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Mixed Reality in Terms of Military Operations & Trainings

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Abstract - Mixed reality is one of the most sophisticated and engaging ways to simulate virtual objects as real. Mixed Reality is based on these realities. Virtual reality (VR) and augmented reality (AR). This white paper discusses the use of mixed reality in military ground field simulations, the advantages of mixed reality in the military, and the shortcomings of mixed reality in the military. On the ground, most soldiers have to die on a fence that has two sides, life and death. They need a lot of battlefield training to take them to the live side. This research paper shows how Mixed Reality can help you accurately train what the disadvantages are and how they can be improved. It describes the currently running application It is used by the military and shows the categories in which these applications can be categorized. It also shows what developments are underway in the field of virtual reality science in defence. Based on these developments, research directions and future expectations in this area are set.

Virtual Reality is a term that refers to a computer simulation environment that can simulate a physical presence in a real place. Not only in the world, but also in the fictional world. Acting in a virtual safe environment without real danger. So virtual reality is a promising technology Applicable to various application areas such as training simulators, medical and healthcare, education, science, etc.

Virtual reality can also lead to technologies like Second Life. As Along with virtual reality and Second Life potential, many lucrative technologies also seem like inevitable challenges.

Key Words: Keywords — Mixed Reality, Virtual Reality, Augmented Reality, Military, Training

1.INTRODUCTION

In recent years, virtual reality technology has made great progress, and its application is

Product design, education and training, military aerospace, entertainment and leisure. With

With the development of science and technology, virtual reality has played an important role in the military field. Attempts to analyse technology and its military applications, and their applications

Future army. Virtual reality (VR) technology was developed in the 1960s and originated in the US military. Combat simulation system. Virtual reality technology is a type of virtual environment created by computer technology. Special input and output devices allow users to interact with virtual devices create an environment and create a real experience in a variety of ways, including visual, auditory, and tactile. So, presenting the latest achievements in computer technology, information technology such as images processing technology, multimedia technology, sensor, network technology Integrated with virtual reality technology that has provided powerful tools for people Experience the virtual world and it has become a widely used technology.

Augmented reality, commonly abbreviated as "AR," overlays computer-generated content in a real-world environment. In short, it's a mixture of reality and computer images. As a technology, augmented reality has been around for a very long time-about 40 years or so. However, recent advances in augmented reality software such as PTC Vuforia Studio and the combination of Industry 4.0 have entered an era of tremendous growth in the sectors in which they are used. While the military first made good use of AR, it is also used in other areas such as manufacturing, medicine, and education.

The MR is also considered as the AR 2.0. The use of Mixed reality in simulation-based training is gaining popularity due to its popularity. Ability to merge real and virtual elements of the experience, the effectiveness of education. Specific aspects that contribute to the value of the Mixed Reality is the ability to present a compelling contextual experience without using the whole thing. Risks and costs associated with the artificiality of virtual reality, or entirely real experience. In the realm of mixed reality, there is a continuum of imagination Range from a fully realistic environment to a completely virtual environment various training systems that span mixed reality spectrum was prototyped and developed for the military fire support role. Includes fire and close air support calls. However, there is currently limited empirical evidence to inform how much exposure and what "reality"

"Virtually" is necessary for training purposes. Current approach to fix this the problem is mainly focused on optimizing the amount of fidelity (such as the amount of realism). In simulation These methods sensory, psychological, and functional cues needed to perform successfully Production tasks to indicate which items need to be provided in the simulation trainer. References are unlikely to be 100% duplicated, so you can fine-tune the amount of fidelity provided based on the importance of these clues. To execute the task normally. Even in such a way, how do decision makers need to make decisions? Implement clues and choose the right intervention along the continuum of imagination stakeholders and decision makers can balance risk and cost variables when deciding which to make. The element must be virtual (eg military weapons, aircraft / vehicle, damage) Other aspects may not be easy to determine (eg with location on the site) Virtual location). The training features of the system may be similar, but others may not be similar user experience aspects can be influenced by your approach to deployment

simulation. Here in this paper we are about to make things look more realistic than any other thing which the world has ever witnessed. Built on these two realities, mixed reality apps allow you to manipulate and interact with elements of both the real and the digital world. For example, you can take a virtual box from your real bedside table, open it, and see what's inside. MR is a kind of immersive AR, no longer tied to a limited screen or viewer. Instead, it uses special equipment: a headset or glasses with controllers, just like VR.

2.LITERATURE STUDY

This literature study is meant to create a stepping stone for the advancement of the body of knowledge regarding MR interface design in a military context. A literature study is meant to

facilitate theory development, close areas where a plethora of research exists and reveal areas where more research is needed (Webster & Watson, 2002 pp. 13). Literature studies provide a foundation for other research to build on, gathering and presenting important concepts and findings of previous research within the field of study, as well as research from other fields, in order to strengthen the main field of study (Ibid. 2002). In this literature study I have conducted a qualitative approach. A qualitative approach in literature studies can be taken in order to see where existing theory and research is lacking (Creswell, 2013), given the purpose of my study this is the most fitting approach.

In the last 5 years, Mixed reality (MR) have attracted the interest of investors and the general public, especially after Mark Zuckerberg bought Oculus for 2 billion dollars that is 1,56,36,70,00,000 in Indian rupees (Luckerson, 2014; Castelvecchi, 2016). Currently, many other companies, such as Sony, Samsung, HTC, and Google are making huge investments in MR (Korolov, 2014; Ebert, 2015; Castelvecchi, 2016). However, if MR has been used in research for more than 25 years, and now there are 1000s of papers and many researchers in the field, comprising a strong, interdisciplinary community, MR has a more recent application history (Burdea and Coiffet, 2003; Kim, 2005; Bohil et al., 2011; Cipresso and Serino, 2014; Wexelblat, 2014). The study of VR was initiated in the computer graphics field and has been extended to several disciplines (Sutherland, 1965, 1968; Mazuryk and Gervautz, 1996; Choi et al., 2015). Currently, videogames supported by MR tools are more popular than the past, and they represent valuables, workrelated tools for psychologists,neuroscientists, biologists, and other researchers as well. Indeed, for example, one of the main research purposes lies from navigation studies that include complex experiments that could be done in a laboratory by using MR, whereas, without MR, the researchers would have to go directly into the field, possibly with limited use of intervention. The importance of navigation studies for the functional understanding of human memory in dementia has been a topic of significant interest for a long time, and, in 2014, the Nobel Prize in "Physiology or Medicine" was awarded to John M. O'Keefe, May-Britt Moser, and Edvard I. Moser for their discoveries of nerve cells in the brain that enable a sense of place and navigation. Journals and magazines have extended this knowledge by writing about "the brain GPS," which gives a clear idea of the mechanism. A huge number of studies have been conducted in clinical settings by using MR (Bohil et al., 2011; Serino et al., 2014), and Nobel Prize winner, Edvard I. Moser commented about the use of MR (Minderer et al., 2016), highlighting its importance for research and clinical practice. Moreover, the availability of free tools for VR experimental and computational use has made it easy to access any field (Riva et al., 2011; Cipresso, 2015; Brown and Green, 2016; Cipresso et al., 2016).

Augmented reality is a more recent technology than VR and shows an interdisciplinary application framework, in which, nowadays, education and learning seem to be the most field of research. Indeed, AR allows supporting learning, for example increasing-on content understanding and memory preservation, as well as on learning motivation. However, if MR benefits from clear and more definite fields of application and research areas, MR is still emerging in the scientific scenarios.

In this article, we present a systematic and computational analysis of the emerging interdisciplinary MR fields in terms of various co-citation networks in order to explore the evolution of the intellectual structure of this knowledge domain over time.

3. RESEARCH METHODOLOGY

Through the years many peoples are working on the technology field in terms of augmented reality, virtual reality but they aren't focused on mixed reality as we are aware of it and it is even called as augmented reality 2.0 for future use as it can be more reliable and realistic type of reality which comes to life in terms of technology. Even the mixed reality is also called as second life as it seemed to be more realistic.

Here in this paper we came forward with the idea that is existed in the current trend of reality but somehow forgotten, how it can be more useful in terms of military training to go beyond the extent to train our soldiers at next level. We have seen mixed and virtual reality in gaming mostly but we are not aware of how

it can be helpful in training our military. What we can do is here we can clearly make an environment suited for every purpose and more realistic for each and everything in it as we have seen the realistic ness in gaming how it evolved so that same technology or graphical things we can use here to showcase the realistic approach towards the area and to make it or feel it real we can attach sensors on the body of soldiers at a point where the acupressure point is so that when the soldiers get hit by anything in training they can feel as we have seen the sensors that records the data from the body so we can even make it to feel the senses to be more real.

The sole purpose here is to provide environment where the military training can go on so that it won't be more time consuming and even more challenging or we can say the training level can be on next level to train.

One more thing to add here when it comes to Digital reality is if it is approved by the countries there won't be a need to train soldiers for a real fight to die for those leader who won't come forward in the battle against their country, here we can create a realistic environment for the countries who wanted to go for a war and win it, here they can fight virtually with the soldiers as the country has because here won't be blood spilt for them or their families but this approach needs to be approved the all international councils and people around the globe for their wellbeing.

4. RESULT & ANALYSIS

Here as we have seen the sensors we use to detect and send the signal to body will be useful as the soldiers get him while training, the training will be more precise as compared to the current training in terms of Virtual reality. These kinds of training provide a way to learn and adapt easily as compared to others and also can be trained more efficiently with the help of Mixed Reality.

5. CONCLUSION

In this article, we considered how mixed reality can help combat the unique military issues associated with training, and how techniques that use mixed reality can help in military service. This white paper explores mixed reality issues early in adoption, exploring how mixed reality can be useful in a variety of military applications, as well as some new technical solutions to them. This paper proposes various means by which mixed reality can be a technology that can refine military technology in the coming decades, combined with advances in modern technology.

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