

The Effect of the Rise of Augmented Reality to Mobile Phone

Author: Yu Gu 16206516

Content

1.Today's achievement of Mobile AR.....	3
Game.....	3
Translation.....	5
Location.....	6
2.AR in Mobile Phone in the Future	6
Education	6
Trip.....	8
Shopping	9
3.The New Devices Will Be Introduced.....	11
Glass	11
1) Introduction	11
2) Bad Influence	12

Abstract:

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real-world are "augmented" by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory, and olfactory. The overlaid sensory information can be constructive (i.e. additive to the natural environment) or destructive (i.e. masking of the natural environment) and is seamlessly interwoven with the physical world such that it is perceived as an immersive aspect of the real environment. (Wikipedia, 2018) With the development of the mobile phone, people have more new needs to the mobile phones, and one of these needs is combination of the virtue and the reality. After the camera popularizing in nearly all of the phones, the possibility of the realization of Augmented Reality is becoming more and more great. Now, we will talk about the rise of Augmented Reality from three aspects. These three aspects are what the level that the Augmented Reality in the mobile phones has reached nowadays, what the future developing directions of the Augment Reality in the mobile phones, and what new devices will be introduced to help the Augmented Reality achieved the effect.

	occasion	devices	technology
AR	Half true Half fake	Phone, iPad, AR Glass	Lighting projecting
VR	fake	Head Devices	Deep interacting

1.Today's achievement of Mobile AR

AR has already influenced our mobile phones in the recent years. With the updating of our phones, many applications have already adapted to the concept of the AR to make our phone more useful and more entertaining. The three aspects game, translation and map has obviously shown the level to us.

Game

Today, more and more game companies have bet in the AR Gaming field. Thus, there are many mobile games about AR have been put in the Google Play and Apple Store. The new

game pattern has been welcomed by many young game players.



The first famous AR game may be Ingress which is developed by Niantic. Inc in 2013. This game is a location-based augmented-reality mobile game. This game is about a competition between two opposing factions. Some scientist in Switzerland have found some energy called XM that associated with the Shapers, a mysterious phenomenon or alien race. Within the game, human reactions to this discovery fall into two factions known as the Enlightened and Resistance. The Enlightened faction embrace the powers of XM to transcend mankind and believe their mission is to assist in the enlightenment of mankind by harnessing this energy. The Resistance faction see XM as a malicious force threatening humanity and believe their mission is to defend the human race by resisting the effects of XM. This game uses google map data, the current time data which is provided by the mobile devices and the compass that can help the player change the view. And the players win the game by occupy the portal in the game. And in the true situation, the portal can be monument, statues, and some famous sight-seeing. (Wikipedia, 2018)



The most famous AR game is **Pokémon Go**. It is an augmented reality mobile game developed and published by Niantic for iOS and Android devices. In the game, as players move within their surroundings, their avatars move within the game's map. Different Pokémon species reside in different areas of the world; for example, Water-typed Pokémon

are generally found near water. When a player encounters a Pokémon, it may be viewed either in AR mode or with a live rendered, generic background. AR mode uses the camera on the player's mobile device to display an image of a Pokémon as though it were in the real world. Players can take screenshots of the Pokémon they encounter either with or without the AR mode activated. This game also uses google map data, the current time data which is provided by the mobile devices and the compass that can help the player change the view. (Wikipedia, 2018)

Translation

When we are going abroad, we always meet some languages problems, especially in the



Japan, Korea and some countries whose main language is not widely used in many areas. So, we need a technology to help us see the translation language more directly. Thus, we can solve some problems more efficiently.

Samsung in this year unveiled the Galaxy S9, which has the ability to translate languages using the phone's camera with its Bixby Vision feature. It actually has taken a big step forward in the Galaxy S9. With the Bixby Vision, you can translate road signs, menus in the restaurants and other stuff in 53 languages, searches for images similar to the recognized object, find landmarks or information about close places with your current location recognition, read QR code and so on. (Murray, 2018)

Location

In 2016, Baidu Map has updated to 9.5.5 version, in this version, Baidu has added 'walking AR navigation', which will be helpful to the road nerd.



Open the Baidu Map, insert the destination in the search box. After you are in the navigation interface, you can see the 'AR Navigation' on the left. Besides voice and word reminding, the camera will document the real street view. This APP will also give you the virtual mark and guide you to the place that you want to go. And we do not need to see the road information repeatedly, which will help us save a lot of time.

2.AR in Mobile Phone in the Future

Education

In the future, Game will not only prepare for the entertainment, but help people learn as well. In many universities, in order to increase people's interest in learning some professional knowledge. Some professors have introduced the Augmented Reality to help students gain the better knowledge of the knowledge they will learn, especially in the field of architecture, where the model is really important.

Take Portuguese for example. In the last few years the number of applicants to Civil

Engineering courses in Portuguese Higher Education Institutions (HEIs) has decreased sharply. Some institutions face the challenging endeavor of motivating and engaging pre-university students in pursuing professional careers in Civil Engineering. Moreover, the recent financial and economic crisis and its impact on the Architecture, Engineering, Construction and Operations (AECO) sector, may have contributed to the paucity of candidates.

The introduction of new methodologies and practices in Engineering Education, especially designed to motivate young students, could improve and engage students in to the learning process. Augmented Reality (AR) interfaces have since been experienced in learning contexts in Engineering Education. These interfaces are usually presented in association with game scenarios. (Fábio Matoseiro Dinis, 2015)



An AR application of a building was presented to participants. In the trial, students had the objective of identifying the different design disciplines involved in the conception of the building. The AR application allowed participants to use mobile devices' cameras to recognize a precise image. This image was previously saved in a database and through the application, students could visualize and interact with an augmented model of the school. The application was programmed so that users could press different virtual buttons. Each button highlighted a different discipline of the building's project. (Fábio Matoseiro Dinis, 2015)

The AR technology in the mobile devices has helped the students increase the interest of the subject that they learn and let them gain a better understanding of the knowledge they learn. In the future, more and more applications like this will be used in education. This can not only be used in professional knowledge study, but in primary study, such as language learning. This technology can combine with Artificial Intelligence to help children finish basic language training. The AR technology can give children a true communication environment, which will make students feel that they are chatting with a real man. This will make students not fear the communication environment and make them show themselves better.

Trip

For gaining more knowledge about the world, more and more people want to go abroad to see something more interesting. In some big country, especially the U.S, Britain, France and China, when we want to know about some famous sites which we have already known, such as Lincoln Memorial, Washington Monument and Tian'anmen Square, we can input the name to Google and Baidu to get more knowledge about the site. However, when we go to other areas, and when we go to some sites which are not very famous as we think, even we cannot speak their name correctly, if we want to know more about the place and know more about the knowledge of the country, we need a method to help us gain the information more efficiently. On the other hand, if we really want to experience ancient culture, we can also use AR to help us revert the true scene to us to let us know what ancient people's life looks like. Thus, the AR in mobile devices will help us a lot.



In Italy, some famous sites have already used this technology to help people know about the ancient culture. Ancient Pompeii is a symbolic site for European cultural identity and archeology history. The designers based on 3D reconstruction of ancient frescos paintings for real-time revival of their fauna and flora, featuring groups of virtual animated characters with artificial life dramaturgical behaviors in an immersive, fully mobile AR environment to give the visitors. After that, this scene was blended by precise real-time registration and 3D modeling of realistic complete simulation of virtual humans and plants in a real-time storytelling scenario based on the environment. These virtual humans are completely with real-time body, speech, face expression and cloth simulation. The project was performed in a mobile and

wearable setup with marker less tracked camera and was implemented in real-time. (Zakiah Noh, 2009) However, this project should be implemented through HMD, which is not very convenient for the visitors to experience the local culture. If people can put the true scene in the mobile phones, everyone can see the scene at the same time, which will let more people understand the true scene.

For giving people a more convenient trip, the government of Seoul has put forward an app 'I TOUR SEOUL+'. This app has added AR function, which will help a stranger know about this city as well. The tourists only need to show the location that you stayed, and you can gain much useful knowledge about the good restaurant, famous sites and some information of the place that you have already stayed. This will give a great trip experience. (安福双, 2017)

AR in mobile phone in the field of tour has not been ripe yet. Some functions can be added in the app and mobile phones. At some time, when we hold up our smart phone, we can gain the information more directly. And our tour life will be much brighter at that time.

Shopping

Today, we do not need to go to shopping mall to buy something that we will not use at once, such as clothes, shoes and electronic devices. Therefore, some companies that rely on shopping business have risen up, such as Alibaba, Amazon and E-bay. Although the mechanism of shopping-return has been improved much, consumers also need some technology to help them gain the better shopping experience. For example, if you prepared to buy a pair of pants on AliExpress and you had already selected what you want, you really want to know whether it is right for you to wear. And at this time, you really hope that you can try this pair of pants as you can try it in the shopping mall. Therefore, AR technology may satisfy your need.

Online shopping with augmented reality is getting more and more easy in the mobiles especially on the iOS devices. In the iOS12 phone, has had AR Quick Look-a feature that allows products to be previewed in AR directly from Safari. For the past three years, Shopify has been exploring how AR / VR will change the way consumers shop. Last year, they showed how Apple's ARKit could be used to provide compelling AR commerce experiences. The main complexity was that ARKit needed to be run in an app. This meant that Shopify merchants looking to offer these experiences had to have their own unique mobile apps that customers would need to download.

With iOS 12's AR Quick Look, 3D models of products in the usdz file format can be uploaded directly to online Shopify stores and viewed in AR right within Safari, without needing to download a separate app.

Usdz files are also easily shareable, so if shoppers are looking to get a second opinion before purchasing, they can embed the virtual product in chat or email conversations.



At Unite, Shopify's annual partner and developer conference, Shopify announced the addition of new partners who will provide 3D modelling services for Shopify merchants. In light of Apple's announcement at WWDC, Shopify will continue to lower the barrier to AR commerce by creating an ecosystem that supports both the creation and storage of usdz files. And the user can have a better purchasing experience. (Daniel Beauchamp-Spotify, 2018)

And also, many retail companies have put forward their application to give people better purchasing experience. IKEA Place is a good example. This is retailer's first ARKit app that brings furniture objects out of the screen and places them in the real space. This Augmented Reality ecommerce app allows interaction of virtual products with the real world in entirely new ways, which was unimaginable till then. The highlight of IKEA app is that it allows users to bring furniture products home, before they actually buy it.

Swedish home goods giant - IKEA was among the early adopters of AR technology. This home furnishing company took a stride in the technology world to improve the online shopping experience. Users can now scan an empty piece of floor through iPhone or iPad's camera and place the selected product there. This gives users a real look and feel of the object in real world environment and helps them to make an informed buying decision.

In the light of Augmented Reality, the dynamic ecommerce market seems to be growing aggressively. This technology is adding a new feel to the customer experience by transforming monotonous browsing to an engaging and immersive shopping experience.

Advertisement

This is the rise of omnichannel shopping in true sense. Online shopping goes beyond to browsing through images and videos of models walking the ramp by bringing product to life in a 3D immersive environment. Such experiences have changed buyer's perception by transforming the way purchase decisions are made.

Ecommerce brands that have implemented AR feature in their app or website have noticed a significant decrease in number of return requests. When there is no guesswork, customers are quite sure about their purchase. This leaves little to no scope of returning the purchased items.

In the future, this technology will be used more broadly in the shopping field. It will introduce VR and other technology to give the person better purchasing experience. And Artificial Intelligence technology and Internet of Things will also be introduced to the shopping. At that time, people can not only buy what they like quickly, but gain the commodity information more conveniently. (Smith, 2018)

3.The New Devices Will Be Introduced

Glass



1) Introduction

The rise of new communication and information technologies has tremendously influenced how individuals communicate with one another and how companies interact with consumers. Nowadays, consumers are not just 'online' or 'always online'. Consumers are, due to mobile devices such as smartphones and tablets, always and everywhere online. An inspection of the latest developments by leading technology companies such as Microsoft, Google, and Facebook, reveals that the next progression in media technology could be what we call

Augmented Reality Smart Glasses. These smart glasses are wearable devices that meld both real and virtual information in the consumer's view field. Recent marketing and scholarly forecasts reveal that smart glasses are likely to be the next 'big thing' in the evolution of media.

Microsoft HoloLens, Google Glass (Project Aura), and EverySight are just three examples of commercially announced smart glasses. We define smart glasses as "wearable Augmented Reality (AR) devices that are worn like regular glasses and merge virtual information with physical information in a user's view field". According to this definition, Augmented Reality Smart Glasses use AR technologies within wearable media devices. Smart glasses capture the physical world with particular technologies (e.g., camera, microphones, GPS), and integrate virtual information that are gathered via mobile internet technologies or stored in the device. Smart glasses differ in various ways from other mobile and wearable technologies. Most important is the fact that they merge virtual and physical information while being worn rather than providing just a virtual reality. (Ro, 2016)

If we introduce the Smart Glasses to our Augmented Reality life, we can have the better experience of the AR. As what we have stated before, what we can see should through the phone screen, and what we can control should be through our finger, however, we cannot go into the phone screen, and cannot control the things more freely. If we use the smart glass, what we have seen can be transformed into the useful information more quickly, just like the things have already in the world, and what we can control is depended on our voice, just as entering a magic world. When we on the abroad trip, when we see the foreign the language, it will be translated to our local language. We can chat with our friends all the time. If you were ill and could not join a class and meeting, you could see the meeting and class situation more directly. And if we use the smart glass to enter the AR world, our world will become more colorful than we think.

2) Bad Influence

Just like a Chinese proverb saying, 'Everything is just like a sword. It has benefit and it has harm, too!' AR in glass will give us benefit and it will also give bad influence on our life.

First, children may be addicted to the glass, so their learning performance will have a bad tendency. And they will not focus on their study. On the other hand, it will be harmful to their health. When children play it on the road, they will not pay attention to the danger around them. The UK National Society for the Prevention of Cruelty to Children has published a parents' guide. It says that the game lacks adequate protection for children, such as safety reminders when contacting new users, hiding location by default for under 18s, and clear processes on safeguarding concerns. (Margaret, 2016)

Second, the government should know that criminal offender may make use of it to do something that is harm to people. First, just like the Blue Whale game in Russia. Some criminal offender will use the psychologic strategy to make people, especially the naïve teens to think something that may be dangerous to their life. When you see these situations visually, the

bad man will achieve their goals more quickly than people think. Moreover, in China, the telecommunication fraud is always happening, just because the privacy guarantee mechanism is not so right as people think. When the bad knows your information, they could play a role as a policeman and the government officer. In the glass you can see just a true man in front of you. Chinese people always think the seeing is more important than listening. Therefore, at the time when the government encourage the AR devices, government should also make sure that this kind of criminal may threat people's life and possession security.

Summary:

With the development of the mobile devices, AR element will be added more in our phone and other mobile devices. AR makes our game have more fun than we think. We do not need to stay in the house all the time and look at the screen only. We can walk around to play with the world and walk around to see the beautiful scenery around us. When we travel outside and see some information not written by our mother language, we can hold up our phone and see the information at once. In the process of the mobile AR development, it will also bring benefit to our children, children will see the world from a different angle using the AR perspective. They will have interest in the learning, especially in the field of language and model. It will bring the convenience to our travel. We can know the site information as quickly as we think. It will also give our shopping good experience. We can know what the commodity looks like when the commodity put in the room or wear on our body. Therefore, the rate of the returning will decrease. Finally, when the needs of the AR increase, some new mobile will be introduced, such as glass. However, we should always make sure that AR may harm to our life and possession. The government and the citizens should protect us from being attacked by illegal activity.

Reference

- Daniel Beauchamp-Spotify. (2018, 7 11). *AR shopping gets simpler with AR Quick Look on Shopify*. Retrieved from Medium.com: <https://medium.com/shopify-vr/ar-shopping-gets-simpler-with-ar-quick-look-on-shopify-c2716593823f>
- Fábio Matoseiro Dinis, A. S. (2015). *Virtual and Augmented Reality game-based applications to Civil Engineering Education*. Porto, Portugal: Dept. of Civil Engineering; Faculty of Engineering of the University of Porto, FEUP.
- Margaret, M. (2016, 8 9). *Margaret McCartney: Game on for Pokémon Go / The BMJ*. Retrieved from www.bmj.com: <https://www.bmj.com/content/354/bmj.i4306.long>
- Murray, C. (2018, 5 10). *Samsung S9: How to Translate Languages in Real Time*. Retrieved from Fonepaw: <https://www.fonepaw.com/tips/translate-languages-real-time.html>
- Ro, P. A. (2016). *Augmented reality smart glasses: an investigation of technology acceptance drivers*. Dearborn, MI 48128-1491, USA: College of Business, The University of Michigan-Dearborn.
- Smith, A. (2018, 4 20). *What's the influence of augmented reality on the ecommerce industry?*

- ITProPortal*. Retrieved from itproportal.com:
<https://www.itproportal.com/features/whats-the-influence-of-augmented-reality-on-the-ecommerce-industry/>
- Wikipedia. (2018, 12 9). *Augmented reality* - *Wikipedia*. Retrieved from Wikipedia:
https://en.wikipedia.org/wiki/Augmented_reality
- Wikipedia. (2018, 12 7). *Ingress (video game)* - *Wikipedia*. Retrieved from Wikipedia:
[https://en.wikipedia.org/wiki/Ingress_\(video_game\)](https://en.wikipedia.org/wiki/Ingress_(video_game))
- Wikipedia. (2018, 11 26). *Pokémon Go* - *Wikipedia*. Retrieved from Wikipedia:
https://en.wikipedia.org/wiki/Pok%C3%A9mon_Go#Pok%C3%A9mon_Go_Plus
- Zakiah Noh, M. S. (2009). *A Review on Augmented Reality for Virtual Heritage*. Skudai, Johor; Hangzhou, Zhejiang: Computer Science and Information System, Universiti Teknologi Malaysia; State Key Lab of CAD&CG, Zhejiang University.
- 安福双. (2017, 6 18). *AR 增强现实在旅游行业的五大应用场景*. Retrieved from 搜狐:
https://www.sohu.com/a/149838500_99899590