

Augmented Reality Types and Popular Use Cases

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Keywords: Augmented reality, Smartphones, Sensors.

Abstract: Augmented reality is an interactive experience overlaying virtual objects on a certifiable picture in this manner augmenting this present reality picture in real time which we as of now observe. AR could be extremely helpful in different areas like Manufacturing, Education, Healthcare, Marketing, Fashion, Travel, Navigation. Today, one of the main challenges in designing mobile augmented reality applications is to understand how our perception of reality can be increased in a cost-effective way and how this increase can be made to fit perfectly with the interaction of users.

1 INTRODUCTION

An increasing number of sectors of human activity is concerned with augmented reality, the cultural sector, benefiting from a broad heritage digitization plan thanks to the research and technology mission, is engaged in a multimedia editorial policy this technology radically changes the approach of interaction between human and also the digital data media. Eventually, the human reality has currently become augmented by increasing our real world. It appears terribly fancy that however this new technology shapes up our imagination. A revolution goes on within the graphical interface style called augmented reality. currently augmented reality provides individuals the same perspective however in an exceedingly completely different approach. as an example, we can use this technology to increase the experience of the the interaction of visitor with the deferent components of the museum. However, the goal of the augmented Reality is to boost the physical world with a digital data system.

replace real with a virtual one. AR appears in direct view of an existing environment and adds sounds, videos, graphics to it.

A view of the physical real-world environment with superimposed computer-generated images, thus changing the perception of reality, is the AR.

The term itself was coined back in 1990, and one of the first commercial uses were in television and military. With the rise of the Internet and smartphones, AR rolled out its second wave and nowadays is mostly related to the interactive concept. 3D models are directly projected onto physical things or fused together in real-time, various augmented reality apps impact our habits, social life, and the entertainment industry.

AR apps typically connect digital animation to a special 'marker', or with the help of GPS in phones pinpoint the location. Augmentation is happening in real time and within the context of the environment, for example, overlaying scores to a live feed sport events.

2 WHAT IS THE AUGMENTED REALITY?

Augmented reality is the technology that increases our real world, adding layers of digital information onto it. Unlike Virtual Reality (VR), AR does not create the whole artificial environments to

3 TYPES OF AUGMENTED REALITY

There are 4 types of augmented reality today:

3.1 Marker-based AR

Some also call it to image recognition, as it requires a special visual object and a camera to scan it. It may be anything, from a printed QR code to special signs. The AR device also calculates the position and orientation of a marker to position the content, in some cases. Thus, a marker initiates digital animations for users to view, and so images in a magazine may turn into 3D models.



Figure 1: example of marker-based AR

3.2 Markerless AR

Location-based or position-based augmented reality, that utilizes a GPS, a compass, a gyroscope, and an accelerometer to provide data based on user's location. This data then determines what AR content you find or get in a certain area. With the availability of smartphones this type of AR typically produces maps and directions, nearby businesses info. Applications include events and information, business ads pop-ups, navigation support.



Figure 2: example of markerless AR

3.3 Projection-based AR

Projecting synthetic light to physical surfaces, and in some cases allows to interact with it. These are the holograms we have all seen in sci-fi movies like Star Wars. It detects user interaction with a projection by its alterations.



Figure 3: example of Projection-based AR

3.4 Superimposition-based AR

Replaces the original view with an augmented, fully or partially. Object recognition plays a key role, without it the whole concept is simply impossible. We've all seen the example of superimposed augmented reality in IKEA Catalog app, that allows users to place virtual items of their furniture catalog in their rooms.



Figure 4: IKEA Catalog app as an example of Superimposition-based AR

4 POPULAR USE CASES OF AUGMENTED REALITY

Today, AR technology has become the major tool for people and business leaders to attract and engage their target audience. And enjoy a plethora of benefits with which they can make their brand remain in the limelight of the market.

Here are some of the industries that are getting flourished with the advent of AR technology:

4.1 Manufacturing

In industries like the manufacturing industry, you can't afford making a single mistake in the development process. A minor error can become the reason for re-building or improving an existing product, which will be both costly and time-consuming. Now, how to deal with this issue?

The right solution to this concern is Augmented Reality. The technology, with its potential to digitize the product prototyping in 3D, makes it easier to access and understand the prototype. The business leaders can easily make the right decision and their team can act effectively. This increases the speed of the process along with the efficiency rate, which ultimately enhances the overall experience and profit generated.

4.2 Education

AR technology is making a difference in the education business vertical in two ways – by engaging users and by making the concepts interactive.

By incorporating gaming elements into the classroom, AR is providing an exceptional experience for both the teachers and students. It is encouraging them to turn a boring class into a jaw-dropping experience and learn complicated concepts easily via 3D AR modelling. It is empowering them to learn beyond the textbook material and satisfy their curiosity. Besides, it is enabling the tutors and teachers provide the right environment to the students so that they can give their best output. For example, by turning a classroom into an Augmented reality playground or high-definition gym, a physical education instructor can easily prompt students to practice actively.

4.3 Healthcare

Just like AI, Machine learning, and Wearable, the AR technology is also disrupting the world of healthcare. The technology is breaking down the complex medical concepts into interactive 3D forms. This way, it is empowering the medical experts to describe everything easily to their patients and trainees. Besides, Augmented Reality will offer 3D visualizations of the organs from the different angles, which will help the surgeons make precise stitches and increase the success ratio.

4.4 Marketing

AR is adding life to the static marketing mediums. It is enabling the marketers to include 3D animations, video and target-based additional information into their AR-based storefronts, brochures, posters, t-shirts, flyers, and billboards. This way, it provides a lucrative and seamless experience to the targeted audience.

4.5 Fashion

Augmented Reality is transforming the fashion and retail industry in multifold. It is providing personalized assistance to the online and offline shoppers and helping them choose the right product comfortably and easily.

One of the finest examples of its application is American Apparel. This California- based clothing retailer company let the users scan any product and perform various functionalities, like checking the available sizes, changing the color, viewing reviews, and so on. To see how it actually works, check out the following video:

4.6 Travel

From hotel room booking to transportation, planning events and outings, and booking a table at a restaurant, augmented reality is helping in everything to make your traveling hassle-free and memorable. The technology is helping the travellers access the information written in pamphlets and other sources easily by converting it into useful, spoken conversation. It is offering 360-degree tours to the guest rooms, restaurants, meeting facilities, and other places to the customers. Besides, the technology is empowering the travellers to visit the nearby events and outing places even without leaving the comfort of their rooms.

4.7 Navigation

Using a GPS along with traveling to a newer place is often troublesome – leading to accidents more often. To tackle this situation, ARy has come up with smart glasses. These glasses have sensors which enable the driver to keep a track of the route he/she takes without looking around.

This way, these glasses are enhancing the experience of the person on wheels and making the automobile sector smarter.

4.8 Retail

AR technology has grown beyond the Snapchat's virtual face filters. The technology is widely adopted in Eyewear and cosmetics industry for helping customers understand what they want, and try everything before buying.

Since every face and skin is different, it was quite difficult to deliver exquisite customer experience earlier. However, with the advent of AR technology, the end users can easily find out what suits them and make the purchase. A successful example of this kind of application is Sephora's updated app. The mobile application has a 'virtual try-on' feature that enables the customers to try make-up virtually and find what goes with your complexion. Likewise, the Eyewear firm Glasses.com has incorporated the technology into their processing to make it easier for the end users to try a different style of glasses and choose the one they find great.

4.9 Museums

Museums are great places where visitors can see, hear, touch, feel and experience interesting things. The visit is even better when visitors can select what they want to see and have ways to enhance their experience. Many museums have a huge amount of collections and objects, selecting which ones to see is sometimes difficult. A system that adapts on the fly to the user's preferences, suggesting objects that he might want to see, paths he would like to follow in their visit, as well as the complementary information he needs about each object, will be of fundamental importance. Smartphones, with their Apps are the best solution to help enhance the museum experience.

5 CONCLUSION

For a glimpse, augmented reality is the virtual illusion of object. It just provides a layer of information onto the existing physical world so that people can see more than normal vision. It conceives a competence that has been around for ages. Though it is in its primary stage, within the next few years, it is going to offer the endless possibilities. Notably, the manufacturer is going to take the enormous advantage of this emerging technology. They will manipulate the consumer in their own way. Not only the business aspect, but it will also have a tremendous impact on our social, environmental, economic and political. Regardless of some related issues, it will be widely implemented across the world. It will reconstruct human behave. It is now far beyond of imagination how would the augmented reality shape our future.

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