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OPPORTUNITIES OF SOFTWARE BASED ON AR (AUGMENTED REALITY) TECHNOLOGIES IN SCIENCE TEACHING

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Abstract:

Although the real world is three-dimensional, we mostly prefer to use two-dimensional tools in education. The combination of AR technology with educational content creates new types of automated applications and serves to increase the effectiveness and appeal of teaching and learning for students in real life. AR is a new tool that combines aspects of ubiquitous computing, material computing and social computing. This tool combines the physical and virtual worlds, offering unique capabilities with continuous and hidden control of the user's perspective and interactivity. This article introduces AR technology (AR) and the capabilities of the software used in it.

Keywords: 3D model, Augmented Reality, smartphones, interactive, display.

FANLARNI O'QITISHDA AR (AUGMENTED REALITY) TEXNOLOGIYALARGA ASOSLANGAN DASTURIY TA'MINOTLARNING IMKONIYATLARI

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Annotatsiya:
Real dunyo uch o'lchovli bo'lsa-da, biz asosan ta'limda ikki o'lchovli vositalardan foydalanishni afzal ko'ramiz. AR texnologiyasining ta'lim mazmuni bilan uyg'unligi yangi turdagi avtomatlashtirilgan ilovalarni yaratadi va real hayotda talabalar uchun o'qitish va o'qitishning samaradorligi va jozibadorligini oshirishga xizmat qiladi. AR - bu hamma joyda mavjud hisoblash, moddiy hisoblash va ijtimoiy hisoblash jihatlarini birlashtirgan yangi vosita. Ushbu vosita jismoniy va virtual olamlarni birlashtirgan, foydalanuvchi nuqtai nazari va interaktivligini doimiy va yashirin nazorat qilish bilan noyob imkoniyatlarni taklif etadi. Ushbu

maqola AR texnologiyasi (AR) va unda qo'llaniluvchi dasturiy ta'minotlar imkoniyatlari bilan tanishtiradi.

Kalit so'zlar: 3D model, Augmented Reality, smartfonlar, interaktiv, displey.

Introduction

In today's developing information age, the field of education cannot be imagined without a wide range of software and hardware support. In the field of education, the concepts of VR and AR technologies have been widely covered in recent years.

The use of AR technologies in the field of education also increases the interest and efficiency of students and teachers in science. It offers extensive and interactive opportunities in the learning process. First of all, let's talk about the role of the educational process based on AR technologies.

AR technologies mean the application of digital information and media technologies to the real world. This includes the use of smartphones, tablets, 3D model headsets, animations, text, images, video, audio and other virtual elements in the learning environment. AR technology in education provides a combination of digital information with extensive and highly interactive educational experiences in this equipped classroom. Currently, AR technologies can be clearly seen in the system of the following subjects: anatomy, geography, foreign languages, history, mathematics, drawing, physical education, etc. The use of AR technologies also gives good results to make lessons interesting and effective. Problems and lack of interest in mastering some subjects may not produce the expected results among pupils and students, so AR technologies serve to expand their imagination and visualize objects.

The advantages of using AR technologies in the field of education

✓ **Increase interest** - It makes learning more interactive and interesting. During the study of the pupil and the student, he increases his attention to the subject.

✓ **Maintaining stability in interests** - Studies show that students remember information better through meaningful experiences with modern technologies like AR technology.

✓ **Improved collaboration** - AR technology improves teamwork efficiency and teamwork among students. They are complex

✓ **Inclusive education** - AR can accommodate different learning styles and abilities, offering a more inclusive learning environment.

✓ **Real applications** - AR allows students to see real-world applications of the concepts they are learning, making the content more relevant and meaningful.

Until now, several software programs have been used in the education system, but the introduction of AR technologies is creating a basis for more in-depth and meaningful learning of subjects.

Necessary for smart glasses, smartphones, and headsets, such software acts as a development tool that facilitates the integration of virtual objects with our physical world through computer vision. The excellence of AR software lies in its ability to merge the virtual world with our real world, creating a vast opportunity for a mobile application.

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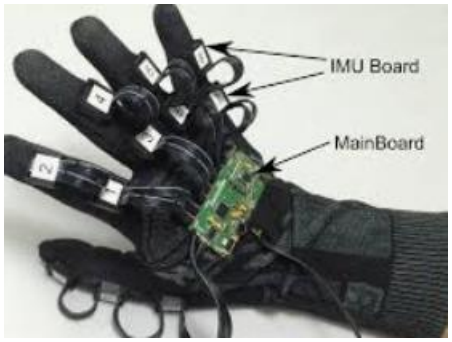
In addition, hardware is also important for AR technologies.

Portable displays

Flexible displays for the head

Gloves



Gloves

Obstacles that AR software deftly addresses include the complexity of developing AR applications for various mobile devices and Linux platforms.

Several recurring questions about this form of AR (Augmented Reality) technologies are being received by developers who are looking for an easy way to create their own mobile applications. Users can easily and quickly create their own AR and 3D content mobile applications using echo3D's first 3D content management system (CMS) and delivery network (CDN), enabling AR applications in a short period of time with the best tools of Baas infrastructure. . echo 3D supports any AR client-side cloud platform, its SDK users include ARCore, ARKit, Vuforia, WebXR, AR.js, Swift for iOS, Android Studio, Flutter, Unity-based SDKs, Microsoft HoloLens, MagicLeap and can create their own custom applications in other programs. Popular such software includes:

Unity is a comprehensive platform for creating and using real-time interactive 3D content. Often used in game development, Unity provides a variety of tools and features that developers can use to create extensive and complex gaming experiences. Given its powerful features and suitability for high-quality game creation, it is emerging as the best tool for game development and real-time interactive 3D content creation.

Unity is a dynamic range of offerings and a versatile platform for game development. It stands out for its extensive toolset, advanced rendering engine and cross-platform compatibility. Comparing it to other tools, I find Unity to be the best for developing powerful games and creating real-time interactive 3D content.

Unreal Engine by Epic Games is another powerful software in the field of AR development. Known for its high-resolution graphics and performance, Unreal Engine is preferred for projects that require photorealistic visuals and complex simulations.

High quality graphics: High rendering capabilities for realistic images.

Cross-platform support: Develop for multiple platforms, including ARKit, ARCore, HoloLens, and Magic Leap.

Use case: Unreal Engine is especially suitable for developers who want to create stunning and immersive AR experiences, which can be seen in areas such as gaming and high-end simulations.

In conclusion, AR has the potential to change the way we use computers. AR interfaces offer seamless interaction. Coordinating a team of experts in an educational AR solution is essential. Educators should work with researchers to develop AR interfaces. Software and hardware technologies play an important and fundamental role in the development of AR applications.

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