

The Creativity of Particle Effects on the Visual Art of CG-IP Design

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Abstract

Among the commercial IPs launched in modern times, CG dynamic IP accounts for the main vision of all mankind. From NFT digital collections, to film and television works "The Matrix", "Star Wars", "Lord of the Rings", "Harry Potter", "Transformers Steel", "Iron Man", "Avengers" and other CG movies, beautiful and beautiful visual effects, never-before-seen technological special effects, and shocking alien space forms are all places that attract us. While appreciating, out of curiosity, you will also want to know the shooting process of these dazzling effects, all thanks to computer CG technology. It is the popularization of CG technology, image special effects technology has entered a period of rapid development, the development has made the production of science fiction films break through the restrictions, create unlimited imagination of the image picture, bring the audience a shocking visual experience, discuss and analyze the impact of particle special effects on the film in CG film special effects technology, through the CG-IP example analysis of particle special effects, effect presentation, and production process, let everyone slowly recognize the creativity of particle special effects and the importance of visual art of science fiction movies. We provide suggestions for the design and production of more powerful CG-IP visual images in the future.

Keywords: CG; IP; particle; particle effects

Introduction

As the most influential CG-IP for the audience's visual senses, it has always been a very popular film category, it can always meet the audience's exploration and imagination of the future and unknown things, mythology, magic, black technology, transcendentalism, etc. can be presented on the big screen through figurative visual effects, rich and imaginative visual senses are addictive. It is precisely because CG-IP can make the visual sense of the film full of artistic creativity, in 1902, shortly after the beginning of silent film, France filmed the film "Journey to the Moon" adapted from science fiction, as well as "Frankenstein" and "Metropolis", "King Kong" and "Vanishing Horizon" in the 1930s, "Godzilla" and "Superman" in the 1970s. The science fiction of that era, but there is no current CG technology, such as Frankenstein, really rely on props makeup to make up a big transformation of the head, the appearance of electric sparks, lightning, all are real props and film film hand-drawn, in addition to difficult, time-consuming (for example, makeup takes a lot of time to start shooting). Another example is the special effects of "Journey to the Moon", which uses a large number of stage special effects, including smoke, montage shots, fast-motion shots, slow-motion shots,

multiple exposures, fade-out, fade-in, etc. film lens techniques, creating the amazing image visual effects at that time, the visual effect of the cannonball shooting into the moon's eye, although simple and funny, has become a classic freeze frame of early CG-IP.



With the advent of the era of CG (Computer Graphics) technology, the visual effects that can be achieved are becoming more and more abundant, and a large number of CG visual effects blockbuster film works appear on the screen, from the 1990s "The Matrix", "Star Wars", "Jurassic Park", to the 21st century "X-Men", "Spider-Man", "Hulk", "Iron Man" and so on, greatly satisfying the audience's visual exploration of the unknown world and technology.



It also makes these movie IPs become household names of star IPs. These film visual effects created through CG special effects technology have become the most important way to perfectly combine visual sensory art and film technology, showing unparalleled visual creativity to audiences around the world again and again. CG-IP brings people not only the extreme experience of audiovisual senses, but also subverts the traditional theory of film creation. For example, the sci-fi masterpiece "The Matrix" movie series shows people the latest development of CG special effects at that time, forming a wrap-around instantaneous still picture through several digital cameras, creating another classic sci-fi movie visual effects lens.



In CG VFX, particle effects are the most important combination of special effects means. Particle, originally refers to the smallest component of matter that can exist in a free state. Particle effects refer to the visual image design special effects system generated based on CG technology, which can also be understood as one of the functions of computer graphics creation. When traditional means cannot meet the visual presentation of the film, the special effects of the CG particle system achieve all the effects we can imagine. Remember, in the "Matrix" movie super beautiful bullet bullet guide trajectory line, the slow rhythm of air ripples, 360 degrees of roaming shooting without dead angles, but are now, when more and more movies need to rely on CG special effects for processing, from the logo of the film company at the beginning of the movie, to the tone of the movie, as well as the editing and processing of the movie, all rely on CG technology, as one of the most representative special effects technologies of CG, particle special effects, Unreal imagery for cinema offers tremendous creativity and changes the viewer's visual sensory experience. First, particle effect creativity Particle special effects continue to innovate CG-IP in Unreal space-time, super powers, and virtual technology graphics; All kinds of sci-fi films that were previously unimaginable have slowly begun to appear on the screen through the creativity of particle effects, due to the visual art creation of virtual reality technology brought about by the creation and reconstruction of particle effects. Particle special effects technology can be "created when you want", it can not only assist the real shooting screen to modify the scene, add sci-fi technology light and shadow, produce brilliant magic special effects, but also be good at completely fictional space-time effects and physical special effects, assist CG-IP special effects to transform imagination into "real", and unblock the constraints for creating dreams. Particle effects have three distinct characteristics of visual creativity:

Refactorability

Particle systems can transform a complete overall image into point-like matter, or linear and patchy objects. For example, in the movie "Avengers 4", when Thanos snapped his fingers, half of the universe was wiped out, from a complete human form slowly turned into a dotted flying particles, this shocking image is where the particle special effect is powerful, we can summarize it as a function of reconstructing the body. For example, in the "Matrix" movie, when the male protagonist enters the digital world, he reconstructs the body by generating zeros and ones, which is also achieved through reconstruction. The reconstructiveness of particle effects can transcend the limitations of form and space, combining the imagination of science fiction and the shape of reality, so as to create infinite possibilities for visual effects.

Simulation

Before CG technology, all special effects were achieved by hand drawing on film. The laser guns and lightsaber fights in the earliest "Star Wars" movies were achieved by the processing of artists on post-production film, and the "Superman" movies, where the hero's flight in the clouds was achieved through film superposition. Now, with particle effects, you can realistically create abstract visual effects that simulate these physical phenomena and perfectly present the visual senses, which are difficult to achieve with other traditional shooting productions, such as explosions, fireworks, water streams, clouds, snow, dust, meteor trails or light tracks. Not only can it completely simulate the trajectory of Star Wars lightsabers and lasers, but also make the future sci-fi weapons in the film appear more realistic. The flames behind the Iron Man who plays cool poses in the air in the "Iron Man" movie, the powerful laser cannon in the chest, and the powerful shoulder armor missiles, all of which are simulated through particle special effects. After watching it, it will make the audience feel that these futuristic high-tech technologies are close at hand, and simulating real special effects has always been a good play for particle special effects. First of all, as small as the chest laser cannon that

fires energy from Iron Man in the movie "Iron Man", as large as the devastating planet explosion in "Star Wars", particle special effects can be perfectly displayed.



Virtuality

For virtual sci-fi scenes, particle special effects are also a good play, which can completely break through the limitations of time and space to design and create shots that cannot be achieved by traditional film production methods, so that the sci-fi scene pictures are vividly and exquisite: for example, the space-time bond represented by the mirror in 1999 "The Matrix", through the simulation of particles, the hard glass and soft fluid are fully combined, breaking the boundary between the real and virtual worlds, and creating the novel space-time physics at that time; the beautiful alien space of "Avatar" on another planet; The game world in Ready Player One; "2012", "The Day After Tomorrow" in the super volcanic eruption, earthquake subsidence, super tsunami and other thrilling, gripping sci-fi video shots.



For sci-fi virtual characters, particle effects can also create a change form that meets the performance effect of the actor, such as the latest steel suit of Iron Man in "Avengers 4", which covers the surface of the human body and can constantly change form with the needs of various weapons; The transformation of the "X-Men" witch is like the whole body is covered with different scales, and with the flipping of the scales, the whole person will change shape, which is super cool; "Terminator" also creates a futuristic nano-fluid robot through particle

special effects, which is a completely unbeatable super machine, which can instantly condense into human shapes or fluids interspersed with various gaps, showing the coolness of future technology to the fullest. Therefore, particle effects not only solve the production and rendering of virtual characters and virtual scenes, but also further enhance the combination of live actors and virtual science fiction. Without the life-like dynamic fluids of particle effects, the high-tech equipment that amazes the audience will become simple styling decorations for actors wearing simple props.



Second, the appeal of particle special effects visual effects

The CG technology of particle special effects continues to innovate, in addition to greatly stimulating the audience's visual perception, but also the audience's visual aesthetic of the film has been unable to accept the bland film picture relying on shooting skills alone, and the preference for picture special effects makes CG special effects image production highly sought after. Whether the movie picture effect can brighten the eyes and whether it can make the sensory immersive experience with the plot has become the basic requirements of contemporary CG-IP blockbusters. Through the particle effect production effect, not only the production and rendering of the above-mentioned virtual characters and virtual scenes are required, but also the communication and integration between the audience and the virtual image world of the film are further increased. Throughout the history of CG-IP development, from the movie "The Fifth Element", to "The Matrix", "The Lord of the Rings" trilogy, to "Harry Potter", "Transformers Steel", Marvel heroes series "Iron Man", "Thor", "Avengers" and other series of century masterpieces, the launch of each special effects blockbuster has raised the visual sense of the film to a new height

Sense of presence

I still remember when the audience came out after watching the first part of CG-IP "Transformers Steel" and saw the car on the side of the road, they couldn't help but shout: "Transformation!" "That's the appeal of particle effects simulating the deformation of a robot car. In "Star Agent: City of a Thousand Stars", the seaside environment is simulated in the spaceship, and when the camera changes, the particle image fully retreats, leaving the cockpit, completing the transformation of the entire environment and atmosphere. Another example is the doomsday effect of the two sci-fi films "The Wandering Earth" and "The Day After Tomorrow", the ice and snow and wind and sand in the CG image are all simulated by the particle system, allowing the audience to empathize, in addition to the superb acting skills of the actors, the environment simulated by particle special effects is indispensable. You know, every dust grain, every piece of flying snow, is CG particles, such a large number of simulation operations, in the era of computer underdevelopment, can not be visually presented in any way. In "The Matrix", the characters simulate the realistic transformation process transmitted from the real world to the virtual computer world through the mirror through particle special effects,

so that the audience has a strong emotional transformation of the mirror of reality, and these sense of presence are the visual impact and appeal brought by the production of particle special effects. It is the dream of every sci-fi blockbuster to shock the audience's vision, let the audience feel the sci-fi characters and the world they have never seen before, and then identify and substitute them, and constantly use particle special effects to create special effects that surpass the previous work. Therefore, when the design of particle special effects can assist the description of the movie script, the film picture effect is fully expressed, so as to form a complete sci-fi world view, and the audience can enjoy a beautiful visual special effects feast.



Realism

One of the important tasks of CG-IP is to make imagination come true, and of course beautiful dreams will come true. In CG, whether it is the floor thing, or the props in hand, or the environment around the house, or even the weather, it needs to be imitated very realistically and consistent with the real environment, so that the audience can have a strong interest in the authenticity of the movie. Remember the movie "Avengers 4", a large number of aliens and human beings on Earth wrestling environment, can you imagine that there are only dozens of actors, and the rest are realistic simulation data through the computer? Looking back at "Harry Potter", the strange magic cast by that little magic wand will appear alive in front of your eyes, from the light of magic to the effect of wet law, you have to make the audience believe that magic exists in our society. This CG-IP's realistic simulation of the fantasy characters and prop environment is also the most important part of the film's recognition by the audience. Just imagine, without the CG particle effects system, just like the gun in the hand of the future soldier in "Star Wars" does not have a cool laser, it comes out with bullets; "Spartan 300 Warriors" does not have a magnificent plain, but a small space inside; "Thor" blew up the flying lightning and became the actor's three-point shot, then watching the movie will become like watching a stage play without props, all the special effects and all the fantasies are completed by the audience's brain, then the film as an image medium, especially CG-IP, will also lose its due charm and attractiveness. Due to the perfect assistance of particle effects, I believe that the future development of CG-IP will change not only the visual picture effect, but also the shooting and production process. For example, film screenwriters will first explore what kind of movie special effects are more attractive, and then create the film script. Secondly, in the stage of film script creation, post-production special effects directors will be added to discuss digital special effects together in order to better brainstorm, and design a special visual effects script while creating the film script. For example, the film "Spartan 300 Warriors" and "Fantasy

Drifting of Young Pi" are all because of the powerful CG special effects assistance, completely abandoning the traditional film live-action shooting, in addition to the real actors, all environment construction, props construction, animals are CG construction, and then according to the requirements of the screen shooting, then green screen keying, and finally integrate actors, virtual scenes, virtual characters, particle special effects, and finally render a complete movie special effects picture. To sum up, the infinite creativity of particle effects liberates the visual time and space limitations of CG-IP creativity, especially for sci-fi themed films to provide a way to create new image effects, making the audience addicted and amazed, and also providing infinite possibilities for future sci-fi image creation, let's look forward to the next CG-IP shock.