Augmented Reality Technology Components and Applications

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Augmented Reality is an invention that presents possibilities that other technologies do not provide. It alters the way people see the world, and almost every industry uses the technology. Nowadays, augmented reality apps are portable and available on mobile phones, computers, and other devices. Its usage in the audio-visual is also increasing, which makes the viewer's experience more exciting. Companies use technology in the news, sporting activities, advertisements, and design. Moreover, AR facilitates learning in many ways. For instance, it allows learners to retrieve location-specific data available via different sources (Alkhamisi & Monowar, 2013).

History Of Augmented Reality

Augmented reality (AR) first surfaced in 1968 when Ivan Sutherland, a computer science professional, made an augmented reality display system. From that point, institutions embarked on studies to advance the technology for wearable gadgets as well as digital displays. The initial AR systems overlaid virtual data on the physical surroundings and permitted simulations. The simulations have provided new capabilities in the aviation industry, the military, and several other areas (Javornik, 2016).

In 1974, Myron Krueger created a simulated reality workshop named video-place. The studio used a projector, video cameras, and specialized hardware to create televised shapes surrounding viewers in an interactive setting. Researchers first used the term augmented reality in 1990. Tom Caudel (the inventor of the name) and his colleagues suggested that employees working on the aircraft wiring put on gadgets that would display aircraft schematics onto reusable screens. In the following years, AR became widespread, and its applications increased. In 1992, computer scientists created virtual fixtures that the US Air Force used to train pilots. Many other inventions followed that demonstrated the creative application of AR, and the advancements continue to date (Igreet, 2015).

Commercial use of augmented reality started in 2008 when companies began using it for advertisement. A German agency created an in-print magazine advertisement for a car, which, when placed in front of a laptop camera, appeared on display. Markers connecting the real ad to the virtual image allowed users to control the image on the screen and manoeuvre it to view it from diverse positions. The design is one of the initial applications of augmented reality (Javornik, 2016).

Other companies are also using this concept, which allows users to interact with objects via physical tracking markers. For instance, in 2011, National Geographic displayed extinct species of various organisms as if they were walking along a path. Likewise, Coca-Cola employed the idea to simulate environmental issues like the melting of polar ice. Disney also uses the technology. In 2011, the organization displayed cartoons that interacted with people in real-time (Javornik, 2016).

All the above examples demonstrate the use of AR to engage clients in public spaces. However, AR displays are not always scalable, as the process may require a lot of money. However, this does not inhibit companies from using it. For example, Skoda used the technology in 2015 to place an augmented reality mirror in a railway station. The application allowed customers to adjust their cars and view themselves driving on a big display (Jarvonik, 2016).

The Concept Of Augmented Reality

AR makes use of existing reality and tangible objects to produce computer-generated augmentations over the user's perception of reality in real-time. The images are generally in 3D models and audio-visuals. The image created relies on the form of experience and the hardware you are using. For instance, you can use a smartphone where the things that you see via the camera appear with some digital enhancements. You can use it to guide someone around different locations using virtual signposts. You can also use it in art galleries to produce information on artwork as you view it through the phone. Apart from the smartphone, you can use devices like Microsoft Hololens, which combines the real world and computer-generated features (Harris, 2017).

AR works together with digital gadgets like tablets and computers. Each AR device has special-purpose software, a sensor, as well as a projector that prompts digital images in the physical environment. It is possible to create and use the technology in several different forms. For instance, Google Glass produces 2D images, while Microsoft Hololens entrenches 3D effects into the surroundings. The augmented reality employs a camera in scanning mode. Some AR applications will require that you scan different objects in a room to create several images and corners. When the camera senses a triggering object from the collection of images, a digital image display will appear at the location of the object (Harris, 2017).

Hardware/Software Requirements Of AR

Projector- AR devices require some form of projection. The projector helps in turning different surfaces into interactive environments. The AR gadget processes the information captured using the camera, after which it projects it onto a surface. Therefore, you do not need the screen of your smartphone to achieve this. In the future, you may not need a smartphone to play online games as you can play them on top of a table (Reality Technologies, 2013).

Processors- the AR gadgets must have processing capabilities. The devices work like small

supercomputers. The manufacturers put the tools in wearable gadgets to make them easy to use. The devices have a central processing unit, RAM, GPS capabilities, and Wi-Fi, among several other components. The devices also have features that allow them to measure speed, tilt, and direction (Reality Technologies, 2013).

Sensors/cameras- the augmented reality gadgets have external sensors. The sensors collect the interactions in the handler's real world and input them into the device for processing and interpretation. The devices also have cameras that visually capture data about the user's environment (Reality Technologies, 2013).

Reflectors- The reflection enhances the way you view the virtual object. The mirrors may be of different forms, such as curved mirrors and double-sided mirrors, among others (Reality Technologies, 2013).

Existing Products Using AR Technology

Google Translate App

The app has a word lens that scans text in different languages using a camera and translates it into English. An augmented reality gadget then superimposes the converted information on a real-time video where you can read it. Some of the features of the application need an internet connection, while others can work offline. You need to have an iPad or an iPhone to use the app (Zibreg, 2017).

Snapchat Filter App

The Snapchat filter allows users to swap faces in real-time (using AR technology). Users can also create other shapes, such as animated rainbows falling out of their mouths and ghost faces with a dog's nose. The application uses sensors and cameras with face-detection capabilities, and this makes it possible to swap faces. Users need a computer, a tablet or a smartphone to enjoy the features of this application. The application also requires an internet connection to work efficiently (Arcangel, 2018).

Instagram Filters

Instagram filters use the same concept as that of Snapchat filters. The filters allow one to place crowns or features on their photos that make one appear like a koala or a rabbit. You can also send math equations rotating around your head, and all this happens in real-time. The application needs a smartphone with a back or front camera, in addition to an internet connection. Facebook is continually adding new features to the filters; therefore, you will be able to do more in the future (Kane, 2017).

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