Digital Media VR Design Recommendation Analysis Relying on LDA Model

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Abstract. With the gradual use of VR technology on a global scale, it has gradually begun to be used in data multimedia teaching, involving more areas. This technology is conducive to improving teaching quality and teaching efficiency. In order to further improve the recommendation effect of digital digital media, this paper uses the design in the LDA model for digital multimedia synthesis and scheduling and decision-making. According to the data information of the feature mapping, combined with the LED model used, the user characteristic behavior of the digital media recommendation is carried out for data. Cluster analysis is used to obtain comprehensive data information of digital media user behavior, and digital media recommendation optimization is performed according to the obtained entropy weight.

Keywords: Digital Media Art Design, VR, Instructional Design

1. Introduction

With the development of digital media technology, a large amount of digital media information is disseminated through the network. The audio and video resources and image resources in digital media are affected by the preferences of users during the dissemination process. Optimal scheduling is required to establish an intelligent recommendation model for digital media [1-2]. The digital interactive platform is used to design the digital media recommendation system, which improves the service quality of digital media, studies the optimization design method of digital media recommendation system, and combines big data mining and resource scheduling to carry out the intelligent recommendation of digital media, which improves the digital media Information fusion and adaptive recommendation capabilities of the interactive platform. Information recommendation for digital media is based on the mining of digital media information and the detection of user behavior characteristics. By constructing digital media big data information detection and fusion models, various types of digital media information are integrated into the cyberspace. Form a digital media information interaction platform under the multimedia network[3-4]. VR technology can be applied to related products to make the virtual world more real and cause confusion between the virtual world and the real world. This further shows that the Internet will replace people in the real society in all aspects in the future. The way of communication between people [5-6].

AR technology achieves a comprehensive integration between reality and virtuality by integrating virtuality into the state of real objects. At this stage, the effective application of VR technology has
began to gradually face end users. VR technology can simulate the production of products, as well as virtual military exercises. VR technology is no longer limited to professional fields, but through the gradual penetration of virtual reality technology, began to dabble in various industries.

2. Big data analysis recommended by digital media
In order to realize the intelligent recommendation of digital media, it is necessary to first build a big data information collection model for digital media recommendation, use the method of association rule scheduling to extract the user behavior characteristics of digital media, and perform scoring predictions on the recommendation results. Suppose the recommended training sample of digital media is \{(x_{1},y_{1}),(x_{2},y_{2}),...,(x_{n},y_{n})\}, where the nearest neighbor set \(x_{i} \in \mathbb{R}^{n}\) of current user preference represents the historical behavior of digital media recommendation Data, combined with user behavior preferences for semantic ontology reconstruction, the evolutionary objective function of personalized recommendation for digital media is:

\[
\begin{align*}
\text{minimize} & \quad \frac{1}{2} \|w\|^2 + C \sum_{i=1}^{s} (\xi_i + \xi_i^*) \\
\text{s. t.} & \quad y_i \left( w^T \Phi(x_i) + b \right) \leq e - \xi_i \\
& \left( w^T \Phi(x_i) + b \right) - y_i \leq e - \xi_i^* \\
& \xi_i, \xi_i^* \geq 0, \quad i = 1, 2, \cdots, n; \quad C > 0
\end{align*}
\]

In the formula: \(\xi_i\) and \(\xi_i^*\) represent the dimensionality and difference feature amount of user behavior information acquisition.

The collaborative filtering algorithm is used to detect the relevance characteristics of user collections and item collections, and establish a hybrid kernel function for digital media recommendation. The expression is:

\[
K_{\min} = \beta K_{\text{poly}} + (1 - \beta) K_{\text{hyg}}, \quad \beta \in (0, 1)
\]  \hspace{1cm} (2)

In the formula, \(K_{\text{poly}} = \left[ (x \cdot x_i) + 1 \right]^2\) represents the distribution function of personalized evolution characteristics in the process of digital media recommendation.

The fuzzy C-means clustering method is used to perform adaptive clustering of user behavior characteristics in digital media recommendation, and the joint information entropy of digital media user behavior is calculated. The joint information entropy distribution time series is \(x(t), t = 0, 1, 2, \cdots, N-1\), under the constraint of association rules, the joint probability distribution function of digital media recommendation is:

\[
E^v (c_1, c_2) = \mu \cdot \text{Length}(C) + v \cdot \text{Area} \left( \text{inside}(C) \right) \\
+ \lambda_1 \int_{\text{inside}(C)} |I - c_1| dxdy + \lambda_2 \int_{\text{outside}(C)} |I - c_2| dxdy
\]  \hspace{1cm} (3)

In the formula: \(c_1\) and \(c_2\) respectively represent the personalized evolution characteristic coefficient of digital media recommendation; \(\text{Length}(C)\) represents the length of the digital media behavior information to be recommended; \(\text{Area}(\text{inside}(C))\) represents the regional distribution; the number of the i-th category The fuzzy membership feature quantity recommended by the media is recorded as \(CF=<F,Q,n,RT1,RT2, RW>\). The fuzzy decision-making scheduling of digital media recommendation is performed in the LDA model, and the LDA optimization model is shown in Figure 1.
3. Analysis of the impact of VR technology on digital media art design

3.1. Technical arts should fully pay attention to technology and art

Under the influence of the update and development of digital media technology, digital art has also achieved a certain degree of transformation. This kind of spectacle change is mainly reflected in scene imaging and audiovisual authenticity. Not only that, it does not neglect the humanistic expression through multiple angles, and realizes the transmission of visual experience to multi-angle content. In the movie "Avatar", VR technology is fully utilized to bring people a very real, vivid and vivid sensory experience. Based on the audience's imagination, it further realizes a deeper expansion, and the machine technology also has certain Emotions can communicate and communicate with people. In the continuous evolution of digital technology, it directly re-gives a new definition and new life to the film experience of vision and hearing, which is extremely novel experience. The full integration of art and technology has promoted the development of art to a large extent, and the information revolution has gradually evolved into an art product with weakened artistic quality and enhanced technical quality. The main thing that modern art conveys is superb technology, but it does not completely discard the artistry. The so-called technology can further change the way of media communication, and technology cannot change the communication of art at all, nor can it focus solely on the visual stimulation of new media and ignore the characteristics of art. Technological innovation needs to ensure that innovation is strictly controlled within the scope of technology, so that art can be effectively connected.

3.2. Image art creation realizes the transformation to visual art creation

With the progress and development of visual culture, people's visual needs have also increased. When people create images, they are often constrained by related cultures, so they rely heavily on images, and gradually lose the artistic creativity and imagination they want to express. Digital media provides more diversified new ways for people to create freely. The characteristics reflected in artistic language can also directly highlight the true characteristics of media art, that is, comprehensiveness, integration, authenticity, and experience. Virtual art does not imitate the real environment, but redefines the world and brings people a real experience from multiple angles. Virtual art breaks through the limitations of traditional art in terms of artistic conception processing, and by giving full play to its own imagination, designing multi-dimensional spaces such as two-dimensional and three-dimensional, realizes the fusion between the world and people’s minds, and reconstructs time and space, environment, and world. Realize the realizing imagination space. At this stage, the development of visual culture has begun to spread globally. The visual art innovation in the digital media environment has not yet been reflected in visual art creation, and its scope is too wide, especially in the visual art creation system, communication methods, consumer experience methods, etc. aspect. Digitization is not a technology penetration, but a new way of thinking and survival based on visual information.
4. Simulation experiment analysis
In the experiment, Matlab7 was used to test the digital media recommendation system, combined with Visual C++ to develop the digital media recommendation algorithm. The sampling time of digital media information was set to 120ms, the data size set was 2000, and the width of the statistical sample sequence was ρSM= 50, sampling amplitude ASM=6, correlation dimension DSM=5, embedded delay Cm=1, adaptive spatial sampling frequency gNa=3, other parameter settings gT=5, ENa=50, EK=−90, EL= -70, ET=120. According to the above-mentioned parameter setting, construct the big data information collection and item distribution model recommended by digital media, and obtain the original digital media information collection as shown in Figure 2.

![Figure 2. Original digital media information.](image)

Taking the digital media information sampled in Figure 2 as the test object, the fuzzy decision-making scheduling and feature mapping processing of digital media recommendation are performed in the LDA model, and the fuzzy C-means clustering method is combined to perform adaptive clustering of user behavior characteristics in digital media recommendation. Realize digital media recommendation. The use of VR technology in digital media art design can fully display its features such as freedom and flexibility, and promote the continuous acceleration of the professional process of digital media art design, thereby improving the quality of digital media art design teaching. In general, in the development of VR technology and its application, personalization and innovative ideas play an important and irreplaceable role. In the construction of digital media art design majors, to strengthen the organic interaction between VR technology and digital media art design majors, the one-way linear relationship between media and users can be improved scientifically and rationally, forming a highly comprehensive information flow, making The presentation mode is more natural.

5. Conclusion
Through the above optimization of VR media technology, the technology has also been widely used in the digital media art teaching process, which has a certain influence on the professional design of students to a certain extent. Therefore, it is necessary to realize that VR technology combines virtualization and digital technology in digital media art design, and strengthen the effective interaction between VR technology and digital art to ensure the improvement of the teaching level and quality of digital media art.

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