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Research Article

Research on Digital Media Art Film and Television Special Effects Technology Based on Virtual and Reality Algorithm

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Art special effects, as a kind of new media art form, bring different visual impacts to viewers in film and television animation. This study discusses the application of digital media art film and television special effects' technology through virtual and realistic algorithms. The wide application of digital media art film and television special effects' technology has achieved the purpose of saving production time and cost for the creation of film and television dramas. Through the comprehensive analysis and research on art creation, image impact, film viewing perception, and natural interactive emotion under different technological environments, and the analysis of the comparison results, it can be seen that digital media art film and television special effects' technology has a far-reaching impact on film and television animation, can better carry out the sustainable development of film and television field, also promote the sustainable development of science and technology to a certain extent, promote the modern development of digital media art design, support society's continuous development and progress, and better promote the all-round integration of digital media art and film and television creation.

1. Introduction

With the development of science and technology, virtual reality algorithm technology is also being promoted widely. J. Lanier puts forward the concept of virtual reality (also known as spiritual technology) in 1989. He believes that virtual reality uses computer technology to create a realistic sensory world with hearing, touch, vision, and even smell. Users can browse the virtual world according to preset technology and related devices and can interact with others subjectively at the same time.

Virtual reality algorithm technology is very comprehensive, including a variety of high-tech, with interactive, immersive, perceptible, autonomous, and other characteristics. Now, it has become one of the core technologies in the production of special effects, providing comprehensive technical support for film production and playing an important role in the whole process of film production. Liu said that using virtual reality technology can promote the development of film production, improve all links, stimulate the audience's visual experience, and meet the audience's needs [1]. Digital media art film and television special effects technology has brought new technical support to art creation and changed people's entertainment lifestyle and habits. Si believes that the movie pictures produced by virtual reality technology can produce shocking visual effects, which can bring new aesthetic taste to the audience [2]. Star Wars and other sci-fi films have used virtual reality algorithm technology to show the shape of objects through reality so that the audience has a real sense of invincibility. Zhang said that avatar, released in 2010, has become the peak work in the special effects' industry [3], pushing the VR algorithm technology to the peak of the film industry. Since then, film and television producers have added virtual reality technology to their works. Shen et al. said that, with the help of VR algorithm technology, film and television directors can directly see the completed picture of background effects in front of the monitor [4]. Han et al. believe that the development of VR has opened a new era of development in the film field and created a new film form [5]. Virtual reality technology can create new audio-visual effects. Technology based on virtual and reality algorithms is more infectious and artistic innovation.

In 1980, digital media art, which combines ordinary art and digital media technology, rose rapidly in China. Its new and innovative characteristics make it deeply loved by the majority of people. Tang et al. believe that virtual reality algorithm technology plays a leading role in digital media art. The expressiveness of the works is stronger, and the visual impact is also stronger [6]. The image processed by digital technology is closer to reality and has higher picture quality. Zhang believes that the important content of VR is to produce a realistic virtual environment in the later stage of the film, then establish a virtual model according to the audience's aesthetic trend and market trend, and finally produce special effects with the best visual effect [7]. Lan said that the application of VR to the special effects of film and television works has become a key technology for the special effects' production of domestic science fiction films and television works. The application of VR technology can make the information picture on film higher than reality. Film and television producers can create some scenes that are unlikely to happen in real life and can also design some model roles. Compared with traditional films, the special effects of films using virtual reality technology are more realistic and have stronger artistic expression [8].

Virtual reality algorithm technology provides more possibilities for the imaging language of movies. Yao said that, with the wide application of VR algorithm technology, images can be placed in virtual content when processing images, and then image fusion can be better carried out, and diversified special effects production can be carried out [9]. People use technology to liberate images from words, making image recording a more convenient and explicit way of expression. Li said that, in the production of special effects, the participation of virtual reality algorithm technology gradually deepens with the continuous improvement of the technical level. Virtual reality technology can reproduce the original complex scene, simulate content remodeling, and other diversified programs so that the picture and content will be richer than the finished products without virtual reality technology, and the effect of some special pictures will be more significant, which has been greatly improved in terms of special effects production [10]. Wang said that film and television special effects using virtual reality algorithm technology can realize lens connection and special effect creation, making many impossible pictures possible [11]. Wang et al. said that the application of virtual reality algorithm technology in the film production process will become more and more mature, changing the film production mode and production mode [12].

This study focuses on the application of virtual reality algorithm technology in digital media art film and television special effects technology, provides a reference for the further development of digital media art value, and contributes to the development of digital media art film and television special effects technology.

2. Development Status of Digital Media Art Film and Television Special Effects

With the development of the times, people's horizons are gradually broadened, and a single film focusing on the plot is far from meeting the needs of modern people. People have higher and higher requirements for the experience of the visual senses. While appreciating the plot, they pay more attention to the shocking special effect scenes and the visual impact brought by creating illusory creatures and scenes. There is no doubt that all these have become a new standard for evaluating the success of a film in the contemporary era. Digital media art will stay in the traditional creative ideas and ideas and lack of innovation in artistic creation. The diversified development of digital media art has gradually marginalized traditional cultural characteristics. Cultural heritage is an indispensable and important core element and deepens the in-depth understanding of traditional culture. In the blind pursuit of special effects, it is easy to ignore the spiritual realm and cultural elements in artistic works.

The technology of virtual and reality algorithms has also been widely used in the field of film and television. Modern art creation must follow the trend of the times and make positive changes according to the accepted appreciation angle. The special effect technology of virtual and reality algorithms can transform abstract things into visualization and enhance the interaction and communication between viewers and film. Therefore, it is important to bring substantial breakthroughs in artistic works in digital media artistic film and television special effects, integrate virtual and reality algorithm technology, apply art special effects technology to create, realize the innovation and development of digital media art creation, and bring more real and touching artistic experience to viewers. With the innovation of media technology, there are good opportunities for the sustainable development of current film and television works. The application of digital media art in the future film and television special effects will bring reform and innovation to the film industry. Through virtual and reality technology, the efficiency of film production will be greatly improved, and better viewing effects will be brought to viewers. The film and television effects will be more realistic and idealized, letting viewers feel the visual feast brought by the film from many aspects.

3. Digital Media Art Film and Television Special Effects Creation Based on Virtual and Real Algorithm

3.1. Virtual and Reality Algorithm. Artistic film and television special effects creation works are inseparable from data information. Virtual and reality algorithms can achieve the maximum optimization of valuable information. Under the massive data information content, we can remove the complicated data, deeply mine the useful information, and analyze and study the main data information. The accuracy and efficiency of their algorithms can improve the capture speed of massive data information extraction in time. By studying the information fusion of virtual scenes and real environments, we can enhance users' perception of the objective world, and from this valuable information, we can get a sense of creation. We can refer to the rich and diverse information content, make the virtual and reality algorithm understand the viewer's psychology in the data information,

create the image content that visually conforms to the viewer's preferences, bring the audio-visual experience of multi-element interaction and integration, integrate the digital media art film and television special effects, achieve the realistic dynamic picture effect, dynamically respond to the viewer's psychological behavior, and promote the interaction of artistic film and television works. The information data assistance of virtual and reality algorithm is added to the special effects of the picture so that the two technologies can be reasonably used to analyze the data of each detail of the digital media art special effects, extract the most favorite pictures and fragments of the viewer, and summarize the key points of the details. In addition, it can provide a certain reference value for the creation of artwork.

3.2. Artistic Film and Television Special Effects' Creation. The creation of digital media art special effects based on virtual and reality algorithms makes the pictures more three-dimensional and strengthens the perception of viewers. A simulated virtual space environment is established, which further stimulates the imagination and expressiveness of creation and combines virtual and reality algorithm technology to create works with more visual impact and expressiveness. In the virtual world, let the whole film and television special effects' picture continue to create better special effects in this environment. The combination of the two technical means can provide more space for film and television creation and creative potential. At the same time, it opens the door to more new worlds for digital media art film and television special effects creation and widens its various paths of artistic expression. The combination of art and technology, artistic elements, and bold creative ideas adds luster to the content through special effects technology. The wonderful ideas of art promote the realization of digital media film and television art and enrich the performance of pictures to a certain extent. Film and television special effects bring stunning effects; while attracting the audience's attention, they also firmly grasp their psychology, and special effects skills have gradually developed into an indispensable dish in the modern and future film and television industry. Excellent film and television special effects can add a lot of color to the whole film. The promotion of art and creation can better enhance the artistic expression of film and television works.

4. Integrated Application and Development of Virtual Reality Technology and Digital Media Technology

The integration between digital media technology and virtual reality technology, through collaborative development, can create brand-new technical concepts and promote effective development. After entering the era of information technology, take digital media art technology as the support point, build a good virtual scene simulation, and create an interesting experience with a strong sense of immersion for viewers. The ingenious integration between the two plays a great value experience. The combined use of it and virtual reality technology can further improve the application effect. In the context of postproduction, virtual scenery is used to adjust the work scheme, complete the all-round creation of the virtual reality world, provide viewers with a very realistic experience, and optimize the virtual world to the greatest extent so that it can be effectively processed in detail, and further optimize the interaction with viewers.

Virtual reality technology can effectively improve the flexibility of artistic creation means, expand creative ideas, give new vitality to the creation of artistic works, and increase free play space to effectively improve the fluency of artistic creation. In digital media art, film, and television special effects' technology, virtual scene simulation ensures the authenticity of the virtual world and allows viewers to immerse themselves in the scene. Detailed processing is conducive to the effective integration between virtual reality technology and digital media art technology and promotes the optimal and innovative application between them. In the virtual scene, improve the authenticity of the visual, auditory, and tactile aspects of the viewer in the virtual environment, ensure that the viewer gets a sense of satisfaction and immersion, make the background content of the scene more realistic, and effectively realize the interaction between the virtual world and the real world.

Digital media art film and television special effects' technology is naturally invested in the virtual world, and viewers get a sense of experience and good artistic enjoyment of the visual image, breaking the boundary between the real world and the virtual world, breaking the presentation mode of film and television artworks, effectively expanding the scope of special effects, and creating a very realistic virtual scene. At present, VR algorithm technology has been relatively extensive, and the development potential of the market is huge. The two complement each other, and their application effect is very significant. Virtual reality technology has generally entered the public's sight, further improving the public's happiness index, not only making achievements in the film and television industry but also promoting the innovative development of more new fields. Integrate technology into art creation, create dynamic virtual images, and have a real sense of experience at the same time. The integration of the two technologies can reasonably optimize the data information, improve the overall work efficiency, present a more optimized design effect, and make the sound, image quality, and special effects have stepped progress.

5. Simulation Verification

5.1. Comparison of Two Special Effects' Technologies in Artistic Creation. The optimization of the virtual reality algorithm is promoting the increasing diversification and enrichment of digital media art in art forms, art styles, and art types. Virtual reality technology has brought a broader platform for the development of imagination and creativity for digital media art and has brought moving visual effects to viewers based on the theoretical knowledge of virtual reality art creation in art creation. Pay attention to the interaction with the viewer, be

immersive and be able to make a benign composition, and integrate into the public and life. Now, we analyze two special effects technology, make charts according to the statistical information, and get Table 1.

Table 1 shows the comparison results of two kinds of special effects' technology in artistic creation. Integrating digital media art, film, and television special effects' technology uses virtual and real algorithms to freely control the expression form of digital media art in artistic creation. Compared with ordinary technology, it is obvious that the technology used in this study has been further improved in creative form, style, and type.

According to the statistical information in the above table, Figure 1 is obtained.

As shown in Figure 1, the visualization effect of the two kinds of film and television special effects' technology in artistic creation is shown, and the contrast gap between the two groups of data can be clearly seen. Digital media art film and television special effects' technology can skillfully express various images in artistic creation, showing a fatal attraction. It can be seen that the development of this special effects' technology has promoted the development of the film and television field.

5.2. Comparison of the Impact of Two Special Effects' Technologies. When the viewer is in it, he will get a unique sense of surreal space experience in the virtual situation. Under the impact of artistic effects, he will create a new form of more real and virtual interaction and bring more artistic experience to the viewer. The interactive combination of vision, hearing, and psychology will inevitably promote the connotation of digital media art to be richer and more distinctive, with a strong sense of spatial hierarchy. Improve the impact and influence of digital media art special effects technology. Now, we analyze the impact of two kinds of effects technology, make charts according to the data results, and get Table 2.

Table 2 shows the comparison results of the impact of the two film and television special effects' technologies. Special effect technology of this study can create a real and high simulation environment, allowing viewers to pass through multiple senses. Virtual reality technology can integrate the digital media special effects' world and the real world to the greatest extent, and its visual, auditory, and psychological feelings are significantly higher than ordinary film and television special effects' technology.

According to the data results in the above table, Figure 2 is obtained.

As shown in Figure 2, the impact visualization effect of two kinds of film and television special effects' technology is shown. The general film and television special effects' technology is lower than the special effect technology of this study in terms of psychological perception, which indirectly shows that the digital media art film and television special effects' technology can be better loved by viewers, and the impact effect of psychological perception can directly reflect the presentation effect of film and television special effects.

5.3. Comparison of Viewing Perception under Two Special Effects' Technologies. In recent years, virtual reality technology has also entered a new stage of development, and its sense of realism and immersion is also constantly improving. It has a greater shock in the perception of film viewing. When the film is appreciated, it can bring the audience into the film and television and perfectly present the film in a very strange film viewing corner. The enrichment of special effects promotes the extension of the viewer's senses. With the support of virtual technology, digital media art creation can show imagination, expressiveness, and more shocking visual effects. Now, we analyze the viewer's perception of movie viewing, and make Table 3.

Table 3 shows the comparison results of post viewing perception of the two special effects' technologies, which can indirectly conclude that the special effect technology of this study is more suitable for the viewer's mind. This special effect is closely combined with the plot of the film to create an environment consistent with the content of the film so that viewers can experience the new entertainment effects brought by the special effects through multiple physical senses.

According to the analysis results in Table 3, Figure 3 is obtained.

As shown in Figure 3, the visualization effect of the viewing perception of the two special effects technologies is shown. Compared with the data, there is a statistical significance of $t < 10.000$, $p < 0.05$. Immersive experience and panoramic viewing can make viewers get a better viewing experience.

5.4. Natural Interactive Emotional Comparison of Two Special Effects' Technologies. Viewers' ultimate pursuit of the virtual world has led to the emergence of 3D movies such as avatar, which achieve an immersive viewing experience and an interactive emotional experience in the virtual world. Immersive to feel the thrill and tension, the processing of artistic special effects will pay attention to the detailed performance of the scene, bring viewers super luxurious visual enjoyment, interact and associate according to the film content in the virtual world aesthetics, and aftertaste the true feelings brought by the film. Now, compare the two special effects' technologies in sensory stimulation, scene detail performance and virtual aesthetic interaction association, and make Table 4.

Table 4 shows the natural interactive emotional comparison results of the two film and television special effects technologies. Compared with the traditional special effects technologies, the special effect technology of this study pay attention to the viewer's sensory stimulation and scene detail performance, leaving an interactive space for the viewer to make interactive memory and association when watching, and enjoy the emotional aftertaste of the film.

Based on the data in Table 4, Figure 4 is obtained.

Figure 4 shows the natural interactive emotional visual effects of the two film and television special effects' technologies. Compared with the two film and television special effects' technologies, it is enough to highlight the good development trend of digital media art film and television special effects' technology, which can promote the sustainable development of the film and television field.

Table 1: Comparison of two special effects' technologies in artistic creation (%).

Group	Artistic form	Artistic style	Artistic type
General technology	69.05	68.31	65.47
Digital media art film and television special effects technology	89.33	92.56	90.38

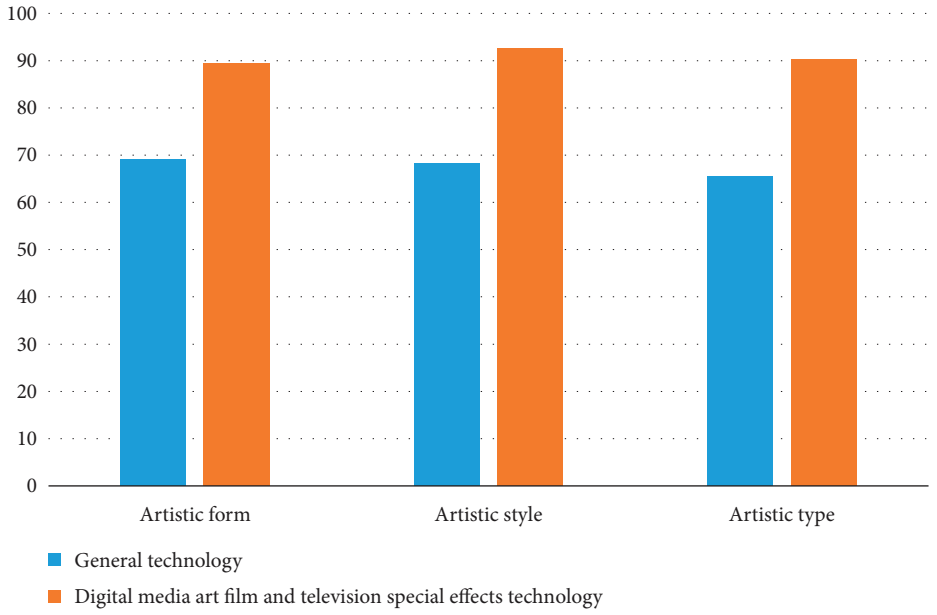

Figure 1: Visualization of two special effects' technologies in artistic creation (%).

Table 2: Comparison of impact force of two special effects' technologies (%).

Group	Visual effect	Auditory effect	Psychological perception effect
General technology	72.45	74.39	73.69
Digital media art film and television special effects' technology	94.06	93.56	96.47

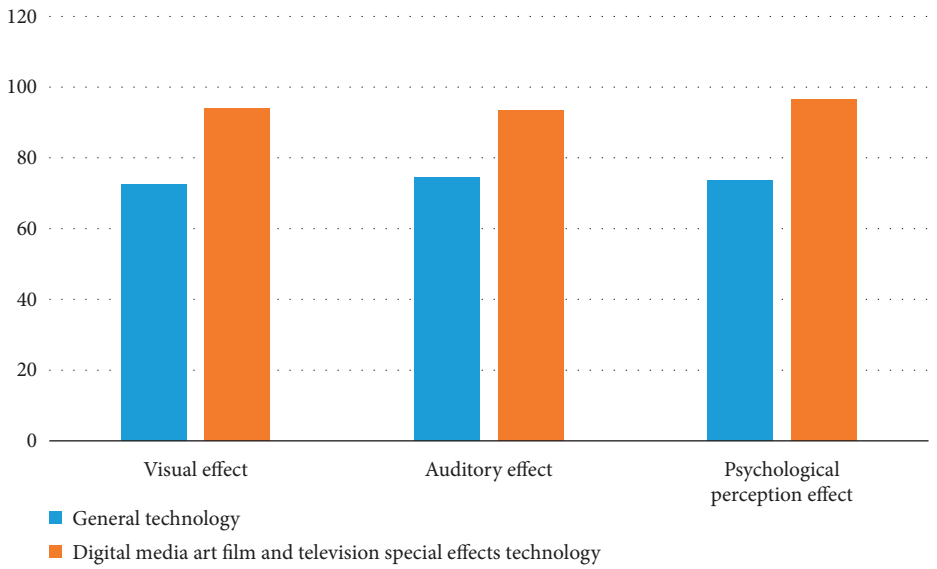

Figure 2: Impact visualization of two special effects' technologies (%).

Table 3: Comparison of viewing perception of two special effects' technologies (%).

Group	Immersive experience	Panoramic view
General technology	74.35	72.14
Digital media art film and television special effects' technology	97.36	93.27
T	6.235	6.458
P	0.045	0.041

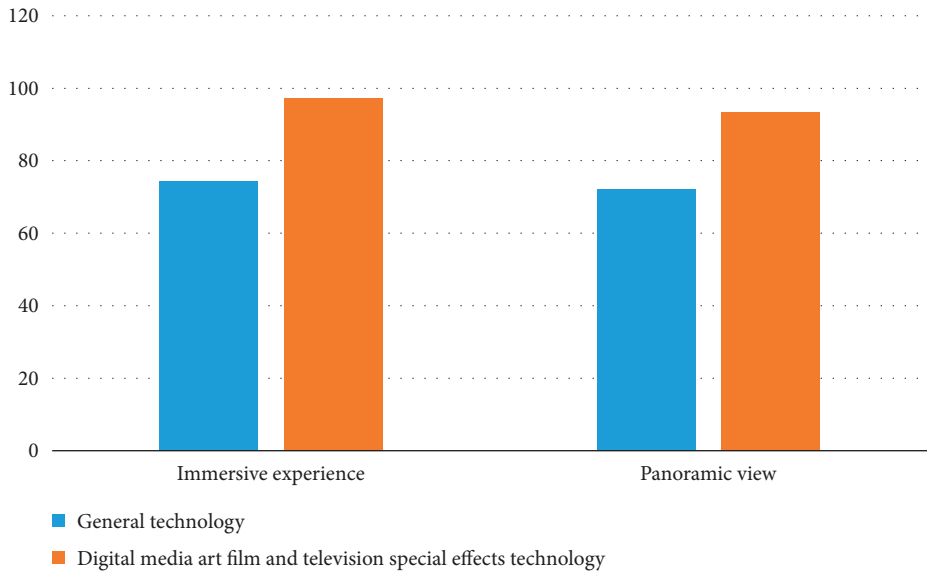

Figure 3: Comparison of visual perception of two special effects' technologies (%).

Table 4: Comparison of natural interactive emotion between two special effects' techniques (%).

Group	Sensory stimulation	Scene detail performance	Virtual aesthetic interaction association
General technology	74.35	75.34	70.52
Digital media art film and television special effects' technology	96.22	94.56	93.59

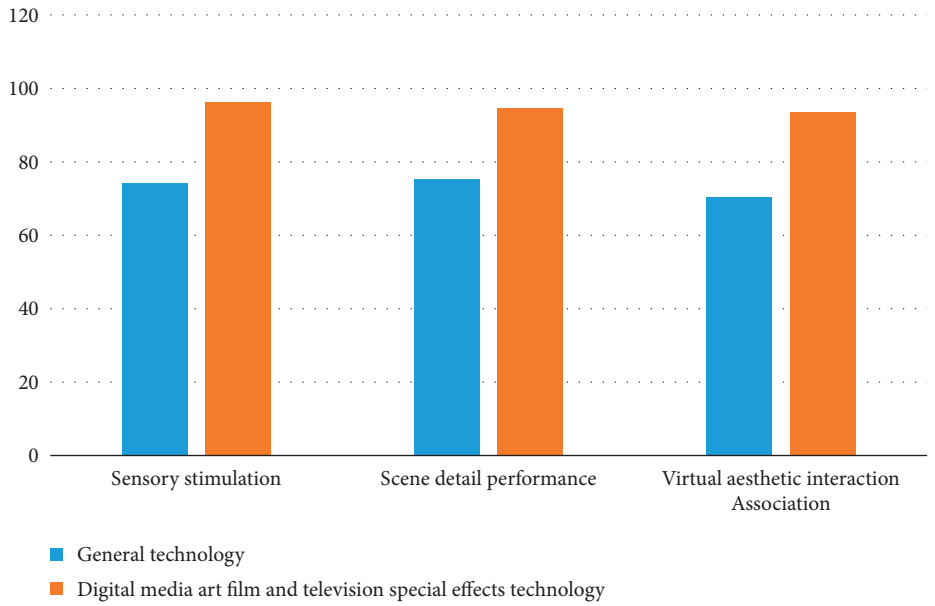

Figure 4: Natural interactive emotional visual analysis of two special effects' technologies (%).

6. Summary

On the basis of VR algorithms, this study discusses the application and development of digital technology. Special effects' technology in the film can show more shocking visual effects in creation so that digital media art can obtain greater development space. And with convenient information access channels and rich information integration methods, it plays an important role in the lives of the people. This study analyzes the effects of ordinary special effects' technology and special effect technology of this study in artistic creation, image impact, film viewing perception, and natural interactive emotional analysis. From the comparison results, the digital media art film and television special effects' technology has broken the boundary between the real world and the virtual world. With a new way of presenting film and television works, viewers have gained a sense of experience and good artistic enjoyment on the visual screen, expanded the scope of film and television special effects, created a very realistic virtual scene, and achieved remarkable audio-visual effects. Digital media art special effects have gradually been recognized by the audience, promoting the development of film towards personalization [13].

Data Availability

The data underlying the results presented in the study are available within the article.

Disclosure

The author confirms that the content of the manuscript has not been published or submitted for publication elsewhere.

Conflicts of Interest

The author declares that there are no potential conflicts of interest in our paper.

Authors' Contributions

The author has seen the manuscript and approved it to submit to your journal.

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