

What is CGI? How does CGI work?

Basically, Computer-Generated Imagery (CGI) is the creation of static or dynamic images using computer software.

Many people have heard about CGI, but not everyone knows what CGI is. In this article, let's learn what CGI is, how CGI works and its applications.

What is CGI?

Basically, Computer-Generated Imagery (CGI) is the creation of static or dynamic images using computer software. CGI is often used to refer to 3D computer graphics that are used to create characters, landscapes and special effects in movies and games . Currently, CGI is also used in advertising and architecture. , engineering, virtual reality, and even the arts.





CGI is widely used because it is cheaper than real-life methods such as creating complex physical models, hiring public actors. In addition, CGI also helps films solve difficult, unsafe scenes for actors or create bogus scenes, costly to staging.

How does CGI work?

CGI is created by a variety of different methods. Thanks to algorithms, designers can create complex structures. Meanwhile, 2D image editors can create 3D vector shapes.

3D graphics software can create everything from simple primitive shapes to complex shapes by combining triangles and flat quadrilateral. 3D software can even simulate how light reflects to surfaces and create other complex effects.





In recent films, CGI is really excellent when the filmmakers use a technique called compositing, also known as the green screen technology. Film scenes are usually shot with a green background behind and during post-editing, digital images and effects created by CGI will be added.

CGI development history

The first movie to use CGI was Michael Crichton's 1973 *Westworld*. A few years later, George Lucas used CGI in *Star Wars*. In the early days, CGI was not as great as it is now. The graphic images are still not realistic and do not match very well. However, these films excited the audience by bringing robotic gunlingers and space stations to life. Shortly thereafter, the designers focused on improving CGI.

In 1993, the audience was even more excited to see real dinosaurs in *Jurassic Park*. Filmmakers used CGI to faithfully describe the dinosaur's movements, skin, and behavior. This success motivates filmmakers to continue to improve CGI.





Filmmakers easily create spectacular scenes

In 1995, CGI was first used to create an entire movie. The result was the introduction of "Toy Story," an animated film that still appeals to the present. The extremely real characters of Toy Story such as Woody, Buzz and Rex have made every audience admired. Pixar also quickly followed the success of Toy Story with other CGI-made films like Monsters Inc. and Finding Nemo.

As CGI improved, it also became more popular. In 2001, the CGI in Pearl Harbor helped truly recreate a historical event. That same year, Gollum became the first CGI character to communicate and interact with the actors in Lord of the Rings. Filmmakers used motion capture technology to help Gollum look more realistic. That is, they recorded the movement of an actor then combined with CGI to create Gollum's motion.



The "magical" world of Avatar

The 2009 Avatar movie took CGI to the next level. It combines motion tracking with face tracking and combined with CGI. The result is that the characters in Avatar are amazingly authentic. The film later received three Oscars and became the highest-grossing film of all time. The audience is really overwhelmed by the authenticity of the fictional world created by CGI.



A monumental scene in Marvel movies is actually just actors running on a treadmill in a studio

Currently, filmmakers continue to improve CGI. Marvel superhero movies always make the audience admire the majesty, the truth of the techniques. Disney movies are getting more detailed and beautiful. Today, CGI is also used in games and television shows.

In fact, many people believe that CGI has permanently changed the film industry. Hopefully in the future, CGI will develop further to create more excellent cinematographic works.

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