

Role of Digital Contents in Animation Design and Production in the Modern Computers' Era

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Abstract

In the context of current animation design and production, computer artwork and the creation of digital entertainment technology may demonstrate a natural affinity between 3D art material and cartoon design and production; as a result, digital media technology is offered as an innovative design idea and technique, maximizing the production efficiency of basic needs. pictures from modern multimedia technology. The Times' progress requires cartoon design and production reform and innovation. Digital media in animated design and production promotes industry growth. Animation seeks light and shadow. Based on an examination of digital media properties, the system architecture and module functions are built. Animation design system framework is built on the scalability and effectiveness of digital media platforms. Digital content technology is ingeniously employed, and 3D animation style and modeling environment technology are merged to boost animation's intellectual information and level. The system's test shows that it runs properly and steadily. Digital modern media technology is integrated into cartoon creation and production to encourage digital development.

Keywords: Digital Contents, Animation Design, Cartoon creation.

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1. Introduction

With the advancement of media technology, contemporary cinema has achieved significant strides in terms of sound, production, image, color, and other elements via the use of internet age. This represents a significant departure from the conventional film in a number of respects (Shuo, 2021). Movies now have better chance of surviving into the future because to the development of technology that supports digital media. People's information transmission method and the media form are both improved as a result of network information, which also enhances the transmissions connecting people and represents a significant shift in the human communication system. The modification of the way in which information is disseminated is impossible without the introduction of new technologies (Liu, 2020).

It has benefited from the growth of media technology first from beginning of word-of-mouth communication all the way up to the present day of network communication. The media are being progressively digitized as a result of the process of the media developing further. Text, images, and sounds are all examples of the types of electronic information that may be found in digital media. Words, photographs, images, and sounds may all be digitally processed, recorded, and transmitted when using digital media. There are primarily two types of word media: the first is the conventional media that has been digitized and then turned back into its original form (Kang & Choi, 2018; Shuo, 2021).

There is another kind that did not emerge until the introduction of digitalization, which is a form that was previously unknown. The technology behind digital media is always advancing, and as a result, the many forms that digital media may take are also developing at the same time. This has led to the development of mobile online technology (Heller & Womack, 2011).

The core of digital media is to represent the presence of some sort of digitalisation and virtualization. Digital media is a type of communication medium that is encoded in the form of digital data. Information technology, which is characterized by computers and the internet, is having a great influence on people's lives in this period, which is characterized by the intersection of industrial growth and the future digital civilization. Our primary sources of information have shifted from the conventional media to digital cellular online medium as a direct result of the rise of electronic content. The development of new ways of thinking, technologies, bodies of knowledge, and conceptualization have endowed cartoons and other forms of traditional art with a richer content and manner of expression, leading to the emergence of new art forms, new modes of artistic production, and new characteristics of artistic production (Li, 2021).

The features of software media and network media are where the virtually real qualities of online technology are most clearly displayed. Following an examination of the impact that digital media has had on filmmaking via an explanation of the qualities of digital publishing technology, a discussion of the particular usage of computer media in filmmaking was then undertaken. The use of 3D technology in the design of animation for film and television has been thoroughly researched and studied. Additionally, the production process of character animation has been dissected, including the creation process, the specific process of midterm production, and the power generation steps of character animation (Lee & Hao, 2015).

An artistic expression in the medium of digital media was created by the collaboration of creative inspiration and technical means. Holroyd did a detailed study of the application features of immersion research in 3D projecting animation. He also investigated and elaborated on the elements of breaking through conventional creative expression, the link between the art and the science of 3D projections animation, the effect of varied spatial settings on the deployment of immersing concept, and target costing. This online feature not only changes the form of media, causing individuals to become dependent, and needs changing their social behaviors, but it is also one of the powerful figures of the online media era, which is when society enters the adventure mode of the network. It is also one of the reasons why people feel the need to change their social behaviors (Yang, 2022; Zhao, 2021).

The upgrading of both the wireless computer system and the technology has made it possible to merge the digital and aesthetic parts of a work in order to carry out large and in-depth circulation and dispersion across a variety of different media. It is not restricted and is not influenced by the media or any other circumstances, and it does not exist restricted in either space or time. Everyone has the potential to become a channel of communication. Because of the ever-increasing population, not only will its sphere of effect become more extensive, but the rate at which it spreads will also quicken (Yang, 2022).

The continual investigation of darkness and light by human beings is essentially the driving force behind the evolution of animation throughout history. The operation of the lamp is based on a concept that is comparable to that used with the dazzling slide lantern. The light from the candle is displayed onto the screen of the lamp, and the information on the painting paper is likewise synced with the changing of the paper so that it seems as if it is happening in real life. The chase of light and shadow may be seen in magic slide lanterns, lanterns, and shadow plays; despite the fact that their underlying concepts and results are distinct from one another, they all have a common theme (Yuan et al., 2018).

The digitalization of art entails not one but two revolutions—one in terms of technology, and another in terms of communication. The most distinguishing feature of digital media is its capacity for interaction, which, in contrast to the conventional media era's one-way communication model for the dissemination of information, results in the establishment of an interactive connection between communicators and their audiences. This interface is not restricted to occurring between individuals; rather, the audience may witness the connected behavior, such as via sensation, intelligence, and the creation of art, to connect in order to acquire a one-of-a-kind experience; moreover, the data cable will also be returned to the media center of information, in order to achieve the two-way interaction of knowledge as well as the dissemination and communication of many dimensions.

2. An Understanding of Digital Technology in a Scientific Sense

2.1. Traits that are Associated with the Use of Online Content Technology

For better broadcasting, online media art is distinguished by its ability to better combine the previously associated media with cinema and television while also being more efficient and popularizing art. The mix of traditional media with cinema and television will benefit from the use of digital media technologies; both the creation and transmission of the film offered positive results. One of the emerging tendencies in the industry of darkroom techniques is the flexible use of online media equipment to support the development of films (Jiang et al., 2022).

This is one of the features of digit television. To accomplish three-dimensional presentation technology, digital entertainment technology is an intellectual object that depends on the system study of television material examination and dealing out. The combination of traditional media with computer technology creates a new sort of complete technology that may be used for the production of digital music and video, films, augmented worlds, as well as other types of media art. The use of digit television know-how is essential to the processes of creative creation, modeling architecture, technical terms, and creativity and develop in any sector. The combination of melody, dancing, paintings, besides some procedures of art will result in more vibrant creative modes (Liu, 2020).

The first movies were created and shown on television in a straightforward and aesthetically uninteresting manner. The absence of a specific creative impact, the advent of 3D virtual technology in filmmaking, and the utilization of web technologies, pictures, and photographs, to a confident degree, accentuate the outcome. It enables such a movie to achieve an aesthetic impact but also exposes the movie to public in a diverse fashion. Thus, viewers may experience film on or after numerous sides to create a sense of visually delight (Jiang & Zhang, 2019; Li & Zhu, 2022; Ying, 2021).

This is done in order to accomplish the effect of being able for appreciating by viewers. During primary stages of movie production, the planning regarding operation as well as configurations of any scene necessitated a large number of workers, physical assets, and a significant amount of time. This not only contributed to an increase in the cost of production but also made it more challenging to produce certain scenes. These days, the proliferation of digital media has made it possible to easily change the film backdrop to virtual backdrop buildings, among other things, using digital technology (Baktiar et al., 2018).

2.2. The Development of Cartoon and Its Manufacturing

There are many different industries that make use of special effects, including the film and television industry, the gaming industry, the advertising industry, and even the medical and military areas. The incorporation of specific effect art also lowers the manufacturing cost but

also, and this is the most essential benefit, raises the decorative value. Additionally, it significantly boosts the sensory impact, which in turn makes everything more vivid and believable. It is possible to argue that all interactive multimedia presentations are inseparable from the art of special effects, which is a testament to the significance of this field.

The fast advancement of the digital era has led to the creation of new technologies, one of which is three-dimensional animation. Computer technology enables designers to freely build works with 3D space and 360-degree vision, and it also gives them the power to travel in accordance with trajectory (Baktiar et al., 2018).

Designers may make these works according to their individual desire. The term "3D animation special effect art" refers to the implementation of many forms of special effect art within the medium of 3D animation. Enhancing the visual impact and increasing the value of fine arts may be accomplished via the use of specific effect art in 3d graphics. This can also make the medium more expressive. The framework of traditional digital media advertising has been disrupted by special effect art, which has resulted in an increased visual impact as well as an artistic performance effect. The use of specific effect artwork grants advertising designers working in digital media an unbounded room for their imaginations as well as their designs. The creation of electronic content cannot be separate out from involvement of special effect art. Specific effect art may help it have more spectacular scenery, beyond the vision of designers, and can build the unique scenery.

It can also give creators with a very big creative space, employing strong specific effect paintings to hook the hearts of people. There are numerous components that make up the art of special effects, including such color, shade, substance, area, animation, and a variety of other components that either do or do not exist in the actual world. It is only via the collaboration of several types of lens art that it can be considered a comprehensive piece of special effect art (Yi, 2021).

2.3. Combination of Online Content Innovation, Cartoon Design, and Delivery

The use and growth of digital media technology may promote animation production and creation in many different fields, which will ultimately increase the financial value of the animation industry. It is impossible to separate animation development and manufacture from the creation of TV and film artwork as well as the design of gaming special effects. Because the conventional illustration of animation pictures and role modeling that have been done traditionally cannot satisfy the expectations of the new era, the advancement of electronic media technology has provided support for the implementation of animation conception and production on a large scale and in an efficient manner (Jiang et al., 2022).

The technology behind digital media includes animated and production applications such as 3ds Max, Photoshop, and Flash, amongst others. With the use of computers, designers are able to create online designs, transfer the designer drawing libraries into 3d Modelling for figure modeling, and use Photoshop to tweak and process animation pictures. Flash software is used to set ambient sounds for animated creatures, and the impact of animation scenes may be evaluated in the virtual world that is generated by virtual reality technology. This allows for the 3D presentation of animation characters to be realized.

To accomplish application in order to get commercial value is the primary objective of animating and production, and the constructability at this time serves as the foundation and premise for the pursuit of commercial value. The conventional design technology in hand-painted animation exhibited the picture of the connotation and the development of artistic conception more, was based on traditional media or tv marketing and advertising, rendered the

animation effect dull and uninteresting and lacked originality, essentially confined the cartoon design and manufacturing quality and effectiveness, and drew people's attention, not to mention the practical product and promotion (Pan, 2022; Zhao, 2021).

The use and development of technology for digital media offer product lifecycle aid for cartoon creation and development in the age of new media. The employment of 3D, Flash, virtual reality, and other applications and innovations during preproduction may give cartoon production and creation of 3D animation substance, so making visual effects characters seem more lifelike.

3. The Planning and Development of the Motion Technique Using Digital Materials

3.1. The Design of a Logical Design

During the process of developing the entire platform, the B/S structure is included into the design of the entire thing. As a result of this, the whole system's operating interface is shown via a browser, and data exchange between the internet explorer and apps background storage is handled by the web server. This ends up producing what is known as a three-tier design, which consists of a display layer, a management layer, and an application layers. Maintaining the system with a three-tier design makes it easier to keep it functioning smoothly, reduces server load, and enhances the flow of data between the various layers.

A layer that allows for direct user interaction is called the presentation layer. Users are able to see the system functional interface and provide guidance on how to use the platform.

In general, the session layer has an interactive interface that is generally user-friendly. This considerably optimizes the presentation tier and makes the system interface extremely simple and user-friendly. As a result, users may have a reasonably positive experience when operating the system. The display level and the data layer are on either side of the business logic layer, which is the layer in the center. Its primary function is to ensure that the user's request is promptly processed and that they get instant feedback on the status of their request. While doing so, it is also able to send the clear directions to the server. The repository of the system is referred to as the data layer, and it stores all of the information that is produced by the system while it is being used. In the meantime, the facts may have additions, deletions, modifications, and checks carried out on them in accordance with the instructions that are being sent by the application level.

It is clear from the architectural diagram of the system that the system is composed of three distinct layers. These layers are the display layer, the business layer, and the database layer. The three levels of this hierarchical structure operate independently of one another, yet they are capable of being connected via the exchange of instructions. Because the function of one level does not interfere with the job to make sure of the other levels, this architecture lends itself very well to the collaborative creation of software.

3.2 Framework Modeling Diffusion

The application system makes use of object-oriented innovation, the C++ programming language while running on Windows, a prototype grid handling feature archive, and a mathematical model function library. It then recommends and realizes an engaging simulation system that centres on the user experience. the user experience system for the 3d imaging figure system: basically, controls operation progress, figure choosing, character design, texturing design, and character preservation; generating, dragging, changing, and as a Figure 1 presents the structural system of the movie model for your viewing pleasure.

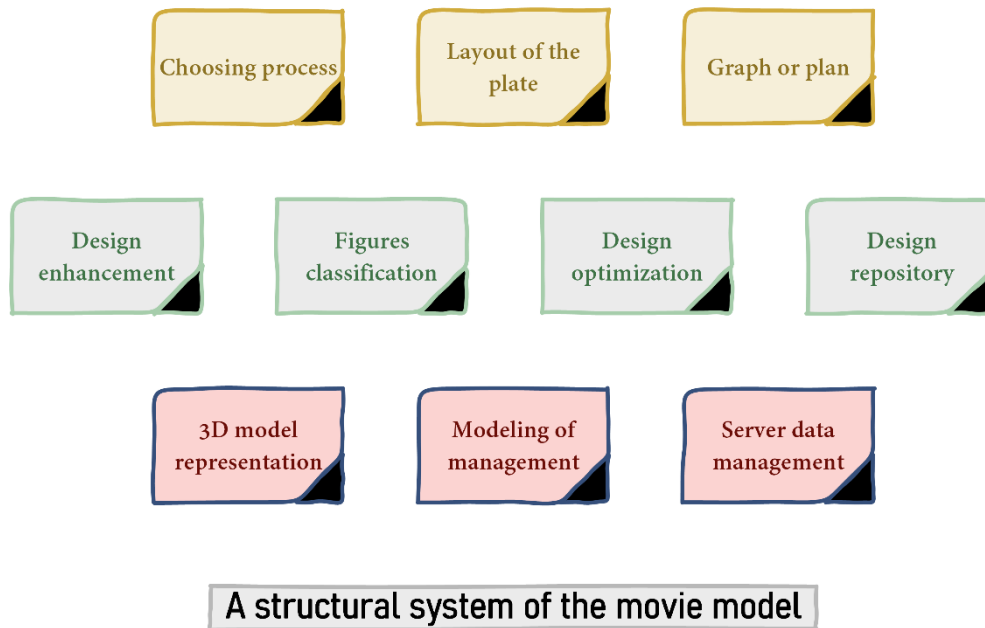


Figure 1: A graphical representation of structure of the motion picture modelling

3.3. Design of the Service's Opportunities For integration

The workable functionalities of the project were analyzed, and it was determined that the visual effects is made up of several modules. These modules include resource upload configurations, which allow members to upload animated film resources; access management strategic risk, which allows clients to maintain personal details; strategic planning modules, which allow administrators organizations to control animation resources throughout the entire visual effects system; and authorization management modules, that allow administrators to evaluate and manage visual effects resources.

The structural diagram that corresponds to the proper functioning of the motion software can be understood according to functional subdivision, the full range of potential of the motion system can be approximately split into four components.

4. Development of a Platform for Digital Media Graphics

4.1. Selection of an Appropriate Developmental Setting

The Java programming language has been chosen as the primary programming language for the animation system described in this paper. The Java Development Kit (JDK) version 1.9 is required for the creation of Java applications, and the software tool that has been chosen is the more user-friendly MyEclipse CI 2017, that provides the most recent version available. The database of the system uses MySQL, which is the database that is used the most often, while the webserver of the system uses the most recent version of Tomcat, which is 9.0. Throughout the whole of the development phase, the flagship 64-bit version of MS-Win 10 was used as the primary computer OS (Li', 2021).

4.2. The Procedure for Testing

This section will pick the purpose of signup, member password alteration, member uploading animation materials, administrator evaluation of animation assets, and at the conclusion, the primary interface for the operation of the animation system. In order to register, users are required to provide pertinent personal information and allow the system to transmit a verification number to their mobile phone, which may then be used for verification purposes. Verification is required before the registration process can be considered complete (Ahmad; Kadirbergenovna, 2022).

Members have the ability to reset their passwords by choosing security settings after clicking just on membership benefits option that is located in the top right corner of this page. Enter your new password, then create a new one, and then confirm your password. If the new password is not the same as the previous password, a warning will be presented stating that the passwords is wrong; nevertheless, the password will not be able to be changed in this case. In the event where the previous password and the confirmed password are same, the username password must also be identical to the verified password. In such case, the new password will not allow for any changes.

Users who have signed up to become members may submit their videos by choosing "my videos" from the menu that appears after clicking on the "member privileges" option located in the top right corner of the page. Simply clicking on the upload function will bring up the uploading interface as well as the call method for the data transmission process; the video that you upload will be able to observe the current audit state. Once the administrator has successfully logged in to the backend system, they will be able to undertake management activities. Enter your credentials on the primary screen. It is necessary for the administrator to review the uploaded materials. If you choose "Pass," the materials will be added to the database of the system. On the other hand, if users select "Reject," the materials cannot be added (Jiang et al., 2022).

To do performance testing on a system, one must first gather and then evaluate the performances system data under a variety of different operating situations by making use of various automated testing tools while the system is in its regular state of operation. The following are the precise stages of the test: (1) launch the login page that will be examined; (2) make use of the network to document login activities; (3) use the administrator account and its credentials to log in; (4) inspect documented network data and evaluate the functioning of the system (Jiang et al., 2022).

5. Conclusion

The online media innovation is a significantly affect that spans the social sciences, the arts, and the sciences. It is due to media technology, immersive language, and machine learning images. This technology is used to show the animation art designing data, and visual effects production and development have a lot in common with one another. The structure of the online media cartoon system is built, and the role of the functional block is explained, on the basis of a study of the features of digital media.

The animation system's function modules get a thorough design overhaul, and the whole system is put through a battery of rigorous performance and functionality evaluations. The amount of time it takes for each module to respond is quite brief, with the confirmation of the login information with the longest turnaround time at 90 milliseconds. The response processing speed of the system is satisfactory. The key information is communicated clearly and successfully throughout the material, and the update has played a very excellent, prompt, and guiding function in the design.

In addition, the systems integration theme is understandable, overall operation process is organized fairly, the layout is sensible, the image and text are well depicted, and the design phase theme is understandable. The incorporation of digital media technologies into the design and production of animation has resulted in the creation of new growth potential for the animation industry as a whole and has successfully enabled the realization of the economic advantages that animation goods provide.

The components of the system have, to a large extent, met the basic required functionality that were put forward by users; however, during the design process, due to the many uncontrollable factors such as a limited intimate technology level, the system's features did not exactly meet the requirements. The study on the security of virtualized and the cybersecurity of the experiment are the most important and challenging aspects of the development of the laboratory; in the work that follows, we will perform investigations on data protection.

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