jims
Sec-5,Rohini,Delhi

October 2020

# IT KALEIDOSCOPE

Theme: "Trending AR & VR Technology"



## AR & VR Technology

### What Is Virtual Reality ?

**VR headsets absolutely accept power over your vision to give you the inclination that you're somewhere else. The HTC Vive, the Oculus Rift, and different headsets are totally hazy, shutting out your environmental factors when you wear them. On the off chance that you put them on when they're killed, you may believe you're blindfolded.**

**Most fastened VR headsets like the Rift, the Vive, the PlayStation VR, and Windows Mixed Reality headsets utilize six-degrees-of-opportunity (6DOF) movement following gratitude to outer sensors or cameras (for the Rift, Vive, and PS VR) or outward-confronting cameras (for WMR). This implies the headsets don't simply recognize the bearing wherein you're confronting, yet any development you make in those ways. This, joined with 6DOF movement regulators, lets you move around in a virtual space, with virtual hands. This space is generally restricted to a couple of square meters over, yet it's substantially more vivid than simply stopping and glancing in various areas. The downside is that you should be mindful so as not to stumble over any link that interface the headset to your PC or game framework.**

**Microsoft calls its Windows 10 VR headsets "Windows Mixed Reality" headsets. Try not to let the term confound you. "Mixed reality" for this situation is just VR simulation. They're VR headsets, with nothing "blended" about them, other than the way that a portion of the hidden interface innovation originates from the Microsoft HoloLens Development Edition.**

**Versatile based headsets like the Google Daydream View and free VR headsets like the Oculus Go are less stunning than attached VR headsets since they rely upon phone level preparing either appended to or worked in, as opposed to an a lot quicker framework close by. They additionally normally just offer three-degrees-of-opportunity (3DOF), which implies they just track heading and not positional development. They generally just have a solitary 3DOF movement regulator far off, or are intended to work with more customary gamepads. The encounters are comparable, yet not close to as vivid.**

**For the two games and applications, Virtual Reality totally overrides your environmental factors, taking you to different spots. Where you are genuinely doesn't make a difference. In games, you may sit in the cockpit of a Starfighter. In applications, you may practically visit far off areas as though you were there.**

By: Ankit Singhal
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## FUN FACTS

### Virtual Reality

- The first VR headset was patented in the 1960s and was named the 'Telesphere Mask' by inventor Morton Heilig.
- VR isn't all fun and games – the technology is now being used in healthcare to treat depression, anxiety, and PTSD amongst other things.
- Virtual reality is used as a 3D modeling tool by many manufacturing industries, as well as in healthcare. In the healthcare industry, it is being used to visualize and analyze the holistic condition of patients.
- Virtual reality is the fastest developing technology and there is more to its evolution. The next frontier is working with the human senses.

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## What Is Augmented Reality ?

**While Virtual reality replaces your vision, Augmented reality adds to it. AR devices like the Microsoft HoloLens and distinctive endeavor level "savvy glasses" are direct letting you believe everything to be front of you like you are wearing a frail pair of shades. The advancement is planned for thoroughly free turn of events while foreseeing pictures over whatever you look at. The thought contacts mobile phones with AR applications and games like Pokémon Go, which use your phone's camera to follow your natural factors and overlay additional information on head of it, on the screen.**

**AR showcases can offer something as basic as an information overlay that shows the time, to something as muddled as multi dimensional images skimming in a room. Pokémon Go ventures a Pokémon on your screen, on head of whatever the camera is taking a gander at. The HoloLens and other keen glasses like the secretive Magic Leap One, then, let you essentially place coasting application windows and 3D embellishments around you.**

**This innovation has an unmistakable weakness contrasted and augmented reality: visual drenching. While VR totally covers and replaces your field of vision, AR applications just appear on your cell phone or tablet screen, and even the HoloLens can just extend pictures in a constrained territory before your eyes. It isn't vivid when a multi dimensional image vanishes once it moves out of a square shape in your vision, or when you have to gaze at a little screen while imagining that the item on that screen is entirely front of you.**

**Fundamental AR that overlays basic data over what you're taking a gander at can work completely fine with 3DOF. Notwithstanding, most AR applications require 6DOF in some structure, following your physical position so the product can keep up steady situations for the pictures it anticipates in 3D space. For applications, Augmented reality has about boundless prospects.**

## Difference between AR & VR

**Virtual reality and Augmented reality achieve two totally different things in two altogether different ways, in spite of the comparable plans of the gadgets themselves. VR replaces reality, taking you elsewhere. AR adds to the real world, anticipating data on head of what you're now observing. They're both amazing innovations that still can't seem to make their imprint with buyers, yet show a great deal of guarantee.**

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# FUN FACTS

## Augmented Reality

- The term AR: "Augmented reality" was coined at Boeing in 1990 by researcher Tom Caudell.
- Markets expect the Augmented Reality market figure to reach $61.39 billion USD by 2023.
- AR shows great potential in curing phobias. AR has become one of the most famous forms of therapy that are practiced worldwide.
- Augmented reality paired with smart phones and smart glasses is set to cross a revenue figure of $70 – $75 billion.

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## Virtual Reality and Future

One of the greatest inventions humans have ever done is Virtual reality which evolved from Illusions paintings in the 1600's. It might seem hard to believe, but augmented and virtual reality have been around for more than 30 years. These technologies found their initial footprints in the military and aircraft arena, with Pilot Head-Mounted Displays and later in entertainment and gaming. Virtual Reality technology is one of the highest projected potential for growth. According to the latest research, investment in VR and AR will multiply 21-fold over the next ten years.

### Virtual Reality and Augmented reality

Virtual Reality and Augmented Reality are like two sides of the same coin. You could think of AR as VR with one step closer towards reality. Augmented Reality encourages artificial objects in the real environment whereas Virtual Reality creates an artificial environment to inhabit. For the definition Virtual reality is the "computer-generated 3D environment that can be interacted by a person using special electronic equipment, such as a helmet with a screen inside, gloves fitted with sensors or remote controllers in both the hands." Also Augmented reality is a "technology that superimposes a computer-generated image on a user's view of the real world, thus providing a composite view."

In Augmented Reality, the computer uses sensors and algorithms to determine the position of feedback or user. AR technology then renders on the 3D graphics as they appear from the viewpoint of the camera, superimposing the digital-generated images over a user's view of the real world at the same time Virtual Reality, the computer uses similar sensors and math. Rather than locating a real camera within a physical environment, the position of the user's eyes are located within the simulated environment. If the user does any movement, the graphics react accordingly. Rather than compositing virtual objects and a real scene, VR technology creates an innovative and convincing world.

### Application of VR

- **Virtual Reality in Sport**

Virtual reality is used as a training aid in many sports such as golf, athletics, skiing, cycling, football, cricket etc. It is used as an aid to measure athletic performance as well as analysing techniques and is designed to help with both of these. One could also learn sports in a 3-d environment.

- **Virtual Reality in News and Documentary**

Documentary and movies made in VR technology could be more effective, as being a part of a movie or scene will leave better expression. New York Times offers 360* video news for the first time. Using this technology, we can experience the same environment of tragedy or story.

- **Data Visualisation**

When data is presented in VR, multiple users can inhabit the environment at the same time. A big number of headsets are available at a certain point in time, and more people can visualize the data together, leading to more useful collaborative efforts without the requirement of another technology. When data is presented on a 3D instead of 2D plane, it affects the way the data is received.

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## AR & VR Technology

**One of the greatest inventions humans have ever done is Virtual reality which evolved from Illusions Hello reader! Did you have any idea about something which exists beyond the normal reality? Well, okay! You guessed it right - it is none other than Augmented Reality and Virtual Reality. These are merely two more realities rapidly adding up in our extra challenging lives. Augmenting means making something greater by adding more to it; therefore, Augmented reality is a view of the real, physical world in which some extra elements are enhanced via computer-generated inputs. These inputs greatly vary and include sound, videos, graphics, GPS overlays, and much more.**

**I am sure you must have heard of the game Pokémon GO, launched in India in 2016 with a much awaiting user fanbase? Yes, the same game was also a perfect example of Augmented reality! Ever thought of how those Pokemons were brought to your real-life world? Again easy to guess, they were just added into your space by computer-generated input. Even though Pokemons weren't physically present, but then too we were able to see them through our phone cameras. This is the magic of Augmented reality. Another example of AR is the widely used face-filters feature in Snapchat and other social media applications. In today's time, every Sector is moving towards Augmented Reality, be it Architecture, Commerce, Education, Gaming, or any other sector existing in the world.**

**Now think of a surgeon operating on you from some different country with the help of another colleague holding the scalpel for you? The same is very much possible nowadays through Virtual Reality. Virtual Reality is a computer-generated environment with scenes and objects that appear to be real, making the user feel that they are completely engrossed in their surroundings. This environment is perceived through a device known as the Virtual Reality Headset or the VR Helmet. VR allows us to immerse and engage in the video games as if we were one of the characters there in the game, learn how to perform heart surgeries, improve the quality of sports training to maximize performance, and what not!**

**To experience VR you need VR goggles and a compatible phone or Virtual Reality Headset. A virtual reality application or device tracks the user's head and eye movements and adjusts the on-screen display to respond to the change of his/her perspective. For example, Immersive Journalism takes the user to the places where the events have occurred with live streaming of 360° videos. Indeed, it's so strange to be alive when we have three kinds of realities - the normal reality, virtual reality, and augmented reality.**

**The main difference between VR and AR is that VR builds the world in which we immerse ourselves through a specific headset. It is fully engrossing and everything we see is part of an environment artificially constructed through images, sounds, etc. On the other hand, in AR our own world becomes the framework within which objects, images, or similar things are placed.**

**According to the latest IDC (It is a wholly-owned subsidiary of International Data Group the world's leading tech media, data and marketing services company), Worldwide Augmented and Virtual reality spending guide, Asia/Pacific spending on AR/VR will continue strong growth throughout the forecast period (2018-23), with a compound annual growth rate of 62.0%. Commercial Industries are going to be more than $11 billion larger than the consumer segment and the consumer segment (which is currently at $1.7 billion in 2019) continues to be larger than any other industry segment over the forecasted period.**

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