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Augmented and Virtual Reality

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ABSTRACT

The use of virtual reality and augmented reality technologies is growing. Pokémon Go and the new Google Maps feature are just two examples of the smartphone apps where augmented reality has so far found the most success. On the other hand, the videogame industry and more affordable gadgets have largely contributed to the popularity of virtual reality. However, due to technical advancements in devices and processing hardware, what was previously a failure in the industrial field is again resurrecting. The various domains in which augmented and virtual reality have been applied have been thoroughly examined in this work. This study aims to undertake a comprehensive scoping assessment centred on these new technologies, where the development of each over the last years in the most significant categories and in the nations most actively using these technologies will be evaluated. In order to further integrate these technologies into society, we will examine their future trends as well as the areas that require further research.

Introduction

Technologies like augmented reality and virtual reality have been investigated for a long time. Nevertheless, a few items in this category have been created and made available to the general public. These technologies have, however, reached a standstill in some places because of social demands and distinctions. It is crucial to understand how research has changed over the past few years so that current patterns may be examined to forecast future application areas. First, it's helpful to define the words augmented reality and virtual reality in order to better grasp the subject of this essay. These phrases are a part of the idea of the "virtuality continuum." by Fumio Kishino and Paul Milgram.The phrase refers to a continuum ranging from actual reality to virtual reality created by computers. A segment of mixed reality, which is characterised as everything between reality and a fully virtual environment, exists within the virtual continuum. There are many definitions for virtual reality (VR), but stewer is possibly the most all-encompassing and universal term. The definition that was selected distinguishes the effects of technology; therefore, it is not necessary to identify Head Mounted Display (HDM) or globe, but rather to concentrate on the technology and applications to determine the path that technology will go.

Motivation

As a Society whenever we use new technologies we are concerned regarding security and other safety features related to the technology. AR/VR is the latest topic for tech developers around the globe. Augmented and Virtual Reality comprises different types of technologies hence it is useful for every tech person and hence security is also important for the society. Different types of technologies can be used for this.

Aim and Objective(s)of the work

Project objectives:

•Using Augmented Reality and Virtual Reality Tools as Part of Blended Learning in General Secondary Education Institutions.
•Demonstration of new aspects of AI-based mechanisms that support augmented and virtual reality.
•On the other hand, it is already a prevailing opinion that technology is destroying society. In such cases, it would be risky for an investor to launch a full-fledged AR/VR device or solution. The problem is exacerbated as technology brings the physical world into the digital world.

Literature Survey For into the METAVERSE

Table1.LiteratureSurvey

	Paper 1	Paper 2
Topic Name	Augmented and Virtual Reality Evolution andFuture Tendency	USE OF AUGMENTED AND VIRTUAL REALITY TOOLS IN A GENERAL SECONDARY EDUCATION INSTITUTION IN THE CONTEXT OF BLENDED LEARNING
Author Name	Luis Muñoz-Saavedra; Lourdes Miró-Amarante; Manuel Domínguez-Morales.	Valentyna V. Kovalenko; Maiia V. Marienko; Alisa S.Sukhikh
Journal Name	MDPI	IEEE Explore
Publication Year	1 January 2020	13 January 2022
Introduction	This study focuses on conducting a thorough scoping review focused on these new technologies, where the evolution of each of them during the last years in the most important categories and in the countries most involved in these technologies will be analyzed. Finally, we will analyze the future trend of these technologies and the areas in which it I necessary to investigate to further integrate these technologies into society.	The study examines the problem of using augmented and virtual reality in the process of blended learning in general secondary education. Analysis of recent research and publications has shown that the use of augmented and virtual reality in the educational proces has been considered by scientists. However, the target group in these studies i students of higher education institutions. Most of the works o scientists are devoted to the problem of introducing augmented reality into the traditional educational process. The use of AR and VR technologies brings science closer to life, recreates real life situations, helps to create artificial spaces for unsolved problems.
	Paper 3	Paper 2
Topic Name	Augmented Reality Meets Artificial Intelligencein Robotics: A Systematic Review	Mobile Augmented Reality: User Interfaces, Frameworks, and Intelligence
Author Name	Zahraa Bassyouni;Imad H. Elhajj	JACKY CAO; KIT-YUNG LAM; LIK-HANG LEE; XIAOLI LIU; PAN HUI; XIANG SU.
Journal Name	Frontiers	Arxiv
Publication Year	22 September 2021	16 Jun 2021
Introduction	This paper provided a systematic review of literature on robotics which have employed artificial intelligence (AI) algorithms and augmented reality (AR) technology. Augmented reality is a promising tool to facilitate the integration of AI to numerous robotics application. To counter the effect of increased complexity in understanding AI systems, AR offers an intuitive way of visualizing the robot internal state and its live training process. To improve the AR experience, accurate and reliable calibration and object localization methods are needed. As can be seen from the literature, artificial intelligence is a viable element supporting this notion for robotics applications. The combination of these technologies will empower the next phase on human-robot interfacing and interaction.	Mobile Augmented Reality (MAR) integrate computer-generated virtual objects with physica environments for mobile devices. MAR systems enable users to interact with MAR devices, such a smartphones and headworn wearables, and perform seamless transitions from the physical world to a mixed world with digital entities. These MAR systems suppor user experiences by using MAR devices to provid universal accessibility to digital contents. Over the pas 20 years, a number of MAR systems have been developed, however, the studies and design of MAR frameworks have not yet been systematically reviewed from the perspective of user-centric design. Y. W discussed the major challenges and unexplored topics o designing seamles yet user-centric MAR frameworks potentially empowered by ML methods.

Characteristics

1)   Mixed Reality (MR) – The combination of AR and VR elements enables digital objects to interact with the real world in which businesses function. Meansyou can design elements in real environment.

2) Extended Reality (XR) – encompasses all types of technology that enhance our senses, including his three types mentioned earlier.

3)   All technology blurs the lines of reality, so it's important to determine the right use case for your organization. For many companies, AR is usually the easiest integrate into their business processes.

Architecture
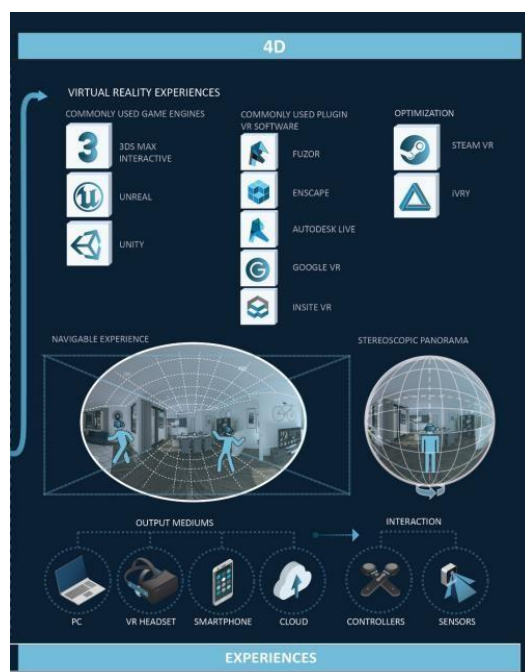
CONCLUSION

Virtual reality and Augmented reality are inverse reflections of one in another, regarding what each technology wants to accomplish. Augmented reality overlays virtual elements in the real world, while virtual reality digitally recreates a real-life setting

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