Augmented reality

Augmented Reality (AR): AR overlays digital content onto the real-world environment, blending virtual elements with the physical world. Users typically experience AR through a device such as a smartphone, tablet, or AR glasses. AR enhances the real-world view by adding virtual objects, text, or images, and it allows users to interact with and manipulate these virtual elements within their real environment. Examples of AR applications include Pokémon Go, AR filters on social media platforms, and industrial maintenance or repair assistance.

Virtual Reality (VR): VR creates a fully immersive digital environment that completely replaces the real world. Users wear VR headsets that transport them to a simulated virtual space. In VR, users are fully immersed in a computer-generated environment and can interact with and explore the virtual world. VR experiences can range from games and simulations to virtual tours and training scenarios. Popular VR devices include Oculus Rift, HTC Vive, and PlayStation VR.

Key differences between AR and VR include:

Immersion: VR provides a complete and immersive virtual experience by replacing the real world, while AR overlays virtual elements onto the real-world environment, allowing users to interact with both the virtual and physical worlds simultaneously.

Interaction with the Environment: In AR, users can interact with real-world objects and their virtual counterparts, whereas in VR, users interact with virtual objects and environments within the simulated world.

Hardware: AR experiences can be accessed using devices like smartphones, tablets, or dedicated AR glasses. VR typically requires specialized headsets that cover the user's field of view and may include handheld controllers for interaction.

Use Cases: AR is often used to enhance real-world experiences, such as adding information or virtual objects to a physical environment. VR, on the other hand, is commonly used for immersive gaming, virtual training, simulations, and virtual experiences.

Both AR and VR have unique applications and offer different experiences, but they share the goal of enhancing user engagement and interaction with digital content in various domains, including entertainment, education, healthcare, and industrial settings.

Augmented Reality Navigation in Neurosurgery

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