

AUGMENTED REALITY AS DATA RETRIEVAL

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Abstract: we all are aware about the multiple technologies or devices which are help in our daily life, and one of them is AR technology which is most widely used worldwide just to solve the daily life problem easily. Augmented reality also known as AR is a live indirect or direct view of a physical, real-world environment whose elements are “augmented ”or can say enhanced by computer generated and extracted real world or live sensory input such as sound, video, graphics or GPS(global positioning system) data. This concept is related with “computer- mediated reality”, in which a view of reality is modified or can say we add the things in real life (possibly even diminished rather than augmented) by a computer.

When we break down the augmented reality in technical term that is ‘**augmented**’ meaning enhancement and ‘**reality**’ meaning the state of things as they actually exist in real world. So, what Augmented Reality means an ‘enhancement’ or ‘elevation’ to the current state of things as and live state of things or how you perceive them or you can analyze them.

Index Terms- Markerless, Markerbased, SAR(spatial augmented reality).

I. INTRODUCTION

Augmented reality is a technology or a computer device just like other applications or software which is based on the computer vision based recognition algorithms or rules to augment (enhanced) sound, graphics, videos or other sensor based input on real world objects using the capture device or camera of your device. AR increases one’s current concept of reality, whereas in contrast, replaces but not completely the real world with a simulated one but it is different than the virtual reality. In other words, augmented reality combines the computer graphics or digital data with the user’s environment. Augmentation usage are generally performed in semantic context with environmental elements, such as superimpose auxiliary information for e.g. “scores over a live video feed of a sporting event or adding something extra over live contents”.

With the help of latest AR techniques the important information about the surrounding real world, and digitally change the Information about the environment and its objects is overlaid on the real world. Augmented reality take out the components of the digital world into a person’s real world. One example is an AR Helmet or harness for construction workers which display information about the construction sites or can say gives the updates or information to the workers.. In the early 1990s, the first functional AR systems that shows immersive mixed reality experiences for users were invented starting with the system developed at the U.S. AR is used for training, simulations, and practical or live operations for enhanced awareness in the field Air Force’s Armstrong Labs in 1992 Augmented Reality is also transforming the world of education, where content may be accessed by ‘scanning’ or ‘viewing’ an image or also by viewing the QR code with a mobile device or any other device which displays the real world problems with solutions.

I. TYPES OF AUGMENTED REALITY

There are 2 types of augmented reality i.e. marker less or marker based. Marker less also known as the position or location based AR.

➤ MARKERLESS

Marker less means it have the ability to capture the position or location in the real world and according to that it have to provide the information related to that location or position. It means it works like the google map so that we are able to find out the things like mountain, famous rocks, rivers, places etc very easily.

➤ MARKERBASED

It is totally different from the marker less because it depends on the software which recognize a particular thing or a particular pattern attached with that thing like a barcode, 2D code(QR) when we place the camera on it after this process it provide the relevant information related to that particular pattern.

II. RELATED WORK

Earlier researchers have developed and used several technologies in different-2 display devices because each display has its own feature and specifications.

Here we used some technologies or display device just to get the required result:

➤ Hardware

Hardware components for augmented reality are: processor, display, sensors, gyroscope(3 Axis), accelerometer, GPS, digital camera, compass and input devices. Modern mobile computing devices contain these elements which often include a camera and sensors such to make them suitable with AR platforms.

➤ **Display**

Various technologies are used in Augmented Reality rendering including monitors, small computers or can say small display devices which are worn on the human body like head mounted display, handheld display etc.

Head mounted display is a display device paired to the forehead such as a harness or helmet. It is really a easy way to carry out the information. HMDs place images of both the physical world and virtual objects or physical objects over the user's field of view. Modern HMDs often employ sensors for monitoring that allow the system to align virtual information to the physical world or adjust accordingly with the user's head movements. HMDs can provide VR users mobile and collaborative experiences and it permits viewing through the lenses with a visual overlay.

➤ **Tracking**

Modern mobile augmented-reality systems use one or more of the following tracking technologies: digital cameras and other optical sensors, GPS, compasses accelerometers, gyroscopes, RFID and wireless sensors. These technologies offer varying levels of accuracy and precision. If we want view the 3 dimensional model in augmented reality with a tracker less then the object will appear on ground level at scale. Most important is the position and orientation of the user's head and hand.

➤ **Spatial**

Spatial Augmented Reality (SAR) augments real-world objects and scenes without the use of special displays like as monitors, head mounted displays or hand-held devices. it is totally different or can say a unique kind of augmented reality. SAR makes use of digital projectors to display graphical information onto physical or real objects. The key difference in SAR is that the display is separated from the users of the system. SAR has all the abilities to bring an image, Product, device to the real life for example makeup mirror, the perfect jewelry etc Because the displays are not associated with each user, SAR scales naturally up to groups of users. SAR can display the things on any number of external surfaces.

Examples include shader lamps, table, mobile projectors, virtual tables, and smart projectors. The imaginary view is projected on the neutral objects, it can be anything, providing the opportunity to enhance the object's appearance with the help of projector, camera, and sensor.

An SAR system can display the information on any number of surfaces of an indoor setting at once. Users are able to touch, feel physical objects or can say analyze the real world in a process that provides passive tactual sensation.

➤ **Networking**

Mobile augmented reality applications are gaining popularity day by day due to the wide adoption of mobile technology and especially wearable tiny devices and of course the portable nature of these devices. However, they often rely on computationally intensive computer vision algorithms and rules with extreme latency requirements. To recompense for the shortness of computing power, offloading information processing to a distant device is often desired so that we can get the data anytime anywhere. Computation Offloading introduces new constraints in applications, especially in terms of latency or bandwidth.

➤ **Input devices**

Techniques include speech recognition systems that translate a user's spoken words into computer instructions and gesture recognition systems just like Google used the speech recognition technique that can interpret a user's body movements by visual detection or gestures from sensors embedded in a peripheral device like as stylus, pointer, glove or other body wear.

III. BUSINESS USES OF AUGMENTED REALITY

Augmented reality is not just about finding subway entrances or the closest place to scarf a burger. There's a lot of potential for the technology within infrastructure and healthcare fields & others that have yet to be fully explored. Dr. Macintyre visualise such scenarios where doctors can superimpose information onto a patient's body so that surgeons can see both the body and digital information or can say the data about the patient at once. "Think about one of those small scopes used in surgery, but where the video is augmented with ultrasound or CT scan information, or with surgical preplanning information," Macintyre said.

If you break your leg, for example, "imagine if your doctor donned a headset to see exactly where it was broken. She/he could then explain the damage at the same time and next steps while you see the results for yourself on a larger screen".

"The good thing about the medical domain is that it doesn't suffer from the need to work everywhere, as the mobile applications do," said Macintyre. "It would be a small investment can say at once, relative to the cost of heavy and complicated medical equipment. You could make AR work only in a doctor's cabin or in the specific office."

Dr. Macintyre also discussed before sees many other uses in such fields as "architecture", where AR could be used to show what building locations will look like should changes be made to the land, or even to the building architecture itself. These changes could be made in real life. Likewise, construction crews and workers could safely use AR to envision submerged pipes, wires, holes and more before digging.

IV. Proposed method

we can say the AR is the part of the E-commerce because online shopping gives good convenience & variety of available choices and of course unbelievable discounts so through this browser technique we can get the useful amount of data. We can distinguish AR in 2 main categories:

Augmented reality browsers

The proposed system involves the augmented reality browser. It means it provides the exact information or data about the product at which our camera of display device point out, it also estimate the value of that product and displays its history and current value.

➤ **Augmented reality 3D viewer**

In the previous life we need the physical product in your hand to make anyone believe you that this is what you are looking for, now the time has changed in today's life we have lots of application and software that helps us to meet our requirement just like 'augment'. It is an app or much more than an app which is available for IOS or android devices. It allow the users to place the life size models i.e. 3D models in your surroundings with the trackers or without the trackers.

➤ **Augmented reality in games**

Games like pokemon Go which is visible in our real life objects whether it a street, road or anybody's house. AR has the huge scope in games as well.

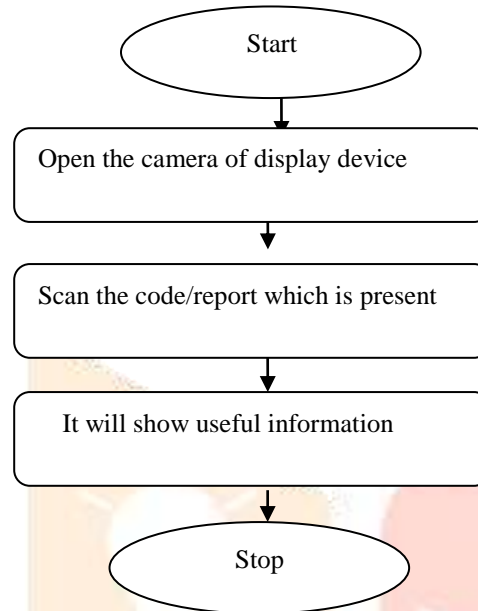


Fig:1 flow chart of proposed technique



Fig: 2 augmented as 3D viewer

V. CONCLUSION AND FUTURE SCOPE

The area which is covered by the augmented reality is retail sector where this technology fills the gap between the online and the physical shops where it offers the great experience to the user in this way. Also the mobile industry have a huge future scope in AR because all are using the smart phones and devices now a days.

Augmented reality is another step further into the digital age as we will soon see our environments change dynamically either through a Smartphone, technical devices, glasses like eye tap, car windshields and even windows in the near future to display enhanced content or can say the augmented contents and media right in front of us. This has amazing applications in today's that can very well allow us to live our lives better more productively, safely, easily and informatively. Maybe in the future, we will see our surroundings become augmented to display information based on our own interests. It would be incredible to no longer wonder 'where to eat', 'where to go', 'where to stay' 'or what to do'. our environment will facilitate our interactions seamlessly. We will no longer be able to discern what is real and what is virtual, our world will become a convergence of digital and physical/real media. Virtual means not completely virtual but augmented which relate us to the real world with the help of technology.

VI. ACKNOWLEDGEMENT

I would like to express my appreciation to Mrs. Neetu Sharma, for his guidance and support and also supervised me to complete this review paper. This paper consumed huge amount of research, work and dedication, and also the outcomes would not have been possible if I did not have a support of her. She suggested me many ideas and technologies. Her motivation and help has been of great inspiration to me.

VII. REFERENCES

- [1]. https://en.m.wikipedia.org/wiki/augmented_reality
- [2]. Phenomenal Augmented Reality, IEEE Consumer Electronics, Volume 4, No. 4, October 2015, cover+pp92-97
- [3]. Steuer, Jonathan. Defining Virtual Reality: Dimensions Determining Telepresence Archived 24 May 2016 at the Wayback Machine., Department of Communication, Stanford University. 15 October 1993.
- [4]. Stationary systems can employ 6DOF track systems such as Polhemus, ViCON, A.R.T, or Ascension.
- [5]. <https://www.digit.in/technology-guides/fasttrack-to-augmented-reality/notable-achievements-in-this-space.html>
- [6]. <https://www.ncbi.nlm.nih.gov/m/pubmed/24464832/>
- [7]. <https://www.ncbi.nlm.nih.gov/m/pubmed/27731839/?i=3&from=/25071992/related>
- [8] <https://www.3pillarglobal.com/insights/augmented-reality-introduction-and-its-real-world-uses>
- [9] <https://www.allerin.com/blog/what-if-we-told-you-that-augmented-reality-had-been-a-part-of-human-life-for-a-long-time-surprised-dont-be-with-emerging-technologies-ar-has-improved-a-lot-and-so-has-its-uses-augmented>
- [10]. Schuettel, Patrick (2017). The Concise Fintech Compendium. *Fribourg: School of Management Fribourg/Switzerland.*

