

# Augmented Reality

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## Definition of Augmented Reality

**Augmented Reality (AR)** is an interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory. AR can be defined as a system that incorporates three basic features; a combination of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects. The overlaid sensory information can be constructive (i.e. additive to the natural environment); or destructive (i.e. masking of the natural environment). This experience is seamlessly interwoven with the physical world such that it is perceived as an immersive aspect of the real environment. In this way, augmented reality alters one's ongoing perception of a real-world environment, whereas virtual reality completely replaces the user's real-world environment with a simulated one. Augmented reality is related to two largely synonymous terms: mixed reality and computer-mediated reality.

## What is Augmented Reality(AR)?

Augmented Reality is what it sounds like: reality, enhanced with interactive digital components. The most commonly used AR applications these days rely on smartphones to showcase the digitally augmented world; users can activate a smartphone's camera, view the real world around them on the screen, and rely on an AR application to enhance that world in any number of ways via digital overlays:

- Superimposing images, digital information and/or 3D models
- Adding real-time directions
- Inserting labels
- Changing colors
- Altering the user or their environment's appearance via "filters" on Instagram, SnapChat and other Apps

Various devices can display AR, and the list is only growing: Screens, glasses, handheld and mobile devices, and head-mounted displays. In understanding what AR is, it's also important to understand what it is not.

AR is not a fully immersive experience like virtual reality(VR). While virtual reality requires users to don a special headset and pulls them into a completely digital world, AR lets them continue interacting with the physical world around them.



## Common augmented Reality Use Cases

So what is augmented reality used for these days? A lot more than helping people track down pocket monsters. In fact, in 2020, nearly every industry has found ways to apply AR technology to improve processes and outcomes. Common issues include....

### **Training and education:**

Dynamic, AR-based instructions let people perform new tasks more easily and quickly than traditional training methods (like instruction manuals). As wearable devices like AR-powered smart glasses, AR contacts and AR headsets become more widely available, the potential for training via augmented reality will be tremendous.

### **Entertainment:**

AR has been enhancing entertainment for years. In 2012, a hologram of Tupac Shakur appeared on stage with Snoop Dogg at Coachella. This year, a fully CGI avatar who happens to be on Instagram influencer was signed by talent agency CAA. And to adapt to the realities of the COVID-19 pandemic, the band Real Estate offered a “Quarantour”, meaning an AR-powered tour to replace the live shows it had to cancel because of worldwide quarantines.

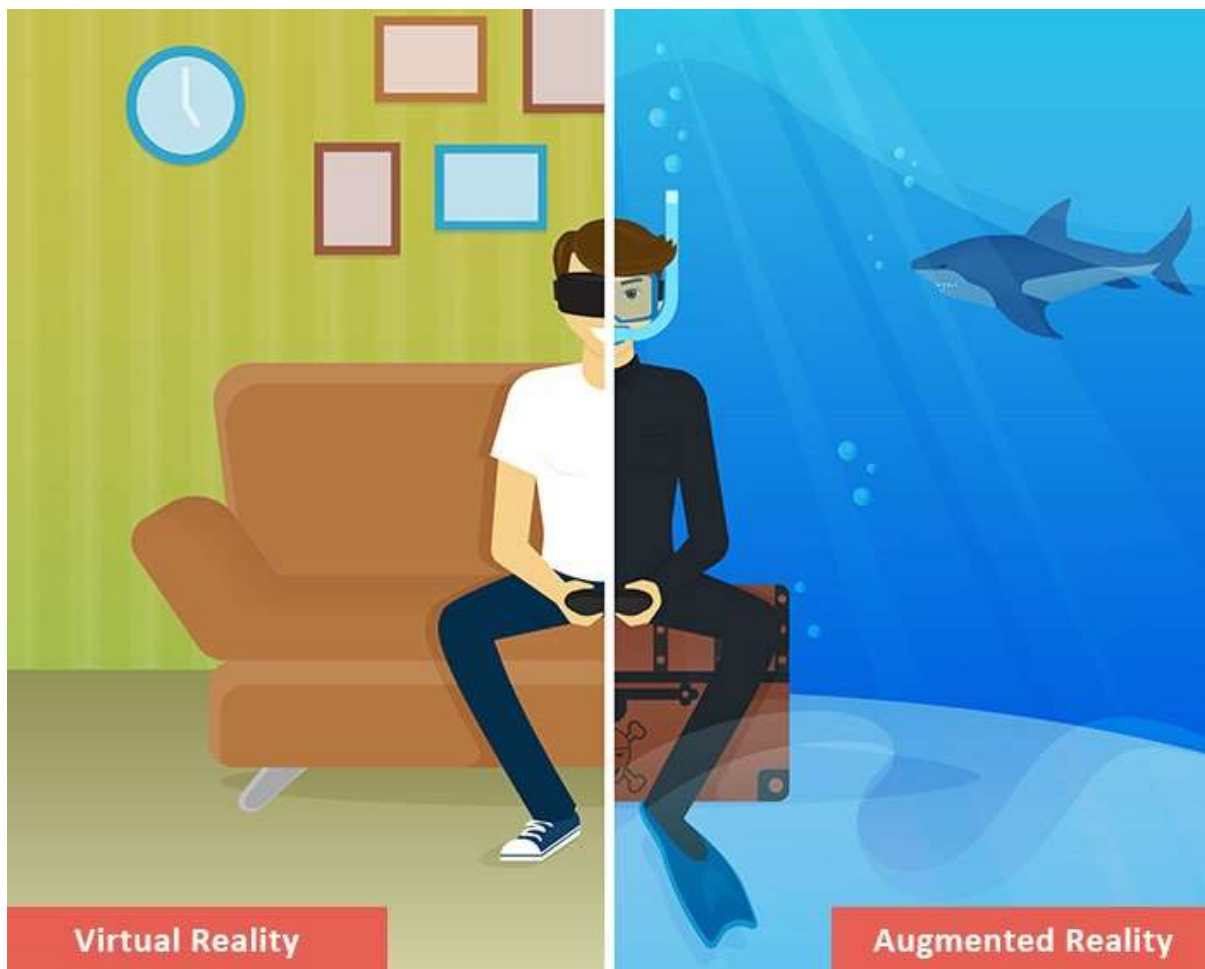
**Gaming:**

Today, dozens of other games incorporate AR elements. The popularity of AR games is no surprise, as gaming was one of the most obvious early applications that many people saw for AR and VR capabilities.

**Selling:**

These days, it is possible to virtually try on or try out a variety of merchandise before buying via augmented reality apps: sephora's app lets you view cosmetics in AR on your face; IKEA offers a chance to "see" furniture in your home; paint brands let you virtually view colors on your walls; Warby Parker makes it possible to "try on" glasses frames without actually visiting a store location or ordering samples. Pre-pandemic, these offerings provided a way to enhance in-store experiences or make life a little easier for busy shoppers. Now, they've made it possible for many brands to sell to shoppers stuck in their homes. AR applications for eCommerce are poised to become the norm.

Today, most of these augmented reality experiences are made possible by smartphones. However, the development of more advanced AR devices (like Apple's AR glasses or Microsoft's Holo lens) could open the door to even more applications. The benefits of AR are only continuing to expand to new sectors, such as healthcare, manufacturing, utilities, telecommunications, education, and public safety.



### Following are some more examples where AR is used

Medical Training. From operating MRI equipment to performing complex surgeries, AR tech holds the potential to boost the depth and effectiveness of medical training in many areas.

- Retail
- Repair & Maintenance.
- Design & Modeling.
- Business logistics.
- Tourism Industry
- Classroom Education.
- Field Service.