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5G+VR: Media Communication in the New Era

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Abstract

With the continuous maturity of 5G technology, people will feel the great changes that 5G technology brings to daily life. Among them, VR and virtual reality technology, as one of the most interesting media communication methods, will also get rid of the problems of low rate and high delay caused by the limitations of 4G, and can be really widely used. With the closer integration of 5G and VR technology, some problems that hinder the development of VR in modern times, such as the high price of equipment, the delay of motion capture, and the quality of image and sound transmission, will be well solved. This paper will introduce the basic technologies of 5G and VR, and discuss the impact of 5G+VR on media communication in the new era from three aspects: network education, intelligent venue construction and 5G+VR live broadcast.

Keywords

5G; VR; Media Communication; New Media; Online Education.

1. The Impact of 5G Technology on Media Communication

As an indispensable part of People's Daily life, media communication is exerting more and more profound influence on people's life.

From 1G, which can only make phone calls with limited distance. To 2G, which can surf the Internet and send and receive emails. To 3G, which can process images, music, video streaming and other forms of media. To 4G, which can carry out high-quality media transmission and more abundant mobile Internet activities.

Mobile communication technology is changing the way and quality of media communication step by step, thus serving People's Daily life.

Today, the birth of 5G, the fifth generation of mobile communication technology, will bring earth-shaking changes to the media communication in the new era.

Tong Wen, chief scientist of 5G at Huawei, believes that the main technical indicators of 5G are: 1 Gbps ~ 20Gbps peak rate, 10Mbps ~100 Mbps user experience, 1 millisecond ~10 millisecond end-to-end delay, 1 times ~100 times network energy efficiency improvement. [1] In other words, 5G has 100 times the transmission speed and one-tenth the network latency of 4G networks, and 1,000 times the capacity.

From such technical parameters, 5G is fully capable of supporting higher quality media transmission, the connection of more smart devices and the application of more intelligent scenarios.

At the same time, 5G network will open more connections between virtual reality and physical reality, generating scenes and narrative tenses of immersive communication. Internet of things, artificial intelligence, VR, AR, big data, cloud computing and other technologies will be fully integrated and applied. Media convergence is facing subversion and reconstruction, and human society will enter the era of intelligent media in which everything is connected. [2]

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2. The Rapid Development of VR Technology

Virtual reality (VR) mainly consists of four parts: computer-generated simulation of the environment, all human perception, natural skills and sensing equipment.

It sets the simulation technology, the computer technology and the multimedia technology and so on technology in a body, will they organically combine together.

The simulation environment is a three-dimensional image with real-time dynamic characteristics.

The perception level includes multiple dimensions, including computer-generated visual perception, as well as multiple perceptions such as touch, smell and hearing.

Natural skills are human behaviors and movements, which are fed back to human head, eyes, gestures and other organs by computer through data information processing and high-speed response.

The realization of the above functions also requires a three-dimensional interactive device, which is a sensing device. [3]

The period from 1935 to 1961 was the embryonic period of the concept of virtual reality.

The concept of VR goggles was first put forward by Stanley Weinbaum in his novel in 1935, which was the earliest time when the concept of virtual reality appeared, including the concept of all-dimensional immersive experience such as vision, smell and touch.

From 1963 to 1972, it was the initial stage of virtual reality technology.

In 1968, Ivan Sutherlan, the father of American computer graphics, developed the first computer graphics-driven helmet display HMD and head position tracking system, which was an important milestone in the development history of VR technology.

From 1972 to 1963, the concept and theory of virtual reality technology came into being in the early stage.

In this phase, M. W. Krueger designed the VideoPlace system to generate a virtual graphical environment in which the image projection of the experience can respond to its own activities in real time.

M. Greevy led the completion of the View system, which allows experiencers to wear data gloves and head tracker, and form a virtual reality system through language, gesture and other interactive methods.

From 1990 to now, it is the stage of perfecting and applying the theory of virtual reality technology.

During this period, large manufacturers including Japan's SEGA, Nintendo, Sony, America's Oculus, Google, Samsung, Apple and others successively produced and sold VR headsets, making VR further popularized.

Nowadays, with the emergence of 5G technology, many problems existing in VR in the 4G era can be effectively solved, such as poor interaction, low clarity, low authenticity, long delay that makes viewers dizzy and other prominent problems.

Improving speed and quality, reducing time delay and improving viewing quality can not only increase user participation, but also stimulate the rapid growth of new media businesses led by VR and AR. [4]

5G technology will promote the formation of a strategic window period for the development of virtual reality industry, activate the market demand and industrial application of virtual reality, and continuously penetrate into various fields. [5]

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3. Application Prospects of 5G+VR in Various Scenarios

3.1. Online Education

In today's society, people attach more and more importance to education.

At the same time, with the emergence of various forms of media communication, the forms of education are becoming more and more diverse.

People pay more attention to "experiential teaching", and by letting students experience the teaching content in person, they can understand it faster and remember it more deeply.

The application of 5G+VR has added a pair of wings to immersive experiential teaching methods.

Virtual reality (VR) can simulate scenes that do not exist in real life.

In the field of education, VR can be used to simulate the activity scenes that are difficult to experience in the real world, and can be used to make a lot of repeated attempts and experiences, which can help learners better understand abstract knowledge and enhance their spatial understanding ability.

This feature brings great potential for online education. [6]

The outbreak of COVID-19 has made it possible for students and teachers to study online at home, which further demonstrates the importance of online education.

However, a single way of teaching simply through network broadcast will lead to problems such as students' gradual loss of interest in learning and lack of concentration.

By creating a virtual environment, 5G+VR enables students to conduct immersive learning and research even at home. It can even transform the rigid text into vivid and interesting images and sounds, which is more able to attract students' attention, improve their interest in learning and deepen their understanding of knowledge.

3.2. Construction of Intelligent Venues

According to the theory of Museum Learning, venues are the second education system besides schools. Compared with classroom teaching, venues have rich Learning resources, relaxed environment, flexible time and casual Learning, and provide students with a relaxed, free, self-guided and unstructured Learning method [7].

The application of 5G+VR can make the venue experience more immersive and create all-dimensional, multi-angle, wide-field and multi-level immersive experience.

For example, in the science and technology museum, some phenomena that are difficult to observe in daily life (such as microphysics, chemistry, astronomical phenomena, etc.) can be felt intuitively with the help of VR technology.

If it can be combined with somatosensory technology, the experiencer can be more immersed in it, and the audience can have a more intuitive understanding of scientific knowledge while enjoying their body and mind.

3.3. 5G+VR

In today's society has gradually entered the era of streaming media, "live broadcasting", a new media method, has been quite common.

Through live streaming, people can interact and communicate with many netizens in real time.

However, in the 4G era, network broadcast is still mostly confined to the 2D screen, and people can only receive planar image information and sound information instead of immersive sensory experience.

With the advent of 5G and the gradual maturity of VR technology, this problem has been solved.

5G+VR live streaming will bring people a more immersive experience.

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In a live act as purchasing agency, for example, people can be more comprehensive understanding of the goods through the virtual reality technology appearance for make their own judgments, such as touch, the basic information, such as color, size can also obtain goods related s, historical background and other information, to solve for a complete picture of the goods under the 2-d visual judgment and then purchase the wrong problem.

For example, in the Spring Festival Gala and similar large-scale live broadcast, people will no longer just sit in front of the screen and watch the 2-dimensional picture, listening to the sound that can only be emitted from the media device, but will be able to walk into the scene and get the best viewing experience from the best viewing position.

Both visual and auditory senses will be 360° omni-directional.

And because of the high speed and low delay of 5G network, the quality and real-time of the video that people see will also be well guaranteed.

4. Prospects of 5G+VR

With the rapid development of science and technology, the world is about to enter the 5G era.

This will be an era of technological innovation, big data, Internet of Things, artificial intelligence, digital media and other related fields will be earth-shaking changes due to the emergence of 5G network.

Among them, multimedia, as an entertainment mode that currently occupies most of people's life, will also give birth to a new look due to the combination of 5G and VR technology.

People's senses will undergo a major shift from the real to the virtual, and the limits of distance will become minimal.

To sum up, the author believes that 5G+VR media communication mode will become one of the most important media communication modes in the future, and it will greatly change people's lives.

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