ENHANCING LIFE WITH AUGMENTED REALITY

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Abstract: *This article is dedicated to describe today's state of Artificial Reality (AR) in our modern life and its perspectives. This technology has a lot of potential, and today there are a lot of interesting products that can show you the power of AR. So, we want to explain, what is Augmented Reality, how you can use it and how it can change our life in the nearest feature.*

Keywords: *augmented reality, technologies of future, development, innovation.*

Introduction

Today modern life is full of new technologies and gadgets. We just can't imagine our life without them. Every day we surf in the internet, communicate with people using social networks, play video games, watch movies. The latest Digital 2019 report, from Hootsuite and We Are Social, shows we're spending on average 6 hours and 42 minutes online each day. But there are some technologies that stands out of our line of sight, the ones that are much more uncommon than regular smartphones and computers, where we just surf in the internet. Virtual Reality, Augmented Reality (AR), neural networks, 5G internet, robots and Artificial Intelligence. All these things can potentially have a significant influence on our life, but lots of people just don't know about them. According to Statista research department, only 35% of business executives surveyed had adopted or have plans to adopt augmented or virtual reality (AR/VR), and only the small percentage of ordinary people have access to these technologies. In this article we will share some insights about Augmented Reality, technology, that has just started to show its potential.

AR: Retail

Figure 1. Shopping using augmented reality [8]

When shopping for clothes, shoes, glasses or anything else we'd wear, it's natural to want to "try it on" before purchasing it. When we're shopping for furniture or other items for our home, it would be great if we could see how the items would fit in our home. Now, we can do it with the help of augmented reality. Since the technology and tools to support AR apps are more ubiquitous than ever, community expects AR growth to accelerate. Vyking is one company leading the way for augmented reality in retail. They use it to allow customers to "try on" a pair of shoes via their

smartphone screen. Converse is another footwear company that uses immersive tech to enable clients to try on kicks from its online catalog.

While you can find some great deals for glasses and sunglasses online, eyewear is certainly one of those items you want to see how it looks on your face before purchasing it. This is no issue at all with Spec's Eyewear's app where you can instantly try on any style of eyewear through augmented reality. Using the face-mapping technology of the iPhone X, WarbyParker is even able to recommend styles of frames that would look best on you.

AR: Construction and maintenance

Figure 2. Augmented Reality in Construction Used on an iPad [9]

In construction, augmented reality allows architects, construction crews, developers and clients to visualize what a proposed design would look like in a space and existing conditions before any construction begins. In addition to visualization, it can help identify constructability issues on a job that can allow architects and builders to brainstorm solutions before the problem becomes more difficult to resolve after beginning of work.

Augmented reality can also support ongoing maintenance of buildings and products. Service manuals with interactive 3D animations and other instructions can be displayed in the physical environment via augmented reality technology. Augmented reality can help provide remote assistance to customers as they repair or complete maintenance procedures on products. It's also a valuable training tool to help inexperienced maintenance team complete tasks and find the correct service and parts information when they are on-site.

Using a head-worn display, a mechanic fixing an engine can see superimposed imagery and information in his actual line of sight. The augmented reality system can label all the important parts. Complex procedural repairs can be broken down into a series of simple steps. Simulations can be used to train technicians, which can significantly reduce training expenses.

AR: Military use

Figure 3. Usage of Airbus D&S Holographic Tactical Sandbox [10]

The Heads-Up Display (HUD) is the typical example of augmented reality when it comes to military applications of the technology. A transparent display is positioned directly in the fighter pilot's view. Data typically displayed to the pilot includes altitude, airspeed and the horizon line in addition to other critical data. The term "heads-up" name applies when the pilot doesn't have to look down at the aircraft's instrumentation to get the data he needs.

The Head-Mounted Display (HMD) is used by ground troops. Critical data such as enemy location can be presented to the soldier within their line of sight. This technology is also used for simulations for training purposes.

AR: Medical use

Figure 4.2 Augmented Reality in Medicine [11]

AR can make digital images and critical information available to surgeons in 3D and within their field of view. Surgeons won't need to look away from the surgical field in order to access crucial information they might require to perform a successful procedure. Startups are building AR technology to support digital surgery, 3D medical imaging, and specific surgeries.

Medical students use AR technology to practice surgery in a controlled environment. Visualizations aid in explaining complex medical conditions to patients. Augmented reality can reduce the risk of an operation by giving the surgeon improved sensory perception. This technology can be combined with MRI or X-ray systems and bring everything into a single view for the surgeon.

Neurosurgery is at the forefront when it comes to surgical applications of augmented reality. The ability to image the brain in 3D on top of the patient's actual anatomy is powerful for the surgeon. Since the brain is somewhat fixed compared to other parts of the body, the registration of exact coordinates can be achieved. Concern still exists surrounding the movement of tissue during surgery. This can affect the exact positioning required for augmented reality to work.

Augmented Reality in future

Advanced research in AR will help us to make a long significant step into the era where the interaction between individuals and information is done in a straight line without needing the utilization of any halfway device.

Moreover, augmented reality provides an opportunity to replace and remedy the absent senses for some impaired individuals, i.e. AR could be utilized as a sense alternate instrument. Hearing-impaired individuals could be given visual signals guiding them to catch missed aural signals and sightless individuals could be given aural signals guiding them to unknown visual events. An additional in future some AR applications are not far from challenges social acceptance issues, privacy concerns, and ethical concern arising.

Alternatively, a small number of related studies have been prepared for the approval and the use of AR systems and innovations in manufacturing instructions and training that require additional investigations and research in future. Nonetheless, since many experts and researchers positively declared the potential likelihood of AR in industrial and commercial fields in their studies, AR in manufacturing venues has an opportunity for the growth of its extent into other business fields such as manufacturing, services, government-related sections, and other industrial settings. Along with such sections, appears a good opportunity of AR to be experienced in occupational safety and health (OSH) sectors. AR could be assumed into safety check up in power plants, chemical plants, and oil refineries, OSH training for executives and members of staff with computer-generated 3D settings, as well as AR games and simulations about dangerous resources management.

Conclusion

Augmented reality is considered a competence that has been around for years. Augmented reality is still in its initial phases; and thus the upcoming possible apps are endless. A lot of AR products have been presented in several kinds and spread around the world. The layering of information over 3D space creates completely new experiences of the world, and supports the broader transition of computing from the desktop to the mobile devices, and at the same time raising new outlook concerning reaching information and new chances for learning. In spite of the fact that AR is utilized broadly in the customers' sector, for example it is used in social engagement, entertainment and marketing, new forms of usage appear every day. It can be easily utilized as a tool for developing new apps. In addition, AR will be more accessible in the recently future and it will be a complementary part in our lives.

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