand and feel the humanistic connotation of the movie through interaction and participation, thus promoting the movie industry to present a more wonderful, interactive and humanized appearance for the audience.

2.3 Promoting the development and integration of related industries

Promoting the development and integration of related industries is an important and forward-looking issue in the exploration of the relationship between digital humanities and film. Digital humanities has brought a new way of expression and creative thinking for movie art, and also brought unlimited development opportunities and integration possibilities for related industries. Movie design and development is in fact a very complex and cumbersome work, the design of the more influential factors, resulting in the process of controllability is weak. Under the integration of digital technology, the application of digital humanities movie production has greatly promoted the technological innovation of the movie industry. In the enhancement of the visual effect and viewing experience of the movie at the same time, for the movie production has brought higher efficiency and quality. For the related technology providers, equipment manufacturers and other manufacturers to bring a broad market space. In addition, the integration of digital humanities and movies has, to a certain extent, promoted the overall development of the cultural industry.

As a cultural product with wide influence, movies will better disseminate and promote the excellent traditional culture through the in-depth excavation and presentation of digital humanities, and promote the innovation and development of the cultural industry. At the same time, the prosperity of the movie industry also provides more cooperation opportunities and development space for publishing, music, art and other related cultural industries. In addition, the development of digital humanities and movie also drives the integration and innovation of other industries. For example, the tourism industry can, through cooperation with the film industry, launch film-themed tourism routes and products to attract more tourists; the education industry can also make use of digital humanities and film resources to carry out richer and more diversified teaching activities, improve the quality of education, and provide a broad space for development and opportunities for cooperation, so as to achieve in-depth development and innovation and optimization.

3 CROSS-FERTILIZATION OF TEXT MINING AND SENTIMENT ANALYSIS

3.1 Movie and TV content and emotional depth analysis, tendency insight

The cross-fertilization of text mining and sentiment analysis plays an important role in the in-depth analysis of film and television content and sentiment, and tendency insight. This cross-application not only helps us understand the connotation of

movie and television works more deeply, but also reveals the audience's emotional attitude and tendency towards the works. Text mining is a powerful support for in-depth analysis of movie and television content. By mining text data such as movie scripts, lines and comments, key information, themes and patterns can be extracted. The details are shown in Table 1 below.

Table 1 Text mining depth parsing table

Text mining deep parsing project	Analysis content
Keywords and key content	The core content and keyword entries in film works
Theme determination	The Concept and Corresponding Theme of Movies
Market evaluation and basic situation	Feedback and evaluation similar to the film market, assessment of development trends

Combined with Table 1, it realizes the in-depth analysis of text mining. With the assistance of text mining, the cross-fertilization with sentiment analysis has a larger coverage and better effect. Specifically, using word frequency analysis and theme modeling, we can find out the main characters, plot clues and implied thematic ideas in the film and television works. This kind of in-depth analysis can help us to understand the storyline and narrative structure of a movie or television work more comprehensively, and further understand the artistic characteristics and expression of the work. However, only relying on text mining is not enough to reveal the emotional elements and the audience's emotional tendency in a movie or television work.

At this point, sentiment analysis technology plays a key role. Sentiment analysis can judge the emotional tendency of text data and identify whether the emotions expressed in the text are positive, negative or neutral. In the analysis of film and television, sentiment analysis can help us understand the audience's emotional attitude and preference for the work, as well as the emotional atmosphere and theme conveyed by the work. By cross-fertilizing text mining and sentiment analysis, we can gain a deeper insight into the content and sentiment of the film and television. Through the text mining of film and television scripts and reviews, a large amount of text data is obtained, and then sentiment analysis techniques are used to judge the emotional tendency of these data. In this way, while understanding the emotions expressed in the works themselves, we can also understand how the audience resonates and reacts to the emotions of the works. This kind of cross-application provides a more comprehensive perspective, and enables a more in-depth understanding of the interactive relationship between the movie and television works and the audience's emotions. It helps the audience to deeply understand the artistic characteristics, emotional expression, and the audience's emotional attitude and tendency of the film and television works, and provides strong support for the development of the film and television industry.

3.2 Audience feedback and forecasting of market trends

Through the in-depth mining of audience feedback data and emotional tendency analysis, we can better understand the audience's needs, preferences and emotional changes, and then predict the market trend to provide powerful support for the decision-making of the film and television industry. First of all, text mining technology can automatically extract key information from massive audience feedback data. Whether it is comments on social media, discussions in forums, or scores and messages on movie rating websites, text mining can effectively process these data and extract keywords, themes and trends related to movie and TV works. This provides rich materials for subsequent sentiment analysis. Next, the sentiment analysis technology will judge the sentiment tendency of these extracted text data.

By analyzing the audience's comments, messages and other texts emotionally, it is possible to understand the audience's emotional attitudes and preferences towards film and television works. Are they positively praised or negatively criticized? Are they enthusiastic or indifferent? The identification of these emotional tendencies provides key clues to deeply understand the audience's psychology. By cross-fertilizing text mining and sentiment analysis, audience feedback can be analyzed in a more comprehensive and in-depth manner. By comparing the audience feedback data of different time periods, we can discover the trend of audience's emotional tendency, and then predict the market trend. For example, if the audience's emotional tendency towards a certain movie or television work gradually changes from positive to negative, it may mean that the market prospect of the work is not optimistic, and the producer may need to consider adjusting its strategy. In addition, this cross-fertilization analysis method can also identify potential audience needs and market opportunities. Through clustering analysis of keywords and themes in the audience feedback, the hotspots and pain points of the audience's concern can be discovered, which can provide targeted suggestions for the creation and marketing of film and TV productions. Mining the audience feedback data and analyzing its sentiment are of key value to better understand audience needs and market dynamics.

3.3 Innovation and transmission of culture and art

Through the in-depth excavation and emotional analysis of cultural and artistic works, we can understand their connotation and value more deeply and provide strong support for the innovation and inheritance of culture and art. The specific contents are shown in Figure 2 below.

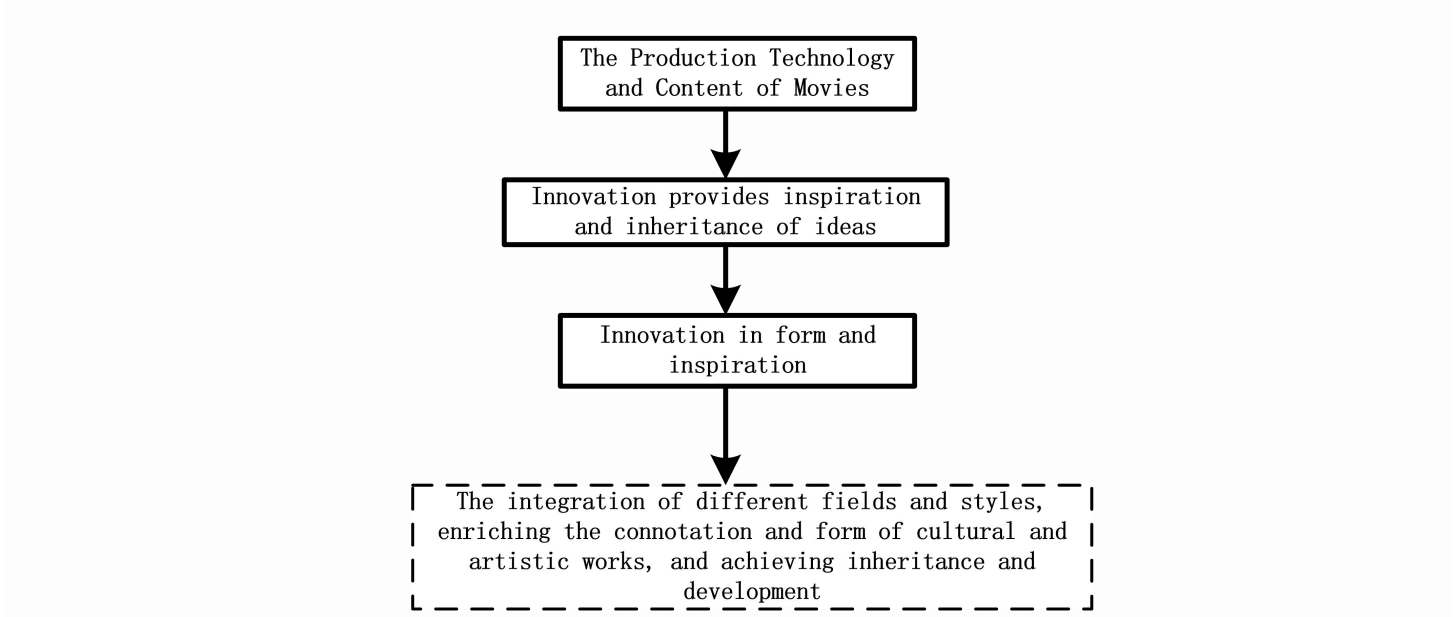

Figure 2 Diagrammatic representation of the innovative and inherited elements of culture and the arts

Combined with Figure 2, it realizes the setting of innovation and inheritance content of culture and art. Text mining technology can reveal the deep meaning and creative background behind the cultural and artistic works, and then reveal the cultural elements, historical background and social value of the works. This kind of in-depth analysis not only helps to understand the works more comprehensively, but also provides inspiration and ideas for the innovation of culture and art; Sentiment analysis technology can reveal the audience's emotional attitudes and preferences towards culture and art works. Sentiment analysis can help to understand the emotional tendency and preference change of the audience towards the works by analyzing the text data such as comments and feedbacks from the audience. At this time, the emotional insight is conducive to further grasping the needs of the audience, providing targeted suggestions and directions for the inheritance of culture and art. The cross-fertilization of text mining and sentiment analysis makes the analysis of cultural and artistic works more comprehensive and in-depth. Through in-depth analysis of the content of the works and insight into the audience's emotional attitude, we can discover the innovation and inheritance value of culture and art. For example, by observing the audience's love and admiration for certain cultural elements, it is possible to incorporate these elements into the innovation in order to attract more attention and love from the audience. At the same time, it can also discover the audience's preference for a certain art form or style, providing strong support for the inheritance and development of these art forms or styles; the cross-fertilization of text mining and sentiment analysis can also promote the cross-border integration and innovation of culture and art. Combining different fields and styles of text data mining and sentiment analysis, we can analyze the commonalities and differences between different forms of culture and art, and then promote the integration and innovation between them. This kind of cross-border integration not only helps to enrich the connotation and form of culture and art, but also brings the audience a richer and more diversified art experience. It provides strong support for the innovation of culture and art, and promotes its inheritance and development.

3.4 Sustainable development of technology

In fact, the sustainable development of technology has provided massive data support for movie production. In the era of big data, there is an endless variety of text data, including comments on social media, product evaluations, news reports, etc. Through text mining technology, key information in these data can be automatically extracted, such as user evaluations of products and changes in market trends. Through text mining technology, key information in these data can be automatically extracted, such as users' evaluation of products, market trends, etc., which provides powerful data support for technical decision-making and innovation, and continuous innovation can more accurately grasp the emotional needs of users. In the process of technology development, it is crucial to understand the real feelings of users. Sentiment analysis can reveal the users' satisfaction, expectation and possible problems of the technology by judging the emotional tendency of the text data. This information has important guiding significance for the improvement and innovation of the technology, which can help to better meet the needs of users and enhance the practicality of the technology and user experience; In addition, in the context of the integration of text mining and sentiment, the integration of technology can also promote the cross-border integration and innovation of technology. Through the mining and sentiment analysis of text data from different fields and industries, it can promote the correlation and complementarity between different technologies, enhance the comprehensive performance and application scope of the technology, and also inject new vitality and power into the sustainable development of the technology.

CONCLUSION

In conclusion, the above is a cross-study of digital humanities and film analysis: text mining and sentiment analysis.

Focusing on the field of text mining and sentiment analysis undoubtedly opens a window to explore the deeper connotation of film art. Through the use of digital technology and tools, we can extract valuable audience emotional tendencies and internal logic of movies from the huge amount of movie text data, so as to more accurately grasp the artistic value and market potential of movies. Compared with the traditional forms of analysis, this innovation makes it possible to accurately capture and analyze textual data and emotional information that are originally difficult to quantify, and provides a new method and perspective for film analysis. At the same time, cross-research demonstrates the broad prospects and infinite possibilities of the industry. We have reason to believe that the integration of digital humanities and film analysis will reveal more about the mystery and charm of film art. The deepening and expanding of film art research will benefit from the continuous development of this field. Let's work together to explore the infinite possibilities of film art with the leadership of digital humanities, and create a new chapter of film analysis together.

REFERENCES

[1] Smits T , Wevers M .A multimodal turn in Digital Humanities. Using contrastive machine learning models to explore, enrich, and analyze digital visual historical collections[J].Literary & linguistic computing: Journal of the Alliance of Digital Humanities Organizations, 2023(3):38.

[2] Su F , Zhang Y .Research output, intellectual structures and contributors of digital humanities research: a longitudinal analysis 2005-2020[J].The Journal of Documentation, 2022(3):78.

[3] Risam R , Dias-Trindade S .Guest Editors' Introduction: Digital Humanities Pedagogies in Times of Crisis[J].International journal of humanities and arts computing, 2023(2):17.

[4] Siddharth S .Martin P Eve. The Digital Humanities and Literary Studies[J].Review of English Studies, 2023(317):317.

[5] Betik B , Cors A .Doctoral Teaching and Mentoring in Digital Humanities: Changing Approaches to Graduate Pedagogy in Times of Multiple Crises[J].International journal of humanities and arts computing, 2023(2):17.

[6] Haoda F , Gang Z .Global Debates in the Digital Humanities. Domenico Fiormonte, Sukanta Chaudhuri, and Paola Ricaurte (eds)[J].Digital Scholarship in the Humanities, 2022(1):1.

[7] Graham M , Francis B .The Epigraph Effect: A Digital Humanities Approach to Literary Influence and Tradition1[J].English: Journal of the English Association, 2022(273):273.

[8] Cobb P J , Golub K .Digital humanities degrees and supplemental credentials in Information Schools (iSchools)[J].Education for information, 2022(1):38.

[9]Wu Jinhua,Shi Jing,Xu Jian.Open Data Ecosystem for Digital Humanities: Constituent Elements and Model Frameworks[J].Library and Information Service, 2022, 66(22):44-54.

[10] Haoda F , Gang Z .The Digital Humanities Coursebook: An Introduction to Digital Methods for Research and Scholarship. Johanna Drucker[J].Digital Scholarship in the Humanities, 2022(3):3.

[11] Joo S , Hootman J , Katsurai M .Exploring the digital humanities research agenda: a text mining approach[J].The Journal of Documentation, 2022(4):78.

[12] Gold M K .James E. Dobson, Critical Digital Humanities: The Search for a Methodology[J].American Literary History, 2022(4):4.

[13]Emmanuel Ngué Um, Jones R .Guest Editors' Introduction: The Current State of Digital Humanities in Africa[J].International Journal of Humanities and Arts Computing, 2022, 16(2):111-115.

[14] Ope-Davies T .The Digital Humanities as a Framework for Refining and Retooling the Humanities in Africa: A Case Study of the University of Lagos, Nigeria[J].International Journal of Humanities and Arts Computing, 2022, 16(2):116-137.

[15] Kim J , Lee Y , Song I .From intuition to intelligence: a text mining-based approach for movies' green-lighting process[J].Internet Research: Electronic Networking Applications and Policy, 2022(3):32.

[16] Ming F .An Appraisal-based Comparative Study on English and Chinese Movie Review[J].Arts Studies and Criticism, 2022, 3(5):339-345.

[17]Carla Míguez-lvarez, Varela L G , Cuevas-Alonso M .Identification of metadiscourse markers in bachelor's degree theses in Spanish:Introduction of a text mining tool[J].Revista Española de Lingüística Aplicada/Spanish Journal of Applied Linguistics, 2023, 36(1):329-351.

[18] Zhao J , Cole J M .Reconstructing Chromatic-Dispersion Relations and Predicting Refractive Indices Using Text Mining and Machine Learning[J].Journal of chemical information and modeling, 2022(11):62.

[19] Shaw B P .A National Analysis of Music Coursetaking, Social-Emotional Learning, and Academic Achievement Using Propensity Scores:[J].Journal of Research in Music Education, 2022, 69(4):382-401.

[20] S. J R K P V , Rao M V P C S .Deep Aspect-Sentinet: Aspect Based Emotional Sentiment Analysis Using Hybrid Attention Deep Learning Assisted BILSTM[J].International Journal of Uncertainty, Fuzziness and Knowledge-Based Systems, 2024, 32(01):21-51.

[21] Luo L , Reichow B , Snyder P ,et al.Systematic Review and Meta-Analysis of Classroom-Wide Social–Emotional Interventions for Preschool Children:[J].Topics in Early Childhood Special Education, 2022, 42(1):4-19.

[22] Notsu H , Iwakabe S , Thoma N C .Enhancing working alliance through positive emotional experience: A cross-lag analysis[J].Psychotherapy research: journal of the Society for Psychotherapy Research, 2023(3/4):33.

[23] Bachura E , Valecha R , Chen R ,et al.THE OPM DATA BREACH: AN INVESTIGATION OF SHARED EMOTIONAL REACTIONS ON TWITTER[J].MIS quarterly: Management information systems, 2022(2):46.

[24] Schumer M C C , Chase H W W , Rozovsky R ,et al.Prefrontal, parietal, and limbic condition-dependent differences in bipolar disorder: a large-scale meta-analysis of functional neuroimaging studies[J].Molecular psychiatry, 2023(7):28.

[25]J Liu,Y Guo.Digital Modeling and Simulation of Grid-Connected Distributed Photovoltaic Power Generation [J].Computer Simulation, 2022, 39(9):96-100.