

Quadrant II – Notes

Programme: Bachelor of Commerce (First Year)

Subject: Computer Science

Paper Code: CSG 105

Paper Title: Computer Applications-I

Unit IV: Internet Applications and Emerging Technologies

Module Name: Virtual reality & Augmented reality: Meaning and Applications

Module Number: 34

Name of the Presenter: Ms. Smruti P. Borkar

Notes:

Virtual Reality: a term used to describe a 3D computer generated environment which can be explored and interacted with the person. That person becomes the part of virtual world and is able to manipulate objects or performs a series of action.

Augmented Reality: is a type of inter active, reality based display environment that takes the capabilities of the computer generated sound, display, text and efforts to enhance the users real world experience.

Augmented reality combines real and computer based scenes and images to deliver a unified but the enhanced view of the world.

AR and VR are the two ways that technology can change the way you look at the world.

Mixed Reality - This technology not just overlays but anchors virtual objects to the real world. In mixed reality that starts with the real world, virtual objects are not just overlaid on the real world but can interact with it.

Virtual reality

1. a complete immersive experience that shuts out the physical world

2. Creates an entire Virtual world
3. It is to differentiate between what is real and what is not real.
4. This is generally achieved by wearing goggles or helmet.
5. E.g. Google cardboard or daydream view.
6. defined as the "use of computer technology to create simulated environment"

Augmented Reality

1. adds digital elements to a live view often by using camera on a smartphone
2. is a mixture of real and virtual world
3. It lets people to interact with both the worlds and distinguish clearly between them
4. This is generally achieved by holding a smartphone in front of you.
5. E.g. Pokémon go game and layer app which shows in the site you visit.
6. Defined as "enhanced version of reality created by the use of technology adds digital information on image of something."

List of features differentiating both the technologies.

- Purpose

The purpose of VR is to create its own Computer generated, digital world without using the actual real-life setup. On the other hand, AR adds virtual components like graphics and images as a layer onto the real objects.

- Method of Delivery

VR is delivered to the users through a head-mounted display or handheld controller which allows them to navigate and perform actions in the simulated world. Whereas AR is made available to the users through an app that can be installed and run on mobile itself into 3D

image devices. As soon as you place your device over the object, it changes which is not visible, otherwise.

- Experience

VR involves a lot of equipment involving headsets and headphones which may not be comfortable enough. However, it's quite immersive and engaging due to the fact that the user has no idea as to what's going on in the actual world while using a VR headset.

Contrary to this AR is really comfortable as it's often lightweight and doesn't require you to wear heavy gadgets. Yet, AR may offer a limited view implying that it's less engaging as compared to VR.

Business Applications Virtual Reality

1. Interactions and Meetings

Virtual Reality can be utilised in different ways by the business houses whether it's for meetings, presentations or training sessions. It's an innovative medium to enable interaction among employees located at different places without hampering the quality of operations.

VR can be used to create simulated images of the conference room with furniture and fixtures so that participants feel that they are sitting in the same room. It's more life-like as compared to video conferencing or any other means of communication.

2. Sales

Often professionals have to prepare presentations in order to crack a deal with the clients or participate in tradeshows. In such a situation, VR can be helpful in representing their business vision in front of the potential clients. A VR experience through the headset is much more interactive than the conventional charts, graphs, and ppt's.

3. Product Testing

In future, VR could also be explored and utilised in testing products that are dangerous to operate in person. By taking on the test in a

computer-simulated environment, companies can cut down their production cost as well as safety measures.

Augmented Reality Business Applications

1.Product Designing

With the help of 3D prototyping and AR, product-centric companies can very well anticipate as well as customize their products in advance. This would ease and speed up the production process, thereby minimizing any wastage or unwanted expenditure.

2.Retailing

In shops and stores, AR can be used in the packaging and displays of products so as to engage the customers. For example, some toy companies set up kiosks in-store where customers can scan a product and see its 3D version on the screen without having to open the packaging.

3.Marketing

AR is surely changing the conventional methods of advertising by adding the augmented content to them. Companies are now designing print ads and billboards which come alive when a device with an AR application hovers on it. For example, Vespa printed an ad which could be scanned through an app and then readers could even customize the scooter with the help of various options available.

4.Sales

AR can also be used to prepare sales presentations for B2B projects by demonstrating what the product would look like in the particular location and that too in real-time.

How do Augmented and Virtual Realities Differ?

1. Purpose

Augmented reality enhances experiences by adding virtual components such as digital images, graphics, or sensations as a new layer of interaction with the real world. Contrastingly, virtual reality creates its own reality that computer generated and delivery Method.

2. Delivery Method

Virtual Reality is usually delivered to the user through a head-mounted or hand-held controller. This equipment connects people to the virtual reality, and allows them to control and navigate their actions in an environment meant to simulate the real world

Augmented reality is being used more and more in mobile devices such as laptops, smart phones, and tablets to change how the real world and digital images, graphics intersect and interact

How do they work together?

It is not always virtual reality vs. augmented reality- they do not always operate independently of one another, and in fact are often blended together to generate an even more immersing experience. For example, haptic feedback-which is the vibration and sensation added to interaction with graphics-is considered an augmentation.

VR and augmented reality are great examples of experiences and interactions fuelled by the desire to become immersed in a simulated land for entertainment and play, or to add a new dimension of interaction between digital devices and real world.

Putting a VR headset over your eyes will leave you blind to the current world, but will expand your senses with experiences within. The immersion is quite dramatic, with some users reporting feelings of movement as they ascend a staircase or ride a roller coaster within the virtual environment.

Augmented reality however, takes our current reality and adds something to it. It does not move us elsewhere. It simply "augments" our current state of presence, often with clear visors.

Real life Examples on Virtual Reality and Augmented Reality

While VR you can swim with sharks. And with augmented reality, you can watch a shark pop out of your business card.

While VR is more immersive, AR provides more freedom for the user and more possibilities for marketers because it does not need to be a head-mounted display.