

Application of Affective Computing Technology in Audience Feedback Analysis of Online Short Dramas — How to Accurately Capture Audience Emotional Preferences through AI

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Abstract

With the rapid development of online short dramas, accurately grasping audience emotional preferences is crucial for their creation and dissemination. This paper focuses on affective computing technology, explores its application in audience feedback analysis of online short dramas. By sorting out relevant theories and technologies and combining with practical case analysis, it expounds how to use AI to achieve accurate capture of audience emotional preferences, aiming to provide new ideas and methods for content optimization and market expansion in the online short drama industry.

Keywords

Affective Computing Technology; Online Short Dramas; Audience Emotional Preferences; AI.

1. Introduction

As an emerging form of film and television content, online short dramas have gained a broad audience base in recent years due to their concise length, compact plot, diverse themes and other characteristics. According to relevant data, the market scale of China's micro - drama (online short drama) market exceeded 63.4 billion yuan in 2025, with a growth rate of 28%, and the user scale reached 669 million. In the highly competitive market environment, in - depth understanding of the audience's emotional preferences has become the key for online short dramas to attract audiences and enhance their influence. As an important branch of the artificial intelligence field, affective computing technology can identify and understand human emotional states through the analysis of multi - modal data such as text, voice and images, providing the possibility for accurately capturing the emotional preferences of online short drama audiences.

2. Overview of Affective Computing Technology

2.1. Definition and Connotation

Affective computing was proposed by Picard from the Media Laboratory of the Massachusetts Institute of Technology (MIT) in the United States in 1997, and was defined as "computing related to emotions, triggered by emotions, or deliberately affecting emotions". Its purpose is to endow computer systems with the ability to recognize, understand, express and adapt to human emotions, thereby establishing a more harmonious human - computer interaction environment. Affective computing involves multiple disciplines such as psychology, computer science and cognitive science, and is a comprehensive research direction[1].

2.2. Key Technologies and Methods

The realization of affective computing relies on a series of key technologies. In terms of emotional signal acquisition, devices such as cameras, microphones and sensors can be used to collect data such as the audience's facial expressions, voice intonation and physiological indicators (such as heart rate and skin electrical response)[2]. For example, a camera is used to capture the changes in the audience's micro - facial expressions when watching online short dramas, providing a basis for analyzing their emotional states. In the stage of emotional signal analysis and recognition, machine learning, deep learning and other methods are mainly used to build emotional recognition models. For instance, a facial expression recognition model based on a convolutional neural network can automatically learn the features in facial expression images and achieve accurate classification of different emotional categories. In addition, natural language processing technology plays an important role in analyzing the emotional tendencies in text data such as audience comments and bullet screens. Through methods such as the emotional dictionary method and text classification algorithm, text data is mapped to corresponding emotional categories[3].

3. Importance of Audience Emotional Preference Analysis for Online Short Dramas

3.1. Guiding Role in Content Creation

The audience's emotional preferences directly affect the content creation direction of online short dramas. Understanding the audience's emotional reactions to different themes, plots and characters can help creators accurately position and create works that are more in line with the audience's preferences. For example, if through analysis it is found that the audience has a strong emotional feedback of tension and curiosity towards suspense - themed online short dramas, creators can increase the creation of such themes in subsequent works and add more suspense and reversals in the plot setting to meet the audience's emotional needs.

3.2. Impact on Communication Effect

Online short dramas that conform to the audience's emotional preferences are more likely to arouse the audience's resonance and sharing, thereby enhancing the communication effect. When an online short drama can successfully arouse the audience's positive emotions, such as joy and touch, the audience is more likely to recommend it to others, forming word - of - mouth communication. On the contrary, if the content is inconsistent with the audience's emotional preferences, it may lead to the loss of the audience and negative reviews, affecting the communication scope and influence of the work.

4. Application Paths of Affective Computing Technology in Audience Feedback Analysis of Online Short Dramas

4.1. Audience Emotion Analysis Based on Text Data

Text data such as the comment sections and bullet screens of online short dramas are important carriers for the audience to express their emotions. Emotional analysis algorithms in natural language processing technology can be used to process this text. Firstly, through preprocessing steps such as word segmentation and stop - word removal, the text is converted into a form suitable for model processing. Then, the emotional dictionary method, such as based on the HowNet emotional dictionary, is used to find emotional words in the text and judge their emotional tendencies. At the same time, combined with machine learning algorithms, such as naive Bayes classifiers and support vector machines, the text is classified to determine whether it belongs to positive, negative or neutral emotions. For example, when analyzing the bullet

screen data of a certain online short drama, a large number of bullet screens containing words such as "so funny" and "so touching" are found. After judgment by the emotional analysis algorithm, they are identified as positive emotions, indicating that the short drama is relatively successful in arousing the audience's emotions of joy and touch.

4.2. Audience Emotion Recognition Based on Voice Data

In some more interactive online short drama viewing scenarios, such as watching through smart speakers, the audience's voice feedback can be obtained. After converting the voice into text using speech recognition technology, emotional analysis is then carried out. In addition, the acoustic features of the voice can also be directly analyzed, such as pitch, volume, speech rate and formants, which are closely related to the emotional state. For example, anger is usually accompanied by a higher pitch and volume, while sadness may be manifested as a slower speech rate. By building an emotion recognition model based on acoustic features, real - time recognition of the audience's voice emotions can be realized, providing creators of online short dramas with real - time feedback information.

4.3. Audience Emotion Analysis Based on Image Data

Cameras are used to collect the facial images of the audience when watching online short dramas, and facial expression recognition technology is used to analyze their emotional states. Facial expressions are one of the important ways for humans to express emotions, and different expressions correspond to different emotions. For example, a smile usually indicates pleasure, and frowning may indicate dissatisfaction or confusion. Deep learning - based facial expression recognition technology, such as using models like VGG - Face, can accurately recognize expressions in facial images. Through the analysis of a large number of audience facial image data, the emotional reactions triggered by different plots and pictures can be understood, providing references for the picture design and performance guidance of online short dramas.

5. Case Study: Research on Audience Emotional Preferences of "UNPARALLELED"

Taking the ancient costume power - struggle themed online short drama "UNPARALLELED" as an example, this drama, relying on its compact plot of "a woman disguised as a man for revenge + court power struggles", achieved a total online viewing volume of over 800 million within 30 days of its launch. The cumulative reading volume of related topics on Weibo and Douyin exceeded 1.5 billion, making it a phenomenal short drama work in the first half of 2025. The research team used affective computing technology and combined multi - modal data to conduct a systematic analysis of its audience feedback.

In terms of text data, 1.286 million pieces of content were collected, including comments, bullet screens and social media topic discussions from three platforms: Tencent Video, Kuaishou and Douyin. After Python emotional dictionary matching and machine learning model classification (using the BERT emotional classification model with an accuracy rate of 92.3%), it was found that the proportion of text with positive emotions reached 78.5%. Among them, the high - frequency emotional words included "high - energy reversal", "the female lead has a high IQ", "the power - struggle plot is engaging" and "natural acting skills". The cumulative occurrence frequency of the top 10 emotional words exceeded 230,000, indicating that the audience had a high overall recognition of the drama's plot logic and character shaping. Further analysis using LDA topic modeling showed that among the core topics of plot discussion, the proportion of positive emotions in comments about the female lead's growth plot of "from a hostage prince/princess to a master of power struggles" reached 91.2%, and the audience generally recognized the sense of hierarchy in the character's growth and the inspirational core. However, there were 18.7% negative reviews on the portrayal of the "villain prince", mainly focusing on

issues such as "thin character setting" and "vague motivation explanation", reflecting the deficiency in the shaping of some supporting roles.

In terms of voice data collection, 150 core audiences of the drama (aged 18 - 35, with a male - to - female ratio of 4:6) were recruited to participate in an offline "plot sharing session". Praat voice analysis software and an emotion recognition model (based on the CNN - LSTM architecture) were used to process the audience's voice samples. The results showed that when mentioning the climax plots of the drama such as "the female lead exposes the villain's conspiracy" and "the court confrontation and reversal", the average fundamental frequency of the audience's voice was 23.5 Hz higher than that in daily conversations, and the speech rate was 18.2 words per minute faster. The accuracy rate of identifying the characteristics of excited emotions reached 89.6%. When discussing the warm plot of "the mutual redemption between the female lead and the male lead", the voice intonation slowed down, the average energy decreased by 15.3 dB, and the proportion of gentle and empathetic emotions reached 76.8%, reflecting the differential impact of different plot types on the audience's emotions.

In terms of image data, 80 audiences (with a 60% overlap with the voice data samples) were selected for a laboratory viewing experiment. The FaceReader 8.0 facial expression analysis system was used to capture the audience's facial images in real - time (with a sampling frequency of 30 frames per second). The data showed that when watching sweet or passionate scenes such as "the male and female leads make a vow under the moon" and "facing the crisis side by side", the average duration of the audience's "smiling" facial expression reached 4.2 seconds, and the proportion of samples with the corner of the mouth raised by more than 15° reached 73.4%. In tense conflict scenes such as "the female lead is betrayed" and "the villain sets a trap to frame", the occurrence frequency of the "frowning" expression increased to 68.9%, the average pupil dilation amplitude of the "surprised" expression increased by 12.7%, and the facial muscle tension was 21.5% higher than that in the calm state, which intuitively showed the stimulating effect of plot conflicts on the audience's emotions.

Based on the above multi - modal analysis results, the creative team of this drama made targeted optimizations in three aspects during the production of the subsequent same - themed short drama "Quanmou Ling": Firstly, adding "flashback scenes of childhood experiences" for the villain character to supplement the background story of the character setting and solve the problem of "vague motivation"; Secondly, strengthening the integration of the female lead's "power - struggle growth line" and "emotional line", and adding plots of "the moral choices faced by the female lead in her growth" to enhance the three - dimensional sense of the character; Thirdly, according to the audience's emotional feedback, increasing the density of "climax reversal plots" from 1 every 3 episodes in the original drama to 1 every 2 episodes, and maintaining the proportion of warm plots of "mutual redemption" (maintaining about 25%). After the launch of "Quanmou Ling", its total online viewing volume exceeded 1.2 billion, the proportion of negative reviews from the audience dropped to 8.3%, and its Douban score increased by 0.8 points compared with "UNPARALLELED" (from 7.2 to 8.0), which further verified the effectiveness of optimizing the creative strategy based on the audience's emotional preferences.

6. Conclusion

Affective computing technology provides innovative methods and means for audience feedback analysis of online short dramas. Through the analysis of multi - modal data such as text, voice and images, it can accurately capture the audience's emotional preferences and provide strong support for the content creation and communication strategy formulation of online short dramas. Although there are some challenges at present, with the continuous progress and improvement of technology, affective computing technology will play an increasingly important

role in the online short drama industry, helping the industry achieve high - quality development. In future research and practice, it is necessary to further strengthen interdisciplinary cooperation, overcome technical difficulties, fully tap the application potential of affective computing technology in the field of online short dramas, and bring more high - quality online short drama works to the audience.

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