

Augmented reality (AR)

Augmented reality

- Augmented reality (AR) is the integration of digital information with the user's environment in real time.
- Augmented reality is used to either visually change natural environments in some way or to provide additional information to users.
- The primary benefit of AR is that it manages to blend digital and three-dimensional (3D) components with an individual's perception of the real world.
- AR delivers visual elements, sound and other sensory information to the user through a device like a smartphone or glasses.
- This information is overlaid onto the device to create an interwoven experience where digital information alters the user's perception of the real world. The overlaid information can be added to an environment or mask part of the natural environment.

How does augmented reality work?

Augmented reality can be delivered in a variety of formats, including within smartphones, tablets and glasses. AR delivered through contact lenses is also being developed. The technology requires hardware components, such as a processor, sensors, a display and input devices. Mobile devices already typically have this hardware available, with sensors including cameras, accelerometers, Global Positioning System (GPS) and solid-state compasses. This helps make AR more accessible to the everyday user.

What is VR?

Virtual Reality (VR) is a simulated experience when the world you're standing in is replaced with a virtual one. This can be done with something as simple as a plastic holder you put your phone into, but these days most people prefer head-mounted displays. Virtual Reality has revolutionized the gaming and entertainment sectors by allowing users to immerse themselves in a highly simulated environment. Virtual reality is also a big player in the education sector- such as medical or military training- and business- such as virtual meetings.

What is the difference between the two?

Virtual reality and augmented reality accomplish two very different things in two very different ways, despite their similar designs. Whereas virtual reality replaces your vision, augmented reality adds to it. The differences come down to the devices you use and the experience itself:

- AR uses a real-world setting, while VR is completely virtual
- AR users can control their presence in the real world; VR users are controlled by the system
- VR requires a headset device, but AR can be accessed with just a smartphone
- AR enhances both the virtual and real world while VR only enhances a fictional reality

They are both powerful technologies that have yet to make their mark on most people's lives. They have the potential to completely change how we use computers in the future, but whether one or both will succeed is anyone's guess right now.

Examples of AR and VR applications

There are many industries that are already using AR and VR. Education and training, healthcare, manufacturing and logistics, construction, and real estate, among others.

Nike uses augmented reality and virtual reality in their physical stores. Customers can scan items like shoes or clothing to view information, or they can enter a VR world to experience the different steps in Nike's supply chain, so they understand how and where items are being made.



AR can be used in the following ways:

Retail. Consumers can use a store's online app to see how products, such as furniture, will look in their own homes before buying.

Entertainment and gaming. AR can be used to overlay a virtual game in the real world or enable users to animate their faces in different and creative ways on social media.

Navigation. AR can be used to overlay a route to the user's destination over a live view of a road. AR used for navigation can also display information about local businesses in the user's immediate surroundings.

Tools and measurement. Mobile devices can use AR to measure different 3D points in the user's environment.

Architecture. AR can help architects visualize a building project.

Military. Data can be displayed on a vehicle's windshield that indicates destination directions, distances, weather and road conditions.

Archaeology. AR has aided archaeological research by helping archaeologists reconstruct sites. 3D models help museum visitors and future archaeologists experience an excavation site as if they were there.