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Virtual Reality versus Augmented Reality

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Abstract

Technology is developing quickly, making a lot of things that were before impossible feasible. Virtual reality (VR) and augmented reality (AR) are two examples of the cutting-edge technology that, only a few years ago, were considered science fiction. However, they are now an essential component of everyday life. The distinction between augmented reality & virtual reality is the one that causes the most misunderstanding in the world. While Virtual Reality is entirely immersive, augmented realities is a synthetic, computer-simulated reality or reproduction of a real-time setting that allows a user to interact with the reproduced actual settings. Optical head-mounted displays (OHMDs), which combine virtual reality (VR) or augmented reality (AR), are close to becoming common gear that consumers may purchase and use to do 3D tasks. Front-facing cameras are a feature of certain OHMDs that enable augmented reality (AR) or virtual reality (VR) capability. Seeing the actual world may alter interaction with virtual items in addition to preventing collisions with the surroundings. It is unknown if virtual reality (VR) or augmented reality (AR) provides any advantages over one another for almost all jobs.

One of the most crucial areas of research in the present-day IT field is the development of augmented reality as well as virtual reality technologies. These two technologies have been used in a variety of fields, including education, healthcare, construction, military operations, and entertainment, and research on their technical aspects is progressing concurrently with research on their evaluation and the development of user-centered optimisation programmes.

The starting place for this article was the real estate show. The authors selected the appropriate assessment index as well as quantification technique through comparisons with virtual reality (VR) and augmented reality (AR) in the physical display field, compared the evaluation results of each technology, and then created a user experience evaluation model for each.

Keywords: reality, virtual, user experience, assessment index

Introduction

Human-computer communication technology has been extensively employed due to the quick advancement of computer science, and key application areas also include virtual reality and augmented reality. Instead of using the conventional user interface or doors, virtual reality (VR) refers to the direct immersion of observers in a three-dimensional computer-created world. VR incorporates dimensional graphic the internet, sensing technology, machine learning technology, and other technologies. Based on virtual reality (VR) technology, the augmented reality (AR) l2l

can add as well as locate virtual items or information by using graphics and show technology, then precisely "place" the simulated items into the actual setting by using sensing technological advances. By using some related equipment, this technology can effectively fuse the virtual and actual items, achieving the data integration of the real world with the virtual one, bringing a kind of rea The usage of AR and VR technologies is widespread in a variety of fields, including entertainment, construction, healthcare, and education.

The information service is rapidly growing, and these two technologies' application services are fairly varied in many industries. Information service providers must provide a pleasant user experience in order to capture the target market and earn brand loyalty. This study compares the usage of AR and VR technologies in real estate presentation, using comparative experiment research. It also uses various quantitative approaches and assessment indices. In order to compare the assessment outcomes of AR and VR in the sector of real estate exhibition, this article will also develop a user experience assessment model for both technologies.

Virtual reality is used to treat medical conditions, simulate difficult-to-experience situations, and facilitate the acquisition of other viewpoints. As an alternative, AR demonstrates that it is possible to maintain informal learning and collaborative thinking. In contrast, mixed reality (MR) is "the blending of real and virtual worlds to build new environments and sights, where physical as well as extra electronic elements co-exist and interact in real-time." MR uses immersive current technology interfaces to combine augmented reality alongside augmented virtuality, thus it is clear that it does not totally take place in either the actual or virtual environment. Though hugely popular in the entertainment industry, advancements in virtual reality, augmented reality, and magnetic resonance are gradually making their way into other fields of endeavour. The potential to overcome service and commercial difficulties that were formerly thought to be insurmountable is shown by contemporary innovation.

The psychological state of presence, or the feeling of being present in the world, may be linked to both mediated or unmediated experiences. In contrast to Virtual Reality, where the user cannot perceive or accept the reality of their surroundings and responds as if they do not exist, Augmented Reality allows the user to sense and accept the reality of his surroundings and responds to them appropriately. While Augmented Reality is an unmediated sense of reality, Virtual Reality is a fully mediated experience of reality.

OHMD (Optical Head Mounted Display) technologies are used in virtual reality and virtual reality systems. IMUs (Inertial Measurement Units), which include an accelerometer, gyroscope, plus magnetometer, are only one kind of sensor included in OHMDs. It also features a camera to show virtual objects, surroundings, etc., as well as a sound recording system made up of several microphones. The OHMDs provide an accurate sensation of the user's body in the computer environment as well as a sense of being in a mediated environment.

The Experience of Augmented Reality Vs. Virtual Reality: The user is intended to be fully immersed in a virtual environment in both augmented reality or virtual reality. In contrast to VR, where users are entirely immersed in the virtual world while being removed from the actual world, augmented reality allows users to interact in the virtual items around them while still being connected to the real world. Both are reflections of one another.

Industry Applications of VR and AR : Both augmented reality and virtual reality have an elegant app that revolves around the business. This significant impact may be attributed to augmented reality's (AR) ability to deal with facts. The starting place for this article was the real estate show. The authors selected the appropriate assessment index as well as quantification technique through comparisons with virtual reality (VR) and augmented reality (AR) in the physical display field, compared the evaluation results of each technology, and then created a user experience evaluation model for each.

PC Gaming and also Entertainment : The year 2018 saw a tremendous increase in the development of augmented reality, mostly as a result of the widespread adoption of Pokémon Go, Apple's AR Kit, or Google.com's AR Central. Before the 2018 charm lawmakers, Snapchat, Google.com Glass, and Admission were the three main sources of publicising augmented reality. More recently, a Silicon Valley-based company called Miracle Surge has broken boundaries to create a light-weight wearable AR as well as virtual reality glass that enables movies and television to 'explore the living room'. This multipurpose home entertainment accessory is used to play games, view movies and perform organization-adapted tasks in the AR and virtual reality fields.

In order to gain a competitive edge, the entertainment business has moreover seen several news outlets, academic institutions, streaming services, and so forth push virtual reality online content to target customers. Therefore, some service providers are now offering VR headsets to their customers so they may witness product releases in virtual reality, in an effort to much better assess the market and to convince social presumption.

Similar considerations have been given to implementing VR in more mainstream settings, such as the movie theatre (to enable monitor-free VR theatres that resemble monitor-free discos), as well as the adult entertainment industry, which is expected to grow to be a $1 billion industry by 2025. The NFL and Microsoft Hololens are now working together to customise the way fans may interact with players, other fans, real-time video game experiences, as well as the league's own marketing specialists and supporters. SpecTrek, Access, Gbanga, and Pokémon Go are a few of the successful examples of mixed reality video games for Android and even iPhone to this day.

Social Network Potential : With the advent of AR/VR technology, one of the measures that social media platforms may implement in order to protect their audience is the installation of AR contemporary technology. By offering a variety of interactive photo filters, Snapchat got a head start in AR learning, and Instagram soon followed. Recently, Snapchat released Shoppable AR, a feature that allows users to try out brands' items using a lens. The shop will then be able to direct users to where they may really spend that money. When it comes to VR, social media platforms like vTime, Facebook Spaces, and others allow for the existence of parallel electronic social worlds, allowing users to completely "leave" real life. Holoportation will also allow device users from different cities or nations to converse and relax next to one other in the same location practically while remaining hundreds of kilometres apart.

Qualitative Evaluation

The term "user experience" is used in the definition of the standard ISO 9241-210 as well as its supplementary instructions to refer to all user experiences before, during, and after the use of a system or a product, including those in the areas of emotion, faith, fondness, cognitive impression, physiological as well as psychological reaction, behaviour, and achievement, among others. The

supplemental instruction also mentions the three elements of system, user, and utilising environment that affect the user experience. Each component results in various aspects, such as the system factor, which may be separated into three levels (service layer, application layer, and network layer) as well as two directions (design feature or user define).

Each direction or layer may also be broken down into distinct qualitative or quantitative components. User experience has a temporal component; it wraps up the whole procedure from the anticipation before to the encounter to the total evaluation after it. There are three primary techniques to assess the quality of user experience: "Two kinds of legislation," "Paired Comparisons," and the frequently used approach "Mean Opinion Score"(MOS), which is advised by the International Telecommunication Union (JTU). Following quantification, it is possible to assess the outcome of subjective, objective, or a mix of the two types of thinking, as well as the user's quality. experience based on psychology, artificial intelligence, and statistics.

There are two features of VR technology:

1. It is an interdisciplinary blend, on the one hand. Research on VR technology is needed in many fields, including modelling, sketching, human-computer interaction, and other areas. These fields include mathematics, physics, electronics, computer science, computer science, the field of psychology, artificial intelligence, and others.

2. However, VR technology has a wide range of applications. The desktop virtual reality system is primarily used in the real estate exhibition field. Its focus is on resolving technical issues like real-time display, collision detection, and navigation as well as the accuracy of the virtual setting expressing and perceiving data synthesis.

The demand for immersion is the key distinction between VR and AR technologies, while AR systems emphasise users' presence in the actual world. However, users of AR technology cannot conceive the presence or integrity of virtual items in a real world with a bigger registration mistake. As a result, AR technology puts a greater premium on registration accuracy. However, while building lifelike virtual surroundings, AR technology may loosen the tight criteria for system calculating power. The majority of current augmented reality & user experience research focuses on availability assessment, human element analysis in virtual reality, and augmented realty design and evaluation techniques. Some academics have proposed the concept that AR may be used in completely furnished rooms in real estate to improve the user experience.

In conclusion, there has been a lot of research on the system and core technologies of VR and AR, but less has been done on the user experiences of these two technologies, particularly when comparing the user experiences of AR and VR technology. The research on application level has mainly focused on the fields of education and tourism. And this is one of the main reasons why certain sectors are now barred from using VR and AR technologies. There are many factors that influence user experience at the same time, thus it is interesting to investigate how these factors may be divided into layers, how these factors relate to one another, and how to assess various products using these approaches.

During the typical real estate exhibition phase, the area map, sand table, layout plan, model for an apartment layout, sample home, etc. are the key components of its content. Customers could only learn the relevant information through salespeople's vocal explanations, and the only way to get

user experience was by visiting a model home. The experience process built around VR and AR technologies is significantly more thorough and beautifully displayed when compared to the standard real estate display technique.

In the property display using augmented reality (AR), the user substitutes words, pictures, sound, or video models, etc. for the sand surface, arrangement plan, home layout model, ornamentation material, and furniture and inserts them into the actual environment; in contrary, the real estate show based on VR employs the new virtual establishing as carrier, simulating walking through residences and the outdoors. They both have distinct effects on the user experience. For the purpose of comparing both of these methods in the real estate display industry, a single evaluation index or standard were chosen. Three dimensions—technical function, utilitarian value, and aesthetic sensibility—combine objective and subjective judgement to make up the popular virtual reality (VR) and augmented real estate display items on the market today.

Evolutional Output

By using the aforementioned evaluation index and quantification approach, we can then compare and quantify the AR and VR physical display systems via a particular experiment. Implementation details are as follows: First, use the group experiment to determine the completion time and workflow for each function. Twenty-eight participants were separated into two groups and included in the small-scale sample approach this article used. They ranged in age from twenty-nine to forty-six, had an interest in housing, and had about equal levels of knowledge of AR and VR technologies. The iPads used by the members of these two groups are used to experience the AR and VR real estate displays, and we have improved the sales environment to lessen the impact of the environment and other external elements on the operation process. Additionally, videotape the operators' time and the operating procedure. Following the completion of each function, operators are asked to promptly respond to a questionnaire about their level of satisfaction, their emotional response, and their aesthetic response so that we may document their subjective experiences and sentiments throughout the whole process.

The functions of the handles is represented as a full score of 100 on a scale from 0 to 100, the emotional response is further divided into one hundred degrees (the sensation of feeling very satisfied following use is 100, experiencing very dissatisfied following usage is 0), and the graphical reaction is also split into one hundred angles (the sensation of getting extremely clear after usage is 100, going through extremely clear after use is 0); the amount of weight for every function are determined by the fondness level of volunteers who took the survey. cou We can perhaps receive the data immediately.

The following inferences may be made based on objective, quantifiable observation and calculation data: In the AR real estate exhibition system (CU, UC PC), the average information obtaining frequency of various aspects is more than in the VR real estate show system. The time it takes for the AR real estate display system to receive data is often longer than that of a VR real estate display system.

According to the study data presented in the arbitrary measurement table, the average levels of satisfaction and emotional sensation in the AR assets display structure are higher than in the VR property show system, whereas the aesthetic consciousness of the AR real estate show system is lower when compared to that of YR.

Conclusions

Because the techniques for constructing the model of assessment and selecting the index weight are not foolproof, the choice of indexing weight inside the paper is a bit arbitrary, and it should be altered using the inverse coefficients of variation approach.

The key is how quickly and intelligently our staff can adapt to, make use of, and embrace these changes, which will impact both the outcomes of our company and those of our customers. Our professionals eagerly anticipate "using the surge" with our clients from throughout the world. It's time to adopt artificial intelligence in a controlled manner and make sure that users become used to it when new breakthroughs are made public.

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