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## AUGMENTED REALITY

H. Mitev

Faculty of economics, Trakia University, Stara Zagora, Bulgaria

### INTRODUCTION

I believe that all will agree that 'reality' is great. We perceive it with all of our senses, for example with our eyes, but camera phones are also pretty good in capturing reality in detail. Internet is also great, but Internet and reality find it hard to cooperate with each other. Virtual reality is one of the applications which tries to connect the real world with the virtual one and more specifically to put our consciousness in a fictitious world. Yes, this is difficult and expensive indeed, although so far there has been some progress, especially in computer games. Their graphics are not close to the real one. And this is the point where the so-called 'augmented reality' comes in handy. But what exactly 'augmented reality' is? If you ever watched a movie with pursuit planes, there is no doubt that you've seen the pilot's view from the cockpit (that's actually a photo). But something is missing. Namely, the pilot needs additional valuable information about the surrounding world which is made possible by the 'augmented reality' technology. Recently, this technology has been implemented in mobile phones. The major aim of this article is to review the augmented reality and present the various technological tools for its implementation.

### THE TERM 'AUGMENTED REALITY'

The term 'augmented reality' (AR) is not easy to remember and has no Bulgarian counterpart when it comes to translation. This is about brand new technologies which are often unknown for the Western world. Actually what augmented reality really is? This is one of the latest innovations in the electronics industry. Augmented reality is the complementation of pre-recorded video, animation, 3D images, and text to real objects that surround us and that we use daily. It is about connecting computer graphics, animation and audio to the real world. This requires several things: a smartphone with a camera or a computer with a web-cam, internet connection and installed

software for augmented reality on our computer or smartphone. Some more sophisticated applications use the GPS and the compass of our mobile phone to determine our location.

### POSSIBLE WAYS TO USE AND IDENTIFY 'AUGMENTED REALITY':

The connection between the virtual information and the real objects is done in two ways:

1. By using a computer's web-camera – everything is displayed on the monitor. AR can be online via a website or offline from a local computer.
2. By using the camera of a smartphone – a higher class mobile phone with Android, iOS or Symbian operating system. Then everything is displayed on the on the screen of the smartphone.

The identification of Augmented Reality is also done in two ways:

1. With a marker called 'glyph'. It is black and white and in rare cases, a colored square. It is printed on paper or on some another surface which in the most cases is flat but it may be curvy as well, on a bottle for example.
2. Without a marker - by using an image of a real object or just a part of it.

Another method of connection and identification which is gaining popularity is the use of the so-called 'smart glasses', which lay digital content on the real world. 'Olympus' and NTT DoCoMo added to existing models small projection layer without an additional burden for users. On the one side of the glasses there is a small retinal display. It projects text and images directly in the peripheral vision of the glasses which allows the user to maintain an additional contact with what he actually sees.

The glasses are directly connected with a smartphone with installed 'Augmented reality' software and sensors for acceleration and direction. They make possible to understand where your eyes are directed at and to give additional information about the observed object.

Imagine that you are hungry and there are 3 restaurants right ahead of you. You are wondering which one to choose. In this situation your smartphone with installed augmented reality software will help you. Turning the camera towards the objects we get additional information – comments, recommendations or reviews by previous customers.

### COMPANIES THAT MANUFACTURE AND SELL APPLICATIONS FOR AUGMENTED REALITY

1. Total Immersion is a French company that has grown and established itself as a leader in providing Augmented reality solutions. It is a global company with offices in Los Angeles, Paris, London, Hong Kong and Sofia. It has over 70 partners all over the world. Its services are used by many global market leaders such as Mattel, McDonald's, Coca-Cola, Procter & Gamble. Their patented software AR technology called D'Fusion is pretty easy to use and it is intended for creative people and designers.

Total Immersion entered the Bulgarian market. It provided license to the digital agency called Tip Tops Interactive to use of the patented software platform D'Fusion. The partnership will enable Bulgarian companies to offer applications and IT services tightly linked with augmented reality, based on D'Fusion.

2. One of the applications which gained much popularity among iPhone fans is the so-called Layar reality browser. It works through the camera, the GPS of your mobile phone and Google Maps. Looking through the display of your mobile phone to various interesting objects and streets around you, you get information about them through Internet – directly to your phone's display.

3. LG are also attempting to enter the market for augmented reality applications with one of their models called Optimus 3D. Actually what LG really did was to partner with Wikitude. The result is the creation of the first 3D augmented reality browser for mobile phones which operates in real time. The 3D browser of Wikitude allows users to view locations, sites and attractions plus additional layers of virtual data – all of this in real time and in 3D. Currently, the browser will

give information about 100 million objects around the world and will be in 12 languages. Many mobile phones already support augmented reality applications like Layar and GraffitiGeo, but they are two dimensional. The two front cameras of Optimus 3D will display things and objects as close to reality as possible.

4. The biggest impressions makes an application developed by TAT, called 'identity through augmented reality'. Augmented ID is a concept, based on augmented reality technology. The application displays the digital entities of people who we meet in real life. Through smartphone and face identification software called Polar Rose, augmented ID enables us to find selected and prepared information in advance for the people around us.

### CONCLUSION

What would happen if you find out that someone intentionally sabotages your brand and you can do nothing about it? That's what happened to the company British Petroleum. An augmented reality application was created, which digitally lays on the company logo a damaged exhaust which symbolizes the damage which the company causes to the environment.

The conclusion is that not always 'new' equals to 'good' and not always 'good' is equivalent to 'positive result'.

Although the augmented reality isn't just a myth, it has a long way to go to become something we use in everyday life.

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