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Design Innovation and User Satisfaction Improvement of AI Video Creation Tools

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Abstract

With the advance of intelligent technology, AI video creation tools are playing an extremely important role in improving the efficiency of creation and optimizing the user experience. This article takes an in-depth look at the innovative design of AI video authoring tools and assesses the impact of these innovations on user satisfaction. The gradual penetration of AI technology in the video creation industry is analyzed in detail, and the application of automated editing and intelligent editing technology is deeply analyzed. Through in-depth analysis of user needs and creative pain points, a set of design innovation strategies aimed at improving user satisfaction is constructed. It includes technological innovations that improve creative efficiency and stability, precise insights into user needs, and features such as multi-platform data synchronization and cross-device authoring. The study found that the application of AI technology to design innovation has greatly improved the creation efficiency, greatly enriched the user experience, significantly improved the user satisfaction, and opened up a new path and vision for the progress of the video creation industry.

Keywords

AI Technology; Video Creation; Design Innovation; User Satisfaction; Automated Editing.

1. Introduction

In the field of information dissemination and entertainment, video content occupies an increasingly significant position, and traditional video creation tools are complicated and inefficient. Thanks to the rapid development of artificial intelligence (AI) technology, the field of video creation has ushered in innovation, especially in automated editing and intelligent editing and other links, AI technology is releasing its huge development space and potential. AI video creation tools effectively improve the creation efficiency, simplify the production process, and realize personalized services according to the specific needs of users. Finding the right balance between functional complexity and user experience remains a challenge. This paper focuses on the progress of AI video authoring tools in design innovation, evaluates how they increase user satisfaction, and further proposes practical design strategies.

2. AI Video Creation Tools of the Core Technology

The core technologies of AI video creation tools mainly include computer vision, deep learning, natural language processing and automated editing. The integration and collaboration of these technologies provide a solid foundation for intelligent identification, editing and generation in the process of video creation. Computer vision technology can analyze the scene, characters, objects and other elements in the video in detail, and accurately capture the core content, so as to achieve automatic editing and processing. With the help of deep learning architecture tools, image processing algorithms can be trained and optimized in a large amount of video data to improve the understanding and editing ability of video materials.

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In the field of video creation, deep learning technology plays a crucial role, especially in the analysis and automated editing of video content. With advanced deep learning architectures, such as convolutional neural networks and recurrent neural networks, AI systems can accurately identify key moments, plot transitions, and picture rhythms in videos, and then automatically complete video clips, music matching, and color adjustments. The application of these technologies enables AI to mimic the thought process of human editors, which greatly improves the efficiency and quality of video creation.With the help of natural language processing technology, the computer can understand and generate the meaning of the video data. By delving into the semantic analysis of scripts, voiceovers or subtitles, AI can perform content selection and modification based on user-input text. For example, artificial intelligence can intelligently select video clips that match text descriptions according to user requirements and generate video content that meets specific needs.

Integrated with advanced technology, the automated editing program can independently implement tasks such as video editing, transition and sound configuration according to established rules or user instructions. This intelligent processing significantly reduces manual operations and improves the efficiency of content production. The core concept of artificial intelligence video creation tools, in the continuous update and improvement, help video creation to move towards the intelligent direction.

3. Design Innovation and User Satisfaction of AI Video Creation Tools

3.1. The Gradual Penetration of AI Technology in Video Creation

With the continuous development of artificial intelligence technology, its application in the field of video creation is more and more extensive, which greatly improves the efficiency of creation. However, there are still some problems with the current level of technology. Although artificial intelligence can autonomously clip and identify content, its accuracy needs to be improved.

In the face of complex creative environment, the application of artificial intelligence in automatic editing is often difficult to accurately grasp the intention of the creator, especially in the grasp of the rhythm and fine adjustment of the video is not accurate enough. It is this lack of accuracy that causes users to have to rely on manual adjustments during the specific creation process to ensure that the final product meets the expected standards. At the same time, for different personalized needs, artificial intelligence video creation tools are encountering a severe challenge. Creators often want to fine-adjust video content according to their own creative characteristics and specific needs, but the current artificial intelligence tools have shortcomings in adaptability, and it is difficult to fully meet these personalized adjustment needs. Although artificial intelligence has eased the pressure of creation to a certain extent, it must rely on artificial intervention and adjustment when dealing with some highly complex or extremely special creative tasks.

AI tools provide more automation, but the interface and use process are still difficult for novice users. Although the degree of intelligence is high, it is accompanied by a steep learning gradient, which makes it difficult for many users to grasp quickly. This situation restricts the wide application of smart video authoring tools, especially among non-professional creators. This phenomenon reflects that although AI technology has brought many conveniences to the field of video creation, there is still a need to deepen improvements in terms of intelligent accuracy, flexibility of creation and user experience.

In order to make AI video creation tools more widely used and meet diverse creative needs, the direction of development should focus on improving the accuracy of the algorithm, optimizing the operation interface and improving the user interaction experience. In addition, it is necessary to continue to strengthen the personalized customization function of the tool and its

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intelligent adjustment ability to more accurately meet the unique needs of creators and the diversified trend of creation.

3.2. Relationship between User Satisfaction and Design Innovation

Innovative AI video creation tools play a decisive role in improving the user experience. While the technology continues to evolve, user feedback still points to flaws. User satisfaction is closely related to the practicality of the tool, which is not only related to the degree of intelligence, but also the convenience of the operation process, the design of the interface architecture and other dimensions are inextricably linked. Nowadays, although a large number of video creation tools have made progress in the technology of automatic editing, intelligent recommendation content and voice command operation, users still encounter some problems in the specific application, especially in the degree of intelligence, friendly operation interface and performance optimization.

Especially in the video automatic editing and special effects automatic matching, although artificial intelligence technology has been able to realize the automation of some basic functions, but in the face of more complex creative content, creators still have to rely on manual meticulous adjustment. This practice reduces the efficiency of creation, and also affects the effectiveness of AI in optimizing workflow. At the same time, even if the operation interface has been optimized to a certain extent, many users still feel that the operation steps are more cumbersome, and for novices, it takes more time to get familiar with them, so the entry difficulty makes the popularity of the tool hindered.Although the personalized function of smart push has been applied to a certain extent, the deep needs of creators have not been fully met. In creative practice, although AI can recommend corresponding content or make suggestions based on past data, these recommendations often fail to deeply understand the personal style and specific needs of the creator, and their accuracy needs to be improved. Users often find that the suggestions they receive do not exactly match their creative intent, which undoubtedly adversely affects the flow and efficiency of the creative process. Table 1 below summarizes the main issues between current AI video creation tool design innovation and user feedback:

Table 1. User feedback and design innovation status quo

Problem category	Description	influence
Insufficient intelligence level	In terms of complex scene processing and detail optimization, the automation function of AI fails to fully match the needs of creators	In complex creative tasks, the automated processing of AI tools cannot fully meet the needs, and a lot of manual adjustments are still needed
Complex operation interface	While the interface has improved, it still takes more time for novice users to get used to the flow	Limiting the application of the tool to a broad user base
Low precision of personalized push	The content and suggestions of smart push do not fully understand the personal creation style and needs of the creator	As a result, the creation experience is not smooth and user satisfaction is reduced
Manual adjustment is highly dependent	In complex creative tasks, the automated processing of AI tools cannot fully meet the needs, and a lot of manual adjustments are still needed	It affects the efficiency and experience of creation

3.3. Automatic Video Editing and Intelligent Editing Functions

With the rapid progress of AI technology, automated video editing and intelligent editing function have risen to one of the core features of modern video creation tools. The goal of these features is to automate the processing of video footage, simplify the creative process and increase the efficiency of editing. In the actual application of these functions, although users

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enjoy a lot of convenience, but also encountered some challenges, these problems mainly involve the accuracy of editing, personalized customization and flexibility of operation.

Intelligent clip technology has the function of automatically identifying key scenes and implementing clips, but its function shows certain constraints in dealing with complex or changeable videos. The finished product of editing is sometimes difficult to fully conform to the user's creative intention, especially in the grasp of the overall rhythm and editing accuracy. While automated tools can save time and streamline workflows, they lack personalized tweaking and customization options to meet the needs of creators who require extremely high levels of detail. Table 2 below summarizes the main issues with automated video editing and smart editing capabilities, and the impact these issues have on user satisfaction:

Table 2. The status quo of automated video editing and intelligent editing functions

Functional domain	Major problem	User satisfaction
Smart clip	The editing accuracy is not high, and it is difficult to deal with complex video content	The editing result does not meet the creator's intention, and it is difficult to meet the personalized needs
Personalized customization	Automation lacks creative flexibility and personalization	It cannot fully match the creative style and specific needs of the creator
Operation control	Automated processing limits the control of the creation and makes it impossible to fine-tune every detail	Users want more manual adjustment options, and automation leads to limited creative freedom
Multi-scene processing	In multi-scene and multi-element videos, the editing effect is not accurate	The editing does not meet the creation needs of multi-scene video, and the rhythm is poor

4. Design Innovation Strategies to Improve User Satisfaction

4.1. In-depth Analysis of User Needs and Creative Pain Points

In-depth analysis of users' specific needs and pain points in the creation process is crucial to improving user satisfaction with AI video creation tools. To accurately identify users' needs and pain points, it is necessary to adopt diversified data collection methods, such as conducting user surveys, collecting network feedback information, and analyzing users' usage habits, so as to obtain users' clear needs. These data can be quantified by the following formula in order to provide a basis for subsequent design innovation:

$$N = \frac{\sum_{i=1}^{n} w_i \cdot d_i}{\sum_{i=1}^{n} w_i} \quad (1)$$

Where, n represents the comprehensive score of user needs, $w_i$represents the weight of each user's needs,d_i represents the score of each demand item, and n represents the total number of demand items. This formula quantifies the priorities of different user requirements and helps development teams focus their limited resources on the most important requirements.

An in-depth analysis of pain points in the creative process is also critical. Collecting all kinds of problems encountered by users in creative practice, such as complex operation process, insufficient intelligence, unreasonable interface design and other problems, helps to accurately locate users' pain points. For example, some users have suggested that when the automatic clip function is used, the system's identification of the key plot of the video is not accurate enough, which makes the frequency of manual intervention greatly increased.

Through the analysis of these pain points, corresponding improvement strategies can be developed to optimize the intelligence of the AI system and reduce the pressure on the user's operation. Detailed exploration of users' specific needs and creative pain points aims to enhance the functionality of creative tools, and is also committed to improving the interactive

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experience of users, ensuring that the innovation of tools can effectively solve the specific challenges encountered by creators in the creative process.

4.2. Technological Innovation to Improve Creation Efficiency and Stability

Improving the creation efficiency and stability constitutes the core trend of the development of AI video creation tools. Through the deep optimization of the algorithm and the innovation of the technical architecture, the speed of video editing can be significantly improved and the reliability and consistency of the finished product can be ensured. Deep learning technology, especially convolutional neural network and recurrent neural network, plays an extremely important role in intelligent recognition and automatic processing of video content. These advanced technologies can quickly analyze video footage, accurately locate key scenes or clips, and enable automatic editing, color adjustment, and music matching, greatly reducing the time required for human intervention. To measure creative efficiency and stability, the following formula can be introduced to evaluate tool performance:

$$E = \frac{T_{total}}{T_{process}} \tag{2}$$

Where E is the creation efficiency,T_{total} is the total time of video creation, and $T_{process}$ is the actual editing processing time. The more productive the creation, the more work the AI system can accomplish in processing time.

At the level of maintaining performance stability, AI technology continuously optimizes the algorithm so that the results generated by the tool remain highly consistent, overcoming the potential instability of operating under different conditions. With immediate feedback and adaptive adjustments, AI systems guarantee the stability of the entire creative process, thus reducing errors caused by system failures or algorithmic errors. Technological innovation has improved the work efficiency of AI video creation tools, while also ensuring the stability of output quality, and better meeting the urgent needs of creators for efficient and high-quality video production.

4.3. Multi-platform Synchronization and Cross-Device Creation

Multi-platform synchronization and cross-device creation are important strategies to improve user satisfaction of AI video creation tools. The increasing demand for creativity from users makes it crucial to easily switch between different devices and create at any time. By connecting devices such as desktop computers, laptops, tablets and smartphones, users can continue their creative process in any environment, breaking the limitations of limited use of specific devices.

To achieve this goal, AI video creation tools must rely on cloud technology and data synchronization technology, using cloud storage and real-time synchronous update mechanism to ensure the consistency of data when operating across devices. The system should be equipped with an efficient synchronization algorithm to ensure that users can always access the latest version of data when switching between multiple devices. Synchronization efficiency can be expressed by the following formula:

$$C = \frac{T_{sync}}{T_{total}} \tag{3}$$

Where, C is the synchronization efficiency, T_{sync} is the synchronization time, andT_{total} is the total creation time. The higher the synchronization efficiency, the shorter the waiting time for users to switch between different devices, and the smoother the creative process.

To realize cross-platform data synchronization, it is necessary to ensure the consistency of information and standardization of operation interface. When using authoring tools on different devices, users should enjoy a consistent way of operating and interface design. This requires the front-end and back-end development of tools to achieve a very high compatibility

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standard to ensure the consistency of operations between platforms. Relying on a unified development framework and interface, users can smoothly use tools on various devices, which greatly enriches the user experience. Optimizing the function of multi-platform synchronization and cross-device creation will further enhance the flexibility and convenience of AI video creation tools, and improve the efficiency and satisfaction of users' creative work.

Conclusion: The rapid progress of artificial intelligence technology promotes the development of video creation tools towards intelligence and automation, which greatly speeds up the creation efficiency. Nevertheless, the tools currently on the market have yet to be improved in terms of accuracy, flexibility, and user interaction. As the level of technology continues to improve, it is expected that AI video creation tools will achieve higher accuracy and efficiency, and better adapt to diverse creative requirements. Continuous improvement will enable AI to create a more humane creative environment, further increasing user satisfaction and stimulating innovation in the industry.

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