



(An Autonomous Institution)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Augmented Reality

Augmented Reality or **A.R** is a way by which technology can change how we perceive the world around us. It's also very useful in various fields, but first, we need to know what is augmented reality and how it is different from virtual reality.

What is Augmented Reality?

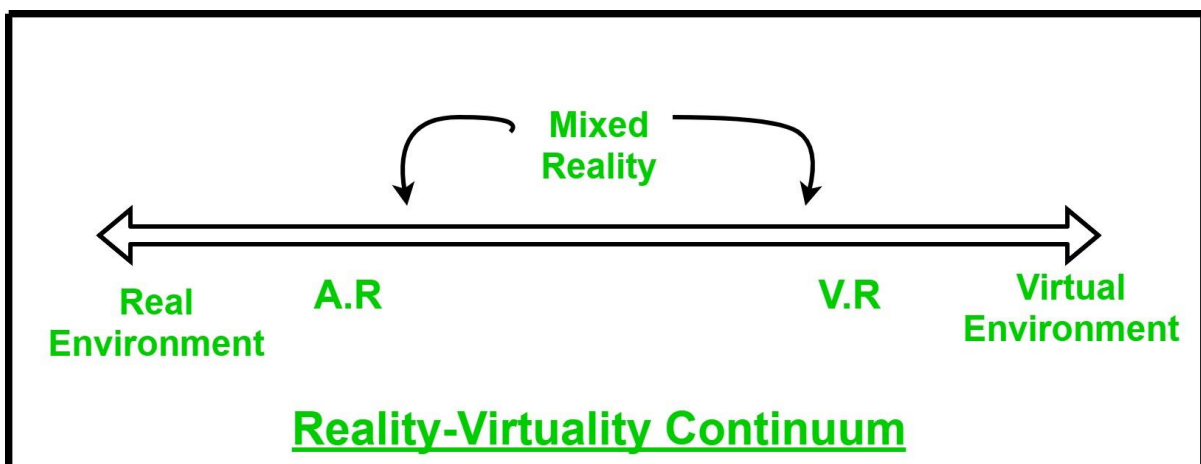
Augmented reality is made up of the word “augment” which means to make something great by adding something to it. So basically, augmented reality is a method by which we can alter our real world by adding some digital elements to it. This is done by superimposing a digital image on the person's current view thus it enhances the experience of reality.

Difference between Augmented Reality and Virtual Reality

We all know about **Virtual Reality**. Virtual reality makes a virtual environment and puts the user in it whereas Augmented reality just adds the virtual components into the user's real-world view. Virtual reality sends a person into a virtual place created by a computer whereas augmented reality brings the digital world into our real world. To experience virtual reality the person needs to wear a special VR headset that is connected to a computer like the **Oculus Rift** or a gaming console like **PlayStation VR** but there are devices that work with a smartphone-like **Google Cardboard**. In this, all you have to do is insert a smartphone, wear a headset, and immerse yourself in virtual reality. For Augmented reality you only need a modern smartphone then you can easily download an AR app like Google's “**just a line**” and try this technology. There's also a different way to experience augmented reality, through special AR headsets, such as “**Google Glass**“, where digital content is displayed on a tiny screen in front of a user's eye, or “**Microsoft Hololens**” which displays the information in real-world all you have to do is wear the headset and you can see the digital images.

The Reality-Virtuality Continuum

The **reality-virtuality continuum** is a scale that was given by Paul Milgram. It is a scale which has two extremes one part depicts the ‘virtuality’ or an environment which is completely virtual and, the other part describes a real environment or ‘reality’ and the middle part is termed as “mixed reality”, thus this scale contains all possibilities for one object or plane being completely digital or completely real.





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Examples: One of the best examples of augmented reality is the app “**Pokemon GO**“.so what that game does is that it imposes the images of pokemon which are digitally created and puts them into our real-world view which we can see through our phone’s camera. the newest development in augmented reality technology is done by Google through their **ARcore** app.

ARcore is a platform for developers to design and run AR apps on their devices. Google also created an app called “**just a line**” which lets users draw virtually in the real world. There are tons of apps on google play store that uses AR technologies like “**houzz**” or apple store like “**amikasa**” which helps you style your room and helps you design a room layout by implementing the furniture in your room using your phone’s camera.

one of the biggest examples that use AR is **H.U.D**. A head-up display (HUD) is a transparent display that presents data without requiring users to look away from their usual viewpoints. they were developed for the aviation industry and now they are now used in automobiles, airplanes, military, and other applications.

Why Augmented Reality is Important?

The development of AR technology is set to revolutionize industries from retail to military to education to tourism and transform the way we interact with the digital world every day. Augmented reality has many uses in different fields like archaeology, architecture. visual arts, commerce, education, video games, and military training, etc. some applications of AR are

1. AR is being used to aid research in archaeology. AR can be used to recreate different structures and overlay them in the real environment so that researchers can study them correctly.
2. AR applications in smartphones include Global Positioning System (GPS) to locate the person’s location and its phone’s inbuilt compass to find device orientation.
3. Augmented reality can be used in the field of tourism to enrich visitor’s experience during visits like the Eiffel tower has an AR app that can show you it looked throughout history when it was being built.