

# Application and Prospect of AR Technology in E-commerce

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**Abstract.** With the progress of science and development of information, E-commerce plays more and more important role in people's life. Affect people's basic necessities of life. However, consumers in the online shopping is just get some virtual information like pictures or some words and so on, there is no real sense of experience, and the perception of goods is not high. Mobile Augmented reality technology, as a new type of information technology, has attracted much attention in recent years. Augmented reality technology has also been included in the major technology of change the future shopping way. This paper will combine E-commerce with Augmented reality technology, improve consumer perception and interesting of goods, so as to enhance the consu\*mer's purchase desire. This paper introduces the concept and basic principles of Augmented reality technology, analysis feasibility and development of applying Augmented reality technology in mobile E-commerce in China.

## Augmented Reality Technology

**The Meaning of Augmented Reality Technology.** The key point of the Augmented reality technology is to realize the seamless connection between the real scene and the virtual scene. The Augmented reality technology uses the computer system to produce the virtual information which does not exist in the real environment, for example, There was a very popular game, Pokemon go, Pocket Monster interaction with the user is the use of Augmented reality technology to achieve, Through mobile phones or other devices to display the scene which combine virtual and actual situation, this give us a feel like that these virtual images is around us, become part of the real environment which around you, this enhance or expand the user's sense of visual experience, user can go through the experience which they can not feel in the reality world, add some fantasy and reality fun for users.

**Basic Principles of Mobile AR Technology.** Mobile AR technology using the camera and other input devices to collect the current real scene, and then combine with virtual portrait which has been stored in the system, to amplify the current real scene.

The information has a variety of trigger form, there are 3 common types of current:

Trigger with a Specific Image Marker This way often through the identification of specific markers, to trigger the emergence of virtual image. Such as children books, just need to scan the card which has the identification code, and it will make the image of the card become three-dimensional image, Interaction with kids by dynamic stereo image, to increase the fun of learning, this operation is very simple then others.

Through GPS, Compass and Other Positioning Equipment. This way can obtain the user's location information, after get the coordinates of the user, system will search some related enhance information in data base, including text, audio, video, hyperlinks, and so on, and then add the enhancement information to the display at some device. For example, Japan's Tokyo Sunshine aquarium APP, This is APP which combine augmented reality technology and GPS position location technology, they cooperate with each other, displayed user location by GPS, the virtual image of the penguin set by the system do a good navigation for users. the user opens the APP in any place in Tokyo, there will appear an aquarium cute penguin and be a navigation for users, to guide users visit aquarium and introduce the culture of aquarium for users. Let the original

monotonous map navigation become vivid and dynamic.

Obtain Direction Through Sensor. System can through the sensor, such as gyroscope on intelligent terminal and gravity acceleration sensor, to get the user's movement and direction, search some related enhancements in the database to amplify the current real scene.

**The Difference Between AR and VR and MR.** VR is the abbreviation of Virtual Reality, this mainly using computer system to simulation create a new world, this technology mainly used in 3D and 4D movies, giving people a visual experience is like crossing to another world. MR is the abbreviation of Mixed Reality, make the virtual image more realistic, have a higher degree of integration with the real world. In simple terms, VR is a new world created by people, AR is a part of reality scene and a part of virtual scene, MR is digital reality plus virtual screen.

### **Augmented Reality Combine with Mobile E-Commerce**

Double eleven just past, according to the official statistics of the Alibaba, In double eleven whole day, the total amount of sales is more than 120 billion 700 million, refresh the globe record once again, during October 21st and November 10th, this is activity preheating stage, Taobao and Tmall launched a number of small games to increase store browsing, one of the most popular game is Tmall go, this game combine with Augmented reality technology, User open camera of mobile phone, the screen will show a Tmall dolls project in the real scene, users need to find dolls in the real world through the phone screen in the real scene, and then throw a box to catch the doll, through this way user can get some gift like coupon, in this way combine reality and virtual games loved by many consumers, let the user go out of the house, and contact with nature, increase the fun and experience for consumers, in double eleven, not only Tmall launched this activity, Suning and other large online shopping platform is also imitation, from this can see, Augmented reality technology is become more and more popularization, and have a trend to development in e-commerce.

**The Augmented Reality Technology Used in Online Shopping.** The Augmented reality technology used in online shopping, make goods in user side enhance reality, let users have a real experience of goods, improve the user's desire to buy, promote the sale of goods. Consumers can through the phone's camera to get the real world image, project virtual goods into the real world, and then you can see the effect of goods placed in reality, for example, users want to buy sofa, Augmented reality technology can make users to see the effect of the sofa placed in the home, and determine whether its size and color is appropriate.

Nowadays, people generally either online shopping or buy their own goods in the store. Two shopping methods have their advantage and weakness. The former customs can get the goods feel and texture, but limited by region and time, and for some large commodities, Such as furniture, supplies etc, those can not experience its effect placed in the home, can not determine whether the size is right and the color is fit. The latter, save time and energy, we can be shopping whenever and wherever we want, but we often buy some undesirable goods. However, Augmented reality technology embedded in online shopping platform, products in the web page can be three-dimensional, users can adjust the angle and location of the goods through the mobile phone screen, to see its whole appearance.

For example, buying glasses in the online shopping platform which embed Augmented reality technology, users only open the front camera of phone or computer, select the attributes of the product you want, The computer will recognize the face and match it with the glasses, There is a true visual experience like wearing glasses, this operation is simple and convenient, not only to meet the user's freshness, but also it's very interesting.

**Augmented Reality Technology Applied in APP.** In the previous technology is not developed, unable to realize the interaction between real and virtual, now most of people use intelligent mobile phone, all with a camera, so the application of augmented reality technology is easy to achieve. Today, there are many software based on Augmented reality technology, for example, in education aspect ,pocket animal paradise is an example, Sunshine aquarium APP has achieve a combination of

navigation and virtual, All of this makes the original monotonous object become more interesting. Users according to their needs, use mobile phones to scan identification codes which printed on promotional items, and then computer system will export the already set stereo virtual image, the user can see the virtual image on the screen in the mobile phone and the real effect of combination, user can also move the virtual object's position and presentation angle, make the integrate degree of reality become more higher.

**Implementation Process.** Take Pocket animal paradise as an example, the user downloads and opens the corresponding augmented reality based APP, open camera function of mobile phone, scanning the special coding of goods by camera, select the virtual 3D images system has been programmed, integrate into the environment around the user, give us a feeling that virtual images exist in our world, to achieve the natural integration of virtual and reality. Some software can also be combined with positioning systems, track the user's moving trajectory in real space, to achieve the interaction between virtual model and user, reflects a better interactivity. Take layer as an example, users open mobile phone camera to take actual scene around the user, and then system will automatically identifies where the user is located, and push some useful information to user, such as bars, restaurants and other information around user. This way base on new technology will makes APP more dynamic, App is no longer monotonous, enhanced interactivity between software and users.

### **Application Prospect of Augment Reality Technology in Mobie E-Commerce**

**Market Trend of Online Shopping Based on Augmented Reality.** Technology at present, there are many online shopping platform, the competition is very fierce, the shop in the online shopping platform is more surplus, it's approaching and the red sea state. How to stand out among the many competitors?

First, there need to be innovative and have a bright spot, in this way can attract the attention of consumers, and Augmented reality technology can do that, strengthen interaction with consumers to arouse the curiosity of consumers. In the foreign, there are some case combine online shopping with Augmented reality technology, such as the Flow system launched by Amazon. Augmented reality technology is more inclined to experiential marketing, it can make online shoppers feel more real about commodity information, reduce time input, attract consumers eyeball. Therefore, online shopping based on augmented reality technology will become a new direction of the development of online shopping market.

**Advantage of Augmented Reality Technology in E-Commerce.** Augmented reality online shopping is different from traditional online shopping. The online shopping with the technology supports can reach real scene video display synchronized to Computer generated virtual content. Online shopping with Augmented reality combined with the real situation to allow consumers to produce immersive feeling. The important characteristics of Augmented reality make consumers' purchase intentions may be stronger. It has two advantages, firstly, Make consumer goods and ego linked together closely, secondly, product purchase process can be changed operation, for example, 360 degree panoramic view, the combination of consumer goods and real living environment, makes the purchase of consumer goods fun and authenticity greatly improved.

Based on user experience of novel Augmented reality technology, on the one hand can create relaxed environment, on the other hand, consumers and products can be zero distance docking, this will create a new era of advertising marketing, businesses use Augmented reality technology to carry out marketing activities can help to arouse the curiosity of consumers to actively participate in the activity.

**Disadvantages of Augmented Reality Technology Application.** In July 2016, Nintendo, Pokemon company and Google Niantic Labs company make a game which have add Augmented reality technology, Pokemon GO, it was very popular across the world once issued, Augmented reality technology slowly went into the public eye, The major gaming platforms and online shopping platform have followed it, However, the application of augmented reality technology is

still concentrated in the military, aerospace, medical and other aspects, the use of e-commerce platform and software APP is still just started, the awareness of augmented reality technology is not high, and augmented reality technology has many unresolved problems and many imperfections. Firstly, Augmented reality technology requires very high hardware, and the cost of software development is very expensive, it has long development cycle, secondly, In terms of Technology, The immaturity of technology leads to a low degree of integration between virtual and reality, users can not experience the real sense, But these disadvantage will be improved with the advances in technology.

**User's Psychological Acceptance of Augmented Reality Technology.** The Attention of Augmented Reality Online Shopping Attention is Stronger than Ordinary Online Shopping. According to the survey, the online shopping with Augmented reality can attract more consumer attention. The way of new media communication is an important way to attract attention, network marketing with Augmented reality technology is one of the new media advertising marketing, this new approach improves consumer attention and satisfy the consumer curiosity. Augmented reality technology also has a function that turn product sales into fun, so that consumers find pleasure in shopping. For example, this year double eleven, during the preheating stage, there are many games had aroused the curiosity of many consumers.

The Positive Attitude of Augmented Reality Online Shopping is better than the Traditional Online Shopping. According to the survey, consumers have optimistic attitude buy goods in the Augmented reality online shopping, attitude is an important embodiment of personal values in the consumption chain. Firstly, Augmented reality online shopping can combine online shopping with some attributes of consumers themselves, such as the shape of their houses, their own body, etc. This approach objectively improves the social presence of consumers, a good sense of social existence is an important part of the positive consumption attitude. Secondly, in the Augmented reality online shopping, the perception of consumer satisfaction and product related information determines the consumer's attitude toward consumption, Augmented reality technology has the ability to make product sales into fun activities. Creative marketing of butterfly and the glasses system of Atolles Opticiens let the public feel the fun of shopping, this kind of pleasure is one of the sources of positive attitude.

The Purchase Intention of Augmented Reality Online Shopping is Stronger than the Traditional Online Shopping. As research results show, consumers prefer to buy something in a shopping platform which based on Augmented reality. Firstly, the changes in consumer psychology, mainly focus on the concept of self, risk perception, perception of product attributes, etc. the psychological change is mainly reflected in the interaction between consumption and its own. In the past, the general online shopping just allows consumers to imagine their own products and their relationship, but Augmented reality online shopping allow yourself or your attributes and consumer goods to be synchronized in the same spatial relationship, Second, changes in consumer behavior, Augmented reality online shopping make shopping no longer limited in a mouse click process, but through the real operation of shopping to achieve the positive behavior of the expected shopping process. This behavior reflects the shadow of modern experiential marketing. Good experience has become one of the important measures for effective purchase.

## Summary

Nowadays, the technology become more and more perfect, Augmented reality technology is also more popular, the application prospects are also more and more broad. The application of augmented reality technology in mobile e-commerce, Augmented reality provides a sense of the actual experience for e-commerce, increasing the fun of shopping, e-commerce platform also provide more resources and development space for augmented reality technology, the combination of them, promote each other and develop together, as for how to play the role of augmented reality technology in e-commerce, whether it can produce greater benefits is still need further research, but as the feedback of Tmall GO game, the application prospect is very optimistic. At present, mobile augmented reality technology is not yet mature, many applications and technologies still need to be

improved, e-commerce companies still need to be cautious, e-commerce companies can cooperate with augmented reality companies, use your own resources and with the AR company's technical support, focus on developing one important things.

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