

Survey of Consumer Oriented AR

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Abstract— Augmented Reality (AR) is a fascinating concept. AR has slowly found varied and important applications in various Commercial and Consumer areas. Commercial AR is more sophisticated but expensive. There is still a long way before everyday consumer has access to sophisticated AR technologies. This paper surveys the current consumer oriented AR applications.

Keywords— augmented reality, mobile AR applications, layar, wiktitude, aurasma, QR codes, sports.

I. INTRODUCTION

Augmented reality (AR) is this technology to create a “next generation, reality-based interface” and is moving from laboratories around the world into various industries and consumer markets. AR supplements the real world with virtual (computer-generated) objects that appear to coexist in the same space as the real world. AR was recognised as an emerging technology of 2007, and with today’s smart phones and AR browsers we are starting to embrace this very new and exciting kind of human-computer interaction. [1]

Augmented reality (AR) is a live, copy, view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated

sensory input such as sound, video, graphics or GPS data [2]. AR allows the user to see the real world, with virtual objects superimposed upon or composited with the real world. Therefore, AR supplements reality, rather than completely replacing it. [4]

Why is Augmented Reality an interesting topic? Why is combining real and virtual objects in 3-D useful? Augmented Reality enhances a user's perception of and interaction with the real world. The virtual objects display information that the user cannot directly detect with his own senses. The information conveyed by the virtual objects helps a user perform real-world tasks. AR is a specific example of what Fred Brooks calls Intelligence Amplification (IA): using the computer as a tool to make a task easier for a human to perform.

II. CONSUMER ORIENTED AR

Consumers nowadays have started showing keen interest in AR. The majority of AR related services available to the consumer are through their smart phones and hand held devices. Figure 1 shows the use of augmented reality to help consumers in their activities.

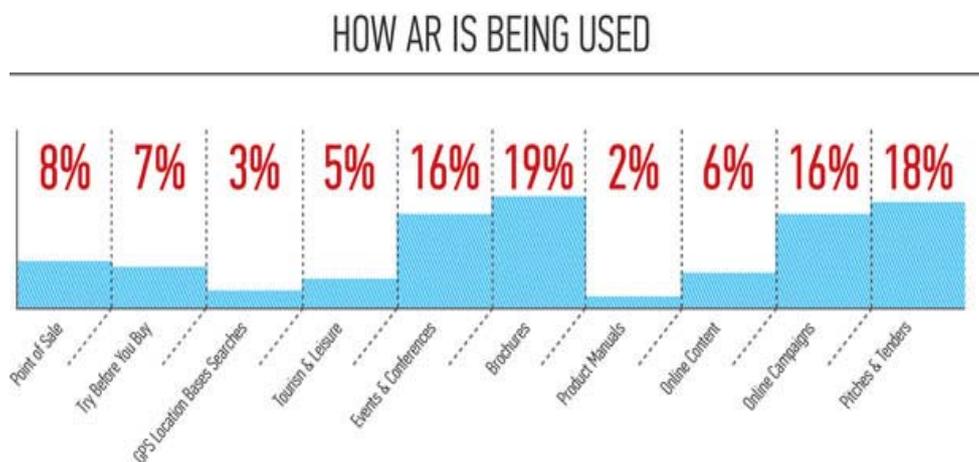


Figure 1 Current Trends and Usage of AR

III. MOBILE BASED AR APPLICATIONS

In this section there is an overview of some AR application available currently for the consumer.[7]

- **Google Goggles**

Uses image recognition technology to deliver information about various logos, landmarks, barcodes or QR codes. Add contacts with business cards, read novel summaries by scanning the title, all by taking its picture. Power of Google search engine with your camera. Recognize DVDs, CDs, paintings, books. Solves Sudoku puzzles..

- **Wikitude World Browser**

Smartphone AR encyclopaedia. Use camera to browse at your surroundings and get information on landmarks, restaurants and other places. Find hotels, ATMs with favourite cuisine of yours from Qype, Yelp, Trip Advisor, Hotels.com .

- **Layar**

Find services easily anywhere near you with this AR browser of your smartphone. Use camera to scan any building or street corners and Layar will bring you over 3000 layers of digital information to choose from. Layar even displays tweets from nearby areas. Scan magazines and “make the print world clickable”. Save favourites and share anywhere.

- **Augmented Car Finder**

“Augmented Car Finder” uses your camera to search for your vehicle and give you directions to it and then shows you the street address closest to the car.

- **Google Sky Map**

Point your smartphone to the sky and it tells you the constellation of stars you are looking at. Utilises Orientation, Location and Magnetic Sensors of the device.

- **Augmented Colors**

If you are fascinated with various color shades and fancy using them too, you can use this app to scan the color, discover its information and also save it too.

- **Augment**

With this app, imagining how certain objects like books, furniture, gadgets look in the environment around just became easier. This app allows you to visualize the object as an overlay on the real world.

IV. QR CODES

QR code (abbreviated from Quick Response Code) is the trademark for a type of matrix barcode (or two-dimensional barcode) first designed for the automotive industry in Japan. A barcode is a machine-readable optical label that contains information about the item to which it is attached. A QR code uses four standardized encoding modes (numeric, alphanumeric, byte / binary, and kanji) to efficiently store data; extensions may also be used.

The QR Code system has become popular outside the automotive industry due to its fast readability and greater storage capacity compared to standard UPC barcodes. Applications include product tracking, item identification, time tracking, document management, general marketing, and much more. A QR code consists of black modules (square dots) arranged in a square grid on a white background, which can be read by an imaging device (such as a camera) and processed using Reed–Solomon error correction until the image can be appropriately interpreted; data is then extracted from patterns present in both horizontal and vertical components of the image. [3]

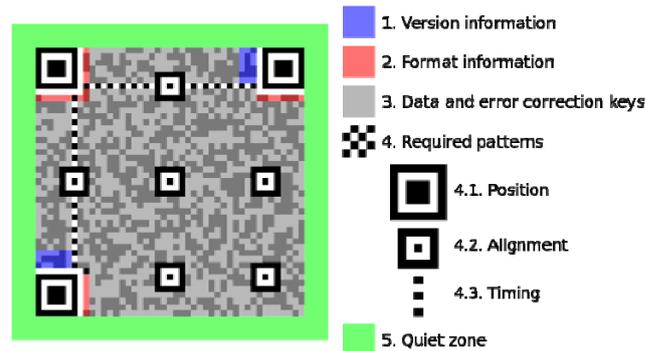


Figure 2 Layout of a QR Code



Figure 3: A typical QR code

V. NEWS AND SCORES

One of the most popular applications of AR. Live Scores are augmented over the live telecast of the sports event, for instance the cricket. Even replays and game decisions can use AR for the ease of the audience. For eg in the game of cricket the path of the ball is traced and displayed as an overlay.

Weather channels carry weather reports with fancy graphics. The reporter appears to stand in front of a huge screen where he describes the various weather conditions at different places. However, in reality there is no screen. The computer films the reporter and replaces the background and overlays it with the weather feed.



Figure 4 Weather Forecast

VI. GOOGLE GLASS

This project has been in the news lately. Under very early stages, Google Glass has managed to generate significant buzz. **Google Glass** is a wearable computer with an optical head-mounted display (OHMD). It was developed by Google with the mission of producing a mass-market ubiquitous computer. Google Glass displays information in a smart phone-like hands-free format. Wearers communicate with the Internet via natural language voice commands.

Features:

- Touchpad: A touchpad is located on the side of Google Glass, allowing users to control the device by swiping through a timeline-like interface displayed on the screen. Sliding backward shows current events, such as weather, and sliding forward shows past events, such as phone calls, photos, circle updates, etc.
- Camera: Google Glass has the ability to take photos and record 720p HD video. While video is recording, the screen stays on while it is doing so.
- Display: The Explorer version of Google Glass uses a Liquid Crystal on Silicon (LCoS), field-sequential color, LED illuminated display. [6]

However at this stage Glass is very much under Development and hence the cost is significantly high ,(~1500\$). It will be a while before it becomes commercially viable for the masses.



Figure 5. Sergey Brin with Google Glass

VII. CONCLUSIONS

Thus we have surveyed a few applications of consumer based AR technology. These technologies are getting more sophisticated day by day, and soon these technologies will become fairly common with the masses.

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