Augmented Reality: Notes for UPSC Mains

Augmented Reality is still in its early days. The next technology that is truly going to bring about changes in the lives of people is Augmented Reality (AR). As per International Data Corporation (IDC), the worldwide spending on Augmented Reality (AR) and Virtual Reality (VR) will reach $ 160 Billion in 2023.

This article will in detail talk about Augmented Reality as the topic is important for the IAS Exam from the perspective of UPSC Mains Essay and General Studies III papers.

What is Augmented Reality?

Augmented Reality (AR) is the technology which superimposes an image onto a user's view of the real world and enhances it with sound, touch, and even smell. It is a combination of the real scene viewed by the user and a virtual scene generated by the computer. AR is a technology which is going to blur the lines of reality.

Augmented Reality has moved beyond headsets and gaming and permeated into numerous industries. In general terms, Augmented Reality is increasingly being adopted for a variety of uses like assembly, maintenance, repair, education, training, retail showcasing and diagnostics.

AR makes workers more efficient by providing them with an additional layer of knowledge and insights. The workforce is already being enhanced in industries such as Pharmaceuticals, Oil and Gas, military, aerospace, automotive and manufacturing. Augmented Reality remote assistance can improve training in situations where new hires need assistance. This tech enables real-time collaboration between field personnel and remote experts.

Industries adopting AR Technology

- Manufacturing
- Utilities
- Telecommunications
- Retail
- Healthcare
- Logistics

What are the real-world applications of Augmented Reality?

Defence

It helps in improving situational awareness of the soldiers using AR technology. The tech is named as Tactical Augmented Reality (TAR). This tech has an eyepiece that assists soldiers on

the battlefield to precisely locate their positions in addition to the location of others (friends and enemy soldiers).

Impact of this technology

- TAR will one day replace night vision goggles, as this technology can help soldiers in the dark.
- It will replace the handheld GPS system that soldiers carry today to locate their positions.
- The eyepiece is wirelessly connected to a thermal site on the soldiers' rifle or carbine. When the soldier is pointing the weapon, the image of the target, plus other details, such as the distance to the target can be seen through the eyepiece.

Advertising

For example, Jaguar Land Rover put prospective car buyers in the virtual driver's seat of its latest models without making the visit to the dealership. Consumers could launch the AR capability directly from a banner ad without any need to install an app. Customers can see the outside view seated at the driving seat through transparent windows.

Healthcare

Traditionally handheld ultrasound scanners are used in reconstruction surgery for locating blood vessels, and bones. However, AR technology has the potential to replace ultrasound scanners as it will help in locating the blood vessels very accurately and in a shorter time span.

Pharmaceuticals

Augmented Reality tools can help scientists to picture the structure of complex molecules. Drug developers usually work with static models. The AR will help the developers to step inside the molecule and see how it moves and responds to different stimuli and situations. This will reduce errors and reduce the years-long drug development cycle.

Logistics

AR will benefit logistics industries at multiple levels of their operations.

- Optimizing warehouse operations
- Optimizing transportation
- Last-mile delivery
- Enhanced value-added services

Other miscellaneous applications of Augmented Reality

- Various filters on Snapchat and Instagram are an example of Augmented Reality.

- Scanning your QR code using your phone's camera provides additional information on the screen.
- Google Glass and other Head-up Displays (HUD) put Augmented Reality directly into the glasses. These glasses could be used as reminders for patients undergoing medication.
- Retail companies use it to help customers envisage aesthetics when new furniture are placed to redesign the interiors of their homes.
- Gaming - Pokemon is one of the most famous games to hit a big chord with the public.
- AR is used in the field of language translation
- Law enforcement agencies can use AR tech to recognize criminals in huge crowds.
- If a car breaks down people can fix their cars using AR tech, repair and maintenance can be carried out without the help of mechanics. This tech will recognize the vehicle parts via object recognition, describe and pictures all required repair and maintenance

How Augmented Reality is different from Virtual Reality?

The difference between virtual, augmented, and mixed reality is highlighted below:

Difference between Augmented Reality, Virtual Reality and Mixed Reality

Augmented Reality	Virtual Reality	Mixed Reality
Integrates text, graphics, audio and adds value to the users' interaction with the real world.	Simulation of Reality	It is a combination of AR and VR; allows a person to see and immerse oneself in the real world while simultaneously interacting with the virtual environment using hands.
Transparent screen	Opaque screen	
	VR replaces the actual world environment with 3D digital elements	
AR does not replace actual world environment with 3D digital elements	VR is a completely computer-generated three-dimensional environment that is displayed either on a computer screen or through special displays.	
AR combines both real-world and virtual. Users of AR are still able to sense the real world around them.		

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