



# A SURVEY ON AUGMENTED REALITY APPS

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**Abstract:** Augmented reality (AR) is a technology that has taken the world by milestone in the past few decades. It is a powerful technology that is proving itself as one of the best tools to be used in our daily life. Augmented reality is growing and finding applications in every area. There is a never-ending scope for augmented reality in this tech world, which can experience by exploring the best AR apps. AR apps have become a fast growing trend that keeps on developing and enhancing the virtual view by offering an integrated view to the real-world aspects. This paper gives an introduction to augmented reality apps.

**Index Terms - Augmented reality, AR works, Augmented Reality Apps**

## I. INTRODUCTION

Augmented reality is the technology that expands our real world environment. This provides a view of the physical real-world environment with superimposed computer generated images. It can be described as a system that satisfies three basic features: a combination of real and virtual worlds, real-time interaction, and accurate 3D registration of virtual and real objects.

The main objective of augmented reality is the manner in which different components of the digital world blend into a person's perception of the real world, not as a simple display of data, but through the integration of immersive sensation, which are perceived as real world view point.

It is widely used to enhance natural environments or situations and offer perceptually enriched experiences. With the help of AR technologies (e.g. Computer vision, incorporating AR cameras into Smartphone applications) the information about the real environment of the user becomes interactive and digitally manipulated.

### 1.1 Augmented Reality versus Virtual Reality

The virtual reality replaces what people see and experience, augmented reality actually adds to it. Virtual reality creating such an environment within the computer that the user can interact with and get immersed in. but in the case of augmented reality, enhances the reality we would ordinarily see rather than replacing it.

Virtual realities artificially replicate or regenerate the real time environment by using computer generated graphics. The hearing and vision are used in such a manner that the user feels he is actually experiencing the computer generated or regenerated environment. In augmented reality places the virtual objects in the real environment in the real time which we can see through the different display objects and turns the environment around us into a digital interface. Augmented and virtual reality both fall in the range of mixed reality.

## II. WORKING OF AR

Augmented reality is taken into account synonymous to assisted Reality. Here, aside from presenting additional information, real time 3D objects are rendered to user's vision field also. The idea of projecting extra information into the user's vision field is termed as assisted reality. Before understanding the functioning of augmented reality, it's important to grasp its objective. Introducing the important world to computer generated entities, which will be seen only by the user.

### 2.1 Augmented Reality Components

The most efficient AR devices is made by combining the basic components used in AR technology. These contains the different display units, tracking module, computer or other portable devices, different scanning algorithms, etc. various devices like high resolution cameras, accelerometers, high speed multi-processors, different sensors like gyroscope, pressure sensors, and rotation sensors are also used to increase the reliability and performance of the AR device.

### 2.1.1 Display

The different types of displays are used in AR technology like Head Mounted Displays, spatial displays etc. when combining real and virtual world two basic choices are available : optically transparent or video transparent. They use various mirrors that are partially silvered which pass the real world views and images through a lens. This mechanism is used in optically transparent display device. During this period, the virtual images are passed into the users view point. To track the HMD device, a 6-degree of freedom sensor is widely used. Display technology follows to be a limiting factor in the development of AR systems.

### 2.1.2 Positional Tracking System

The other major component in AR technology is a positional tracking module. The 3D geometry of the virtual pictures has to be studied upon and well understood, for the virtual object to visible as flawlessly integrated in the real world. Tracking and position doesn't only include the user's exact position as compared to his surrounding environment but also, the tracking of his head and exact eye points. The findings of the orientation of the originating camera, its exact position and its internal parameters such as focal length, aspect ratio etc. There is a need of some previous data about the original environment view and to model it correctly in order to position the virtual objects accurately. Take an example, to place the virtual objects at their correct positions; we need to define the level of the ground plane. The objects in the real and virtual environment must be properly aligned with respect to each other.

## 2.2 Augmented Reality Types

We can use devices like GPS or some other such navigation system to find our location. This is the simplest way of tracking. But accurate and exact locations and positions are needed by the AR related devices. They use the following two tracking methods: location based or marker based.

### 2.2.1 Marker Less or Location Based Tracking

This method works by using scanning algorithms and features detection systems. We want to find the information regarding some objects, we can simply point our phone at it and have some kind of feature-detection or pattern identification systems try to recognize it. Also specific scanning algorithms are used to identify it. It generates or projects a virtual grid on the picture caught by our camera. The GPS locates the approximate location of our phone or the device we are using. And to point the exact location, the automatic scan finds several anchor points and binds a virtual model to it. This technology has many advantages including that the real life object can serve as a marker by itself and there is no overhead of making or creating markers on the objects

### 2.2.2 Marker Based Tracking

Here, a particular goal is looked for by the device. Commonly these are small, two-dimensional barcodes known as data-matrix codes or it's a 2D image printed on something like a poster. The goal is recognized via the camera by the augmented reality application device, the picture is processed, the barcode is turned into a web address, and an appropriate web page is called up by the browser with related further information. The advantage of using this tracking method is that it's more convenient to use as the marker or targets can be recognized easily by the camera. Also, a more stable, accurate, tied to a particular point, picture is obtained using the markers. Due to its simplicity of implementation, it is the most popular option currently.

Day by day the world is constantly changing. Everything we do today is more and more complex. So to make our life easier and tackle the complexity coming up, augmented reality is a must. We start counting too many augmented reality uses. Today we're getting games and other augmented reality applications that is trending to a great extent.

## III. BEST AUGMENTED REALITY APPS FOR ANDROID AND IOS

AR apps run the gamut from interactive map overlays and virtual showrooms to highly massive multiplayer skirmishes. The available choice of augmented reality apps is diverse. Here are our top picks for the simplest AR apps available. Whether you're checking out iOS or android apps.

### 3.1 Houzz

Houzz is one of the best platforms when it comes to designing and improving homes activities, Houzz is ranked as one of the top augmented reality apps because of its features and easy usage. Whether you want to re-design, build or decorate for any occasion, the app has very fit for you. The best part, you get to choose a location or style as per your choice.

With more than 20 million style formats from, Houzz could be your go-to choice when it comes to designing your home. The app works very comfortably just like the website with menus and user interface of the whole app convenient to use. It gives the app a real feel to it and makes it one of the best augmented reality apps. Users will allow many swipe options to shuffle between different options in the Houzz app.

#### Features of Houzz Augmented Reality App

1. Sketch features to draw directly on photos.
2. 2.5 million Professionals to use this app for designing their home.
3. Search products or furniture for interiors directly on the app.

### 3.2 Sun Surveyor

Sun Surveyor, is the one of the best augmented reality apps, photographers can search for the best location and get the best shot. It provides a live camera view point with an interactive map, 3D compass and details like never before to know the natural light source in the galaxy, even the moon, and Milky Way etc. Even the most knowledgeable of solar experts would find a lot of features in the app for them to use.

It is obsessively designed with one main thing, the enormous star position in the center of our solar system. Sun surveyor app provides both a flat view point compass and 3D, AR view, each detailing the sun's solar path, maximum elevation, its hourly intervals, and its rise and set times, among other noteworthy data.

### Features of The Sun Surveyor Augmented Reality App

1. AR projections of the sun and moon so that you can tell where the sun or moon would be at a particular location in the sky at that time.
2. Predict the sunset and the moonrise.
3. We can use the app offline as well, making it one of the finest augmented reality apps for android.
4. Users get to create images of summer solstice ways.

### 3.3 Mondly

One of the other augmented reality apps for education that combine augmented reality with learning; Mondly offers language learning in 33 different languages with chatbots to help you learn a language quicker. This augmented reality app uses your phone's camera to scan and show animations of the word's you're learning. Users get the benefits of learning any language in combination with the other languages.

It is one of the best ways to learn a new best ways to learn a new language, and since it's on your phone, you can learn on the go. Tap the AR button, and you will be asked to find a flat surface. Once that's detected, the app will ask you to plank down your AR teacher, and she'll then begin your lesson, bringing in examples of the words as a memory aid.

### Features of Mondly Augmented Reality App

1. It is highly interactive when it comes to using it.
2. Chatbots provide different feeling of learning.
3. Interact with the animations and even move them around, getting a 360 degree view.
4. 33 different languages are available in this app

### 3.4 Pokémon Go

The list of the top augmented reality wouldn't be completed without adding Pokémon Go App. It's an amazing AR game that works effectively and quickly captured everyone's attention and encouraged them to see the gaming world in an enhanced and augmented way. With its stunning features and functionalities, the Pokémon Go app instantly gained high popularity on the app stores.

The game uses GPS to mark location and move your in-game avatar, while the Smartphone camera is used to show Pokémon in the real world. There aren't lots of instructions regarding game mechanics like the colored rings around wild Pokémon, but thanks to the nature of the internet. So far, the Pokémon has received multiple updates, including trading, raids, and player-versus-player battles.

### Features of Pokémon Go Augmented Reality App

1. Dynamic weather and Pokémon spawns.
2. Team matches, and more.

### 3.5 Magicplan

Creating floor plans might be a simple task for the architects and professional map makers, but it's never been easier for all users. Magician is easily amongst the best augmented reality apps for android and iOS that make it easier to design to design and measure floor plans for everyone. They can now use this app to measure the areas and make floor plans exactly like experts.

Magicplan app is specially introduced to help contractors and interior designers. Now they can attach the application with their measuring tools to come out with effective designing methods and floor plans.

### Features of Magicplan Augmented Reality App

1. Users use the camera to create floor plans.
2. Allows add photos and related notes.
3. Provide statistics automatically for surroundings, surfaces, and distances easily rewarding it as one of the top augmented reality apps.
4. Conducts surveys by providing customized questionnaires.

### 3.6 AR GPS Compass Map D

Get accurate guidance on the routes from your current location with this augmented reality app. The best listed among the augmented reality apps, AR GPS Compass Map 3D lets you select where you want to start and end the path.

It is quite simple to use, like the heads-up display guide you to search for the destination by making sure that you're not lost anywhere in the middle.

### Features of GPS Compass Map 3D AR App

1. Helps to locate landmarks.
2. Excellent map stability.
3. Integrated with a split- screen map features to adjust the size with different GPS locations.
4. It provides a 3D augmented reality display.

### 3.7 Roar

Is one of the widely used augmented reality app likes consumers, businesses, and retailers can call benefit from, but we're going to speak to the people that are going to use it in their personal life style. It is an best shopping adviser app lets you take different images of thousands of foods and drinks, and instantly learn their prices and ingredients see reviews from peoples, and may be even found relevant coupons and promotions. The different products found in roar's app can be compared by price or retailer, and items can be bought from within the app itself. Even more it provides an attractive the ability to scan a movie poster in order to quickly buy tickets to an upcoming showing, potentially saving you the trouble of having to navigate a full website.

#### Features of Roar Augmented Reality App

1. It is an ever-growing app.
2. Easy to use
3. Easy to understand

### 3.8 Google Translate

Google Translate is one of the best augmented reality apps which have been widely used among users to translate different languages. Unlike the standard version of Google Translate, which only focuses on converting the text, AR app can translate the text into an image from one language to another language. The procedure need to open this app, capture the text, and wait for you translation results.

#### Features of Google Translate Augmented Reality App

1. Translate in about 103 languages.
2. Also possible offline Translation.
3. Providing Handwriting translation options

### 3.9 INKHUNTER

Getting inked with different body parts has become a trend among youth, which also encourages them to make temporary tattoos. Commonly, we can't temporarily ink ourselves with an inkjet printer; thus, no worries we've got INKHUNTER for you. It is one of the top AR apps for android and iOS that can be used by users to get a tattoo in augmented reality.

To use the INKHUNTER app's features, you have to simply put a point anywhere on your body using a ball pen and project a tattoo design that you want to have, making the whole process very simple and edging it as one of the top most augmented reality apps.

#### Features of INKHUNTER AR App

1. It provides a gallery of different attractive designs.
2. It allows the user to check out the tattoo from different views.
3. It is created with an advanced photo editor, which makes it very easy to create the tattoo design look real way.
4. It allows a quick share option for users to send their tattoo creation with friends.

### 3.10 Augmented Car Finder

Augmented Car Finder is an very efficient app specifically designed to help guide you to your hiding vehicle. First the car's location is set, the app generates a visible marker showing the car, the distance you are from it, and the direction you should walk to find it. It is highly useful app for places like stadiums, convention centers, outdoor concert venues, and other crowded areas or those lined with massive parking lots.

Just imagine a friend of yours or your loved one gets their car stolen and their phone was inside the vehicle. You can track that vehicle for them and prevent it from disappearing for good. What if you are meeting someone and want to meet them in your car, or are travelling and need to go with other people in your car; you can share your location with them and they will be able to find you without you having to move or start looking for landmarks and waving, when you can see them but they can't.

#### Features of Augmented car finder App

1. It can give you directions to the nearest car parking area, so you do not have to leave your car in the middle of nowhere.
2. With using this Augmented Reality App, you will also be able to manage up to 3 different vehicles.

## IV. FUTURE TRENDS

This technology has its limitations which are likely to be overcome at some future point. But it is important to have knowledge about them. The limitation which includes accuracy of GPS and other tracking and positioning methods, information overload and privacy concerns.

But AR apps have widely used in many areas. Also phones and tablets will not be the only devices where AR mechanism is used. Research continues on including AR functionality in contact lenses and other wearable devices that would operate by them. The important goal of augmented reality to create a fitting and accepted concentration and to ease the human work.

There seems to be a lot of future scope for mobile augmented reality applications offered we eliminate all concerns and challenges. Privacy is one of the major concerns for augmented reality application. Even the user's data such as location of the user and personal information about the user present on the mobile device can be compromised will using an AR application. We hope more research on

the topic will lead to the development of attractive augmented reality application without compromising user's privacy and other concerns

## V. CONCLUSION

This paper gives a brief introduction about augmented reality apps. The existing mobile augmented reality apps available in different field such as gaming, education, medical and advertisement and promotions. We have also the different augmented reality software platforms. The emerging technology of augmented reality has been used in multiple ways in the app world, and its use is still growing at a rapid pace. The scope of augmented reality is never-ending, and it is constantly enhanced augmented reality companies to find new ideas to implement in exceptional ways.

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## REFERENCES

- [1] Ithinyai Moses Mutwiri "Research paper on Augmented Reality", South Eastern Kenya University, unpublished M. Young, The Technical Writer's Handbook. Mill Valley, CA: University Science, 1989.
- [2] Vaishali Agrawal, Jignesh Patel "A Review on Augmented Reality And Its Working", International Research Journal of Engineering and Technology, 2017
- [3] Ms. Shraddha C. Chauhan, Mr. Santosh Londhe "A Survey on Augmented Reality", International Journal of Advance Scientific Research And Engineering Trends, 2017
- [4] Nivedha, Hemalatha "A Survey on Augmented Reality", International Research Journal of Engineering and Technology, 2015
- [5] R. Alain Pagani, Jose Henriques, Didier Stricker "Sensors For location based augmented reality: the example of Galileo and Egons", the International Archives of the Photo grammetry, Remote Sensing and Spatial Information Sciences, Volume XLI-B1, 2016
- [6] Vikas Tiwari, Vijay Prakash Tiwari and Dhruvesh Chudasama "Augmented Reality and its Technologies", International Research Journal of Engineering and Technology (IRJET) Volume: 03 Issue: 4 April, 2016
- [7] <https://www.networkworld.com/article/2239439/augmented-reality-on-mobile-devices--a-new-way-of-seeing--and-being-html>
- [8] <https://www.netguru.com/blog/augmented-reality-mobile-android>
- [9] [https://en.wikipedia.org/wiki/Augmented\\_reality/](https://en.wikipedia.org/wiki/Augmented_reality/)
- [10] <https://www.mobileappdaily.com/top-augmented-reality-app/>
- [11] <https://www.digitaltrends.com/mobile/best-augmented-Reality-app/>