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How can Meta-verse meet theme parks?

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1. Introduction

Virtual reality, which enables communication using a three-dimensional virtual space built in a computer, is drawing attention as a new interface. This is also being used in the theme park field as the technology necessary to approach the realism or realism of space that cannot be described by conventional CG technology is possible. By introducing the feelings and information of the real world we experience in a real theme park into a virtual space, it is possible to bring the real world closer to the real world and visually overlap the computer-generated information in the real world in front of us. Virtual reality is characterized by integrating information inside the computer with the reality theme park itself where humans are active. The technology that combines computer-generated information into the world of the real theme park in front of us is also called "augmented reality" in the sense of strengthening and expanding the real world with virtual information.

In addition, the space from the real world to the virtual world through extended reality and virtual reality is regarded as a continuum without a clear boundary, and the concept of space including this whole and the sense that humans can feel by it are called mixed reality. In complex reality, it is premised that

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the user interacts with the complex real world in which the real world and the virtual world are fused.

Recently, this concept of virtual reality tends to be replaced by the word Metaverse World. Metaverse was first used in Neil Stephenson's science fiction novel Snow Crash in 1992 and is a combination of the Greek word Meta, which means "processed, abstracted" and Universe, which means "real world," meaning real-life social, economic, scientific, and cultural activities.

2. Development of VR technology and merge with theme park

The origin of virtual reality is often the development of airplane simulators during World War I. Developed by Morton Heilig in the early 1960s, the system also embodied the first virtual reality system that evoked seat vibrations, wind stimulation, and even the smell of alleys in New York, along with videos of users riding motorcycles in New York through a display. It proposed the prototype of the current 4D movie theater.

Around the same time at MIT, Ivan Sutherland developed a system called "Sketchpad," which is the beginning of current computer graphics, and a few years later, he created the concept of "Window on the World (WoW)" by connecting a head mounted display with a device that can track the head position. It was the first tool to enter a virtual world created by computer graphics.

However, it was difficult to simulate real-life content with computing power in the 60s, and virtual reality came back to the spotlight only in the early 90s due to poor sensors and display devices. Since the 90s, virtual reality technology has developed rapidly with the increase in computer processing capacity, the development of display technology, and the development of various sensor technologies.

Virtual reality was used in the early stages of defense and industry, but has been expanded to services for the general public such as broadcasting, advertising, computer games, and theme parks.

For humans, the evolution of technology is like an extension of the senses, for example, from playing alone through computers in the past to the introduction of network technology, many people have come to play together, such as online games. In addition, in the field of sensation, media in the past had a strong literal character, but gradually became stronger in visual character, and recently, various perceptual experiences have become possible due to the introduction of multimedia technology.

In terms of technology development stage, virtual reality has evolved from the most basic VR technology to augmented reality (AR), which extends it to the real environment, and mixed reality (MR), a technology that creates an evolved virtual world by fusing virtual information based on real life information.

However, VR has an excellent three-dimensional feeling and a high sense of immersion, but it has the disadvantage of being less convenient because dedicated VR glasses such as Head Mounted Display (HMD) are needed. Since AR also has less spatial constraints and a high sense of reality, but has a low three-dimensional sense of immersion, MR is a technology that combines the advantages of VR and AR by improving it. In other words, technology that integrates AR and VR and further strengthens interaction with users can see a hologram-type virtual image at 360 degrees with MR.

In April 2019, Korea launched the world's first 5G telecommunication commercialization service. 5G communication is characterized by ultra-fast, ultra-connected, and ultra-low latency, and it can be connected to smartphones and countless devices in the future, and it enables data transmission speed 20 times faster than 4G when transmitting data. It can also use a frequency band up to 100 times wider than 4G. With the commercialization of 5G, VR technology application services are being released in all industries, but the theme park service sector is the most actively introduced.

There are many applications using the characteristics of virtual reality technology, such as education and training, entertainment, communication, medical care, information visualization, and prototyping, and recently, in the theme mark field, it has begun

to be used to give a sense of excitement like being in a theme park.

3. Implications and suggestions to theme park industry

Virtual reality (VR) and augmented reality are also being introduced into journalism. Samsung, Oculus, and Google are developing and popularizing consumer VR headsets with virtual reality controllers.

VR John Shinjuku, a theme park opened in Tokyo by Japanese game company Bandai Namco in July 2017, shows the essence of virtual reality. The "Mario Cart" passenger reaches around in the air as if he is in a game, throws bananas on the screen, and wields a hammer. You can also experience the lethal move "Energypa (a kind of hot wind)" in "Dragon Ball." If you wear sensing devices on your hands, feet, and waist and do your best, energy waves will erupt from the virtual screen, breaking the rock in front of you.

Many people screamed that they couldn't take a step from the cliff on the virtual screen. The "force jacket," which was unveiled by Disney in the U.S. in April 2018, drew attention as a prototype that embodies mixed reality. The jacket, made in collaboration with MIT and Carnegie Mellon University, provides both large and small senses to the body with airbags and high-frequency vibrations. Wearing a jacket and virtual reality glasses allows you to check the various senses of the virtual world with your real skin, such as snakes winding around the body or being beaten by monsters. Smart gloves developed by UC San Diego University team with Qualcomm are also interesting. A kind of robot muscle built into the glove reacts like a spring and applies force when the finger moves. Even if the user plays the piano in the air, they can feel the touch while immersing themselves as if they were actually pressing the keyboard.

Various bio-signal feedback interface technologies are now introducing immersive and five-sense services in theme parks as well as in content fields such as movies and games. Theme parks are also evolving from simple rides to five senses,

including touch, space, and bio-signals, and research and investment in bio-feedback interface technology through bio-signal recognition are rapidly increasing worldwide.

Metaverse, where this emotional interface meets virtual reality, is expected to change the paradigm of media and theme parks to its roots. At the South By South West (SXSW) conference held in 2022, users of realistic services showed by metaverse technology provided a realistic experience by maximizing human five senses in the metaverse space. The increasingly advanced hardware and emotional interfaces will evolve in the direction of not only enjoying games or theme parks using avatars on metaverse, but also attracting various participation by engaging in social and cultural activities such as real life.

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