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Analysis of Intelligent Virtual Platform Using Ar-Vr for Edutainment Application: A Survey Analysis

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Abstract

Distance learning has recently become commonplace during the coronavirus pandemic. Many understudies required hardware or were not even connected to the Internet; thus they were not prepared for the current situation. Government agencies and educational institutions had to act quickly to allow understudy to learn remotely. In addition to providing understudies with equipment (such as computers, iPads, and goggles), they also had to grant them access to the Internet and other essential tools. Then again, educators were attempting to embrace new advancements in the training system to empower greater intelligence, relieve sensations of seclusion and separation, and upgrade understudy commitment. new developments, Extended Reality (XR, also known as the Metaverse), Mixed Reality (MR), Augmented Reality (AR), and Virtual Reality (VR), Big Data transformed surveying, learning, and picking up. Notwithstanding that, a few instruments were executed quick, and the Coronavirus pandemic was the trigger for this cycle; a large portion of these advancements will be utilized further, even in homeroom educating. Additionally, the document includes research on malware detection that was suggested by a number of research specialists during the 2018–2021 period. The main achievements of the security measures and their success metrics, both qualitative and quantitative, are recognized in this evaluation. Additionally, this study examines the main conclusions and the rationale behind the lessons discovered as a guide for future research.

Keywords: Artificial Intelligence, AR, Education, COVID-19, MR, Online Learning, VR

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Introduction

With the arrival of the digital age in recent years, cutting-edge technologies have permeated a number of industries, including sports, education, construction, and logistics. Additionally, people's material lives have significantly improved as a result of science and technology's ongoing advancements. In order to enhance the quality of instruction and learning and advance teaching, technology has also entered the educational system and integrated with the topic curriculum. Several disciplines are focusing more on students' individualized learning and the growth of their innovative skills in the framework of the new curriculum reform, highlighting the vital role that students play in the teaching process (Ciolacu et al., 2018). Currently, the majority of IT classrooms use the conventional teaching strategies of "practice while lecturing" and "lecture first and then practice." Because of this, teachers and students engage in one-on-one interactions, and teachers' feedback and evaluation are postponed, which makes it challenging for both teachers and students to understand the teaching and learning effects. These issues are successfully resolved by the smart classroom with the aid of technology and equipment, and its exceptional features—such as high interaction, personalization, and big data—meet the demands of the new curriculum reform (Fisher & Baird, 2020). With the help of individualized learning materials, a range of communication and learning pathways, numerous interactions, prompt feedback, and a number of assessment techniques, students can fully utilize their subjectivity, be inspired to learn, increase the efficacy of their education, and hone their problem-solving and collaborative inquiry abilities in a smart classroom.

Asynchronous and synchronous learning are the two types of distance education. Learning through paper instructions, recorded lectures, or pre-recorded video tutorials are examples of asynchronous distant learning, which is predicated on interactions between the teacher and the student at separate times. Real-time interactions, such watching live online lectures, are necessary for synchronous learning (Ivanova, 2018). Both approaches gained popularity, and the learner's desired level of knowledge determines which teaching strategies should be employed. The most common teaching method these days is a combination of synchronous and asynchronous instruction. Students and teachers communicate directly using communicators during online classes. Nonetheless, students are given extra training materials to complete assignments or add to their knowledge in their spare time. These resources can be in the form of digital books and text files, but they can also be presentations, films, or assignments that need to be completed using specialized software. People had to physically attend classes in order to study a certain field a few decades ago, and they couldn't begin their studies until they passed classification tests. People can now attend world-class lectures that are accessible to everyone from anywhere by simply taking a few minutes to register online.

Conceptual Methodology

Fig. 1 shows the overall conceptual view of incorporating Artificial intelligence in education application to improve the e-learning system. To foster a stage utilizing AR and VR which can remember numerous viewpoints like ease of use for various age gatherings, dealing with different type of subjects. To foster a stage utilizing AR and VR which can incorporate the mental expertise improvement of understudies, thinking about the focus, insight, understand ability, cybersickness, mental power and so forth. To lead a review in school/undergrads on different boundaries. To direct a multi variation examination in view of review (Iatsyshyn et al., 2020). Then again, VR presents a completely vivid computerized climate that recreates certifiable situations or mimics speculative circumstances. This innovation can move students to far off areas, verifiable periods, or even tiny domains, giving experiential learning amazing open doors that sounds unrealistic or unimaginable, really. For example, understudies concentrating on old developments can basically visit archeological locales and interface with relics, cultivating a more profound feeling of social comprehension. Essentially, VR recreations can be utilized in science and designing training to direct virtual tests, practice specialized abilities, and foster critical abilities to think in a gamble free climate.

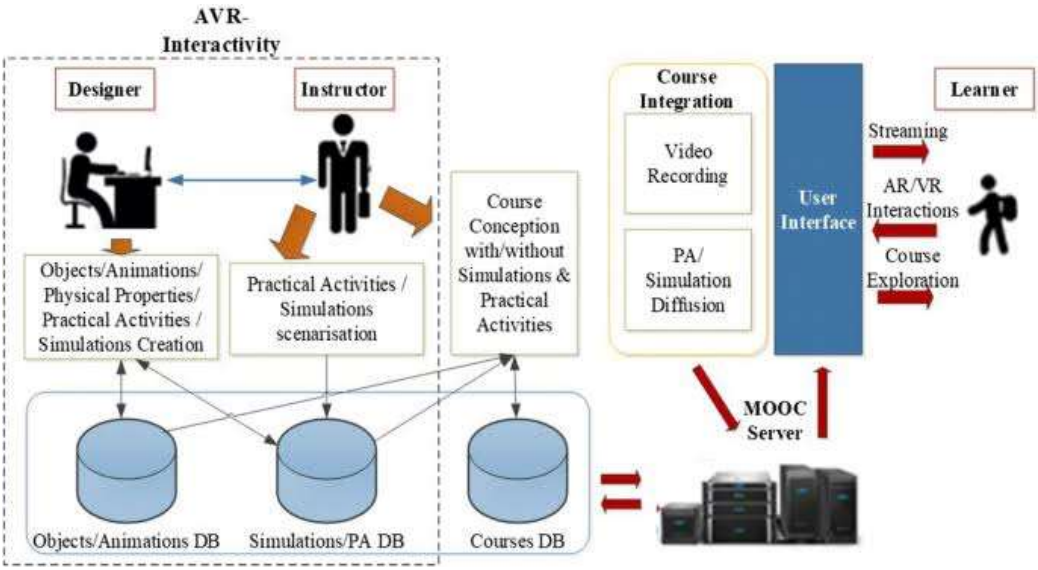

Fig. 1: Overall Conceptual View on AI in Edutainment

Results and Discussion

Even after the COVID-19 pandemic ended, remote learning is becoming more and more popular in education because of its many benefits. Although there are drawbacks, they are becoming less significant as technology advances (Vretos et al., 2019). The emergence of new technology has made it possible to use a range of teaching styles and approaches and eliminated the need for expensive participation fees. Parents and kids don't have to waste time traveling to school, and the child doesn't have to wait in the common area to go home after class. The intentional selection of time, location, learning speed, and participant count can all influence remote learning. Quick access to resources, continuous assessment of students' knowledge, customization of the learning process, group work opportunities, and direct communication between the teacher and students are some benefits of distant learning (Sermet & Demir, 2020). It is important to remember, nevertheless, that one of the biggest benefits of studying full-time is the continuous and direct interaction between the student and the instructor. Even with the newest technology, this is difficult to replace, and the practical knowledge that is essential to many vocations cannot be substituted. The teacher is in charge of instructing students, particularly in the early educational phases like elementary or high school. Teachers can immediately determine whether a kid is having issues, such as at home or with friends, by having direct interaction with them and observing their behavior. Additionally, a child's growth is greatly impacted by the interactions they have with their peers while they are in school. Furthermore, hands-on workshops that teach manual skills cannot be replaced by distant learning (Li et al., 2018). However, it should be noted that distant learning offers a valuable substitute in circumstances where access to school is restricted, such as by the COVID-19 pandemic. Performance Evaluation shown in Fig. 2.

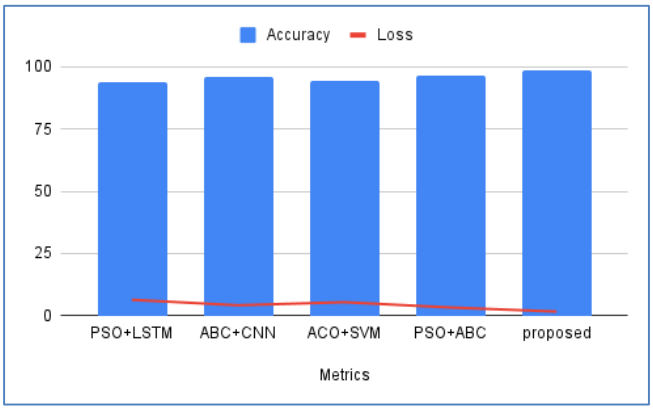

Fig. 2: Performance Evaluation

However, there is no denying that immersive technologies, such as Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), and Extended Reality (XR, also known as the Metaverse), might aid in the comprehension of difficult ideas. They also make it possible for students and lecturers to actively participate in three dimensions during class. We go over the latest approaches to using distance learning in this paper. In the framework of distance learning, namely the remote learning formula, we provide several information and communication technologies, such as VR/AR/MR/XR, Big Data, Blockchain, and Free Space Optics (FSO), together with an analysis of current trends and obstacles. Due to the emergence of Covid 19, teaching learning process using computational intelligence revolutionized in a big way using AR/VR/MR. The importance and relevance are high even in post Covid scenario, since global universities are preferring flipped and blended learning (Kurilovas, 2016). A lot of research, scope, advancements, developments foreseen in the cases of accessibility, mobility, ease of use and effectiveness, thereby a need for quantitative and quantitative analysis and even pilot testing is needed for effective implementation since it contributes much towards the cognitive skills.

Conclusion

AR/VR arrangements can increment by and large learning results for understudies as well as giving new kinds of encounters to all students. Vivid encounters cultivate better degrees of commitment and increment memory review for muddled or conceptual themes, like STEM (science, technology, engineering, and mathematics) disciplines, which much of the time depend on two-layered thoughts. They may likewise give criticism to understudies and teachers and adjust explicit learning goals to meet understudies where they are at in different kinds of picking up, permitting students to arrive at their maximum capacity and leaving less behind. The greatest advantage of AR/VR in schooling innovation is the learning result for understudies; No alt message accommodated this picture AR/aVR makes learning more vivid and drawing in for understudies, It further develops memory maintenance in kids, It is particularly gainful to youngsters with learning disabilities, It advances self-learning and independence between students, It is a magnificent preparation apparatus and acquires certainty learners, It makes remote picking up engaging and captivating. Also this paper shows the Bibiliometric analysis on the research works focused on this area on 10 database. This survey will be also useful for other research specialists to understand the various techniques and come across much effective VR-AR integration as well.

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