

How VR and AR are empowering healthcare industry

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The acceptance of immersive technologies is on the rise and the healthcare industry hasn't been an exception. According to a report from *Reportbuyer*, Augmented Reality (AR) and Virtual Reality (VR) in healthcare industry will touch US\$5 billion growing at a pace of 36.6 per cent compound annual average.

With the advent of AR and VR technologies like Magic Leap and Microsoft HoloLens, the gates to new opportunities are now wide open in the healthcare industry. These immersive visual technologies combine virtual and real environments and are usually referred to as Extended Reality or XR technology.

VR is when the user is immersed in an absolutely virtual environment, while augmented reality abbreviated as AR is when virtual environment or objects are overlaid on real environment to enhance contextual meaning. Here are some of the ways XR technologies are going to shape the healthcare industry in the near future.

Facilitating medical learning and healthcare training

One of the key benefits of XR technologies lies in improving the quality of learning and training for medical professionals while driving costs down and enhancing retention and understanding.

Realistic 3D visualisation

AR and VR technologies can help medical professionals to learn physiology and anatomy of the human body in an effective manner. Conventional training procedures involve static two-dimensional images where a medical student has to rely on his or her own mental imagination to complete the picture. XR technologies enable students to see every detail in full immersion improving the learning process.

Skills development training

Another aspect of medical training purely depends on performing physical tasks such as inserting a catheter, drawing blood, and performing surgeries. While traditional methods involve learning from textbooks, slide shows, and watching a professional perform these tasks; AR and VR technologies enable the same students to learn these behavioural skills in a virtual or mixed reality environment by actually performing them.

By actually performing these skills in an immersive environment, medical students don't only improve the quality of learning but learn to do so with a much higher degree of accuracy and precision.

Advanced learning

Apart from the above benefits, medical professionals also get to learn new and innovative procedures and medicinal novelties through an immersive environment, which helps them to retain more information.

One of the major challenges for today's healthcare professionals is the quickly evolving landscape of medicine, which is changing daily. That's why they have to stay ahead of the curve by learning and absorbing all the new information to ensure they're not falling behind. AR and VR technologies help them achieve that feat in an efficient and immersive manner.

Enhanced patient care and education

Not only medical professionals but patients can also derive a number of practical benefits from AR and VR technologies helping them understand the medical conditions and details about treatment and a variety of procedures.



Improved patient education

XR technologies, especially AR can be used to provide interactive and immersive education to the patients who may be fearful or sceptical. Doctors and healthcare professionals can't only employ VR and AR to tech interns but also use the technology to educate patients during consultation sessions.

This will also enable doctors to impart confidence and trust into their patients putting them in a much better position to make informed decisions. When patients are able to understand their condition and the treatment approach, they tend to be much more receptive and responsible toward self-care.

Virtual assistance in medical facilities

Augmented reality-based navigation can make it quick and convenient for patients to find exactly what they are looking for. It can also help nurses and other medical professionals to find the right spot as well as equipment during emergencies and critical situations.

Virtual assistance through AR can also enhance the orientation experience in hospitals and medical clinics to ensure the audience grasps the concepts being explained to them clearly and have a much higher chance of retaining the information.

Pain management through VR

VR technology can be employed to distract patients who are in pain or discomfort. Suzanne Hardacre, a midwife, says, "There's a great opportunity particularly to use this with women in early labour, to try and help them with some breathing and relaxation and take them out of the moment."

VR technology brings many therapeutic apps and techniques, which can be used to provide a bit of comfort and reassurance to burn victims, women in labour, and other patients in order to provide assistance to them during a painful recovery.

Enhanced diagnosis

One of the crucial aspects of XR technologies is that they can be integrated with artificial intelligence to leverage the technology's advantage even further. By integrating AI into AR and VR technologies, a number of medical procedures can be sped up to ensure efficient and accurate diagnosis.

Digital entertainment in hospitals

Hospital isn't a place people want to be in. They are there because they absolutely need to be, and the uncertainty can be frustrating and quite distressful. Moreover, hospitals can be downright scary for little children.

This is where technologies like VR and AR can be used in medical facilities to provide entertainment content to the patients, for example, games for kids, VR stories and orientations for adults. Educational content can also be disseminated through the use of these technologies such as telling parents and kids the significance of timely vaccinations.

Moreover, there could be other educational areas that can be targeted, for example importance of healthy diet, how different medical equipment such as X-ray works, etc. There are playing areas for kids in many hospitals already, equipping them with immersive technologies like VR and AR, which can prove to be quite effective.

Healthcare marketing and advertising through AR

The use of XR technologies in the healthcare industry is still in its infancy and has a long way to go. With every passing day, medical professionals are exploring new ways to embrace VR and AR in different fields of medical profession; marketing and advertising being one of them.

Pharmaceutical companies are already using mobile apps to sell their medicines. These apps make full use of flow animations to show the effects of a formula inside the human body and how it treats a particular condition.

The technology is also being used to introduce a variety of products to doctors through hovering animations, which are far more interactive and immersive than conventional PowerPoint slides.

Conclusion

Like any other disruptive technology, AR and VR will also take some time to become mainstream to overcome a variety of barriers. The medical professionals as well as patients should be ready to embrace the change. When we talk about XR adoption, it can be safely said that we're getting there.

Top technology giants including Google, Microsoft, Apple, Oculus, Facebook, Amazon and many others have invested heavily in AR and VR technology and results are already showing. The day isn't far when XR technologies would be as ubiquitous as thermometers and stethoscopes. ✚

Dr. Atanasova will be speaking on '3D design, VR and augmented reality advancing healthcare' as part of the Laboratory Innovation conference on February 5, at the Medlab Congress.