

# Google Glasses Impediments

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**Abstract:** Google Glasses are a pair of lenses just like interactive touchscreen primarily developed as an initiative to pervasive computing. Google Glasses have almost all the features of a smartphone and also of the Personal Computer. Google Glasses are obliging in browsing internet, clicking pictures, recording videos. Currently it is supportive and new technology to all individuals and celestial being for handicapped persons. This research paper will discuss some pros and cons of a Google Glasses and how it can be helpful and also detrimental to the society.

**Keywords:** Google Glasses, Technology, Security, GPS

## I. INTRODUCTION

Google Glasses are a sort of wearable technology, developed by Google as an initiative to pervasive computing[3]. Initial versions of Google Glass were titanium-framed glasses to show communications from your smartphone. We can do everything with Google Glasses which we can do with a normal smartphone with faster access like Wi-Fi connectivity, giving voice commands, searching through GPS, etc[4]. It is can help visually impaired person in a way like people wearing such eyewear may be able to recognize strangers in public using facial recognition,. It is based on the Android operating system with 5 megapixel of Camera and 16 GB storage. As technology is a consecrate for a human being, but also a beshrew so like other technology google glasses can also have major inadequacies. Prime of all is a security concern like taking photographs or recording videos of people without their knowledge. And if the Google Glass is stolen, then the information stored can be misused. But all depends on how we are using this technology with virtuous will, we can rule over this world. The idea of a new pioneering invention forecasting to change the lifestyle of persons, has a way of raising doubts within the culture[6]. Society was uneasy for the first computer and for the first smartphone, but they slowly became more accepting. Society will need to be open-minded for this product to be able to use it to its full benefit[7]. Google Glass will be the next big thing for centuries to come. Consumers will be able to have access to the world's information, interact with people while using their Google Glass and even more.

## II TECHNOLOGY

### USED

Google Glasses will undoubtedly communicate with mobile phones through Wi-Fi and display contents on the screen, respond to the voice commands of the user[11]. It mainly concentrates on the social networking, navigation and communication[3]. The video camera senses the environment and recognizes the objects and people around. The whole working of the Google glasses depends

upon the user voice commands itself[4]. Various technologies used by Google Glasses is as follows:

(a) **Ambient Intelligence:** It refers to electronic environments that are sensitive and responsive to the presence of people. Ambient intelligence is closely related to an intelligent service system in which technologies are able to automate a platform embedding the required devices for powering context aware, tailored and anticipatory services[10]. The concept of Ambient Intelligence provides a vision of the Information Society, where the stress is on greater user-friendliness, more efficient services support, user-empowerment, and support for human interactions. People are surrounded by intelligent, intuitive interfaces that are embedded in all kinds of objects and an environment that is capable of recognizing and responding to the presence of different individuals in a seamless, unobtrusive and often invisible way[12].

(b) **Wearable technology:** Wearable technology is a category of technology devices that can be worn by a consumer. Other wearable tech gadgets include devices that have small motion sensors to take photos and sync with your mobile devices. Wearable technology will have some form of communications capability and will allow the wearer access to information in real time. Data-input capabilities are also a feature of such devices, as is local storage[4]. Examples of wearable devices include watches, glasses, contact lenses, and caps, jewelry such as rings, bracelets, and hearing aid-like devices that are designed to look like earrings.

While wearable technology tends to refer to items which can be put on and taken off with ease, there are more invasive versions of the concept as in the case of implanted devices such as micro-chips or even smart tattoos[10]. Whether a device is worn on or incorporated into the body, the purpose of wearable technology is to create constant, convenient, seamless, portable, and mostly hands-free access to electronics and computers. The implications and uses of wearable technology are far reaching and can influence the fields of health and

medicine, fitness, aging, disabilities, education, finance, gaming and music. The goal of wearable technologies in each of these fields will be to smoothly incorporate functional, portable electronics and computers into individuals daily lives[10]. Prior to their presence in the consumer market, wearable devices were primarily used in the field of military technology and had the biggest implications for healthcare and medicine[12].

(c) **Eye Tap Technology:** An Eye Tap is a device that is worn in front of the eye that acts as a camera to record the scene available to the eye as well as a display to cover computer-generated imagery on the original scene available to the eye[5]. This structure allows the user's eye to operate as both a monitor and a camera as the Eye Tap intakes the world around it and enlarges the image the user sees allowing it to overlay computer-generated data over top of the normal world the user would perceive[1]. The Eye Tap is a hard technology to categorize under the three main headers for wearable computing like constancy, augmentation, mediation. for while it is in theory a constancy technology in nature it also has the ability to augment and mediate the reality the user perceives.

In order to capture what the eye is seeing as accurately as possible, an Eye Tap uses a beam splitter to send the same scene to both the eye and a camera. The camera then digitizes the reflected image of the scene and sends it to a computer. The computer processes the image and then sends it to a projector[10]. The projector sends the image to the other side of the beam splitter so that this computer-generated image is reflected into the eye to be superimposed on the original scene. Stereo Eye Taps modify light passing through both eyes, but many research prototypes only tap one eye[5].

(d) **Smart Grid Technology:** A smart grid is a modernized electrical grid that uses analogue or digital information and communications technology to gather and act on information, such as information about the behaviors of suppliers and consumers, in an automated fashion to improve the efficiency, reliability, economics, and sustainability of the production and distribution of electricity[10]. Smart grid is a generic label for the application of computer intelligence and networking abilities to a dumb electricity distribution system. Smart grid initiatives seek to improve operations, maintenance and planning by making sure that each component of the electric grid can both talk and listen. Another major component of smart grid technology is automation[11].

(e) **Augmented Reality:** Augmented reality is a live direct or indirect view of a physical, real-world environment whose elements are augmented by computer-generated sensory input such as sound, video, graphics or GPS data[10]. It is related to a more general concept called mediated reality, in which a view of reality is modified by a computer. As a result, the technology

functions by enhancing one's current perception of reality. In contrary, virtual reality replaces the real world with a simulated one[10]. Augmentation is conventionally in real-time and in semantic context with environmental elements, such as sports scores on TV during a match[11]. With the help of advanced AR technology the information about the surrounding real world of the user becomes interactive and digitally manipulable. Artificial information about the environment and its objects can be overlaid on the real world

### III WORKING OF GOOGLE GLASSES

There are a few different ways to control Google Glass. One is by using the capacitive touch pad along the right side of the glasses. The touchpad responds to changes in capacitance, which is essentially a weak electrostatic field generated across the screen. When your finger makes contact with the panel, a controller chip detects the resulting change in electric capacitance and registers it as a touch. Swiping your finger horizontally allows you to navigate menus on the device. Swiping downward on the touch pad backs you out of a choice or, if you're at a top-level menu, puts the glasses in sleep mode[7].

Another way to control Google Glass is through voice commands. A microphone on the glasses picks up your voice and the microprocessor interprets the commands. As of early 2014, the processor in the Explorer version of Google Glass is from Texas Instruments. It's an Open Multimedia Applications Platform chip (OMAP). These chips belong to a larger classification of microchips called systems on chip. That means there are multiple components working together[10].

The main circuit board also houses a SanDisk flash drive for memory --16 gigabytes' worth of storage, though only 12 gigabytes are available to the user. A company called Micron Memory (formerly known as Elpida) supplied the dynamic random access memory (DRAM) chip. These chips provide not only storage for media and apps, but also the memory that the microchip requires to run programs on the Glass[6].

While you can use Google Glass to take photos and videos without any connection to the outside world, to get the most from the product you'll need to connect to the Internet[11].

#### **Start tap:**

To start using Google Glass, you tap the frame of the glasses and you are taken to the home screen. You don't see a bunch of icons like on smartphone home screen, just a simple overlay box that carries any information and the wallpaper is actually the real-life scene you're looking at[1].

#### **Video Content Search:**

With the arrival of corporate video coming from Glass, there will be a growing problem of how to find specific content within a rapidly expanding video library.

Traditionally, video content search has been limited to a small amount of manually-entered metadata, and generally required the viewer to either watch an entire video, or skip back and forth by hunting through the video's timeline[11]. This problem is compounded at work, where corporate videos often run 60 minutes or longer. Considering that the average knowledge worker spends 19% of the work week simply searching for information to do his or her job effectively, the ability to quickly and efficiently locate content will increasingly become critical to improving workforce productivity. To meet this need, there are new video search tools entering the market that use Automatic Speech Recognition ASR and Optical Character Recognition OCR technology to automatically timestamps and index every word spoken or displayed on-screen. Searching for a word or phrase produces results with links to specific moments in the video where those words appear. Viewers can then instantly fast-forward to the exact point in the video that contains the search term, accessing information within video as easily as they do within an email or documents today[12].

#### **Camera:**

Google Glass is making it easier than ever to capture a task, demonstration, or event from different perspectives. This capability opens up new opportunities for knowledge sharing in a range of fields including healthcare, engineering, energy, real estate, and construction. While the advantages of seeing an intricate procedure from multiple angles are obvious, finding a way to knit all of this video together has traditionally been a challenge[8]. In the past, it is required a team of professionals and expensive equipment to record the procedure, and a videographer to manually synchronize the feeds and switch between various camera angles. Today, new video platform software that supports multi-camera video recording, editing and viewing enables organizations to automatically combine the video captured from multiple Google Glass wearers without the need for expensive and time-consuming video post-production[8].

#### **Video Analysis:**

The types of video that can uniquely be captured by Glass, such as point-of-view (POV) reports from the field and POV demonstrations of proficiency, create new opportunities for businesses to ensure compliance and get insights from a globally distributed workforce. Doing so requires analytics and reporting that are built specifically for the needs of video[8].

For other types of organizations, like retailers whose business depends on the success of front-line staff, POV video enables these employees to visually demonstrate proficiency with key processes and share best practices[8]. Management can then use analytics to view aggregate data on staff completion rates. Imagine the opportunities for continued improvement in learning and development if, for example, Starbucks management could see a

dashboard, updated daily, showing the percentage of baristas around the world who have demonstrated the ability to correctly prepare a soy latte, discuss the flavor profiles of seasonal and small-batch roasts, or troubleshoot common issues with the company's smartphone-based app payment system[12].

#### **Video management:**

As businesses seek to better leverage Glass and other smartphones and tablets, they will need to ensure that videos are easy to share, discover, and view from any device. Too many organizations have invested in video only to see usage falter because they failed to plan for adequate storage, file conversion, or other unique aspects of enterprise video content management. In the past, these technical considerations required the use of custom, internally-built file systems[8]. Today, a new class of enterprise software called video, content management systems VCMS is dramatically simplifying this aspect of working with business video. A modern VCMS addresses three major challenges of managing mobile and POV video. First, a VCMS enables video files in any format to be uploaded and shared from a central, secure repository. This means that, with a few clicks, video captured with Glass or with any of the other wearable devices currently in the market can be distributed to colleagues around the world. Second, a VCMS will automatically convert every video captured with wearable and mobile devices into formats that can be viewed on any PC, Mac, tablet or smartphone, regardless of whether the device is hardwired to a gigabit Ethernet connection or receiving video wirelessly over 4G[10]. Third, a VCMS uses advanced technologies to enable searching inside videos without depending on users to curate and tag a rapidly growing library. Video content management systems, multi-camera recording, inside-video search, and video analytics are already proven in the field of academia, where lecture and lab recording have been a fact of life for more than a decade[8]. Now, as these technologies converge with the wave of wearables led by Glass, they will open up a range of new opportunities in the enterprise.

### **IV. APPLICATION OF GOOGLE GLASSES**

#### **Recording Videos:**

Just say the word and Google Glass will take a picture or record a video, you will never have to touch the hardware. The photos and videos will be stored on the 4GB flash memory of the device, and can also be shared on social networking websites or emailed[4].

#### **Text messages:**

Google Glass will show you text messages as well as emails you receive and allow you to reply to them via voice commands.

#### **Browsing:**

If you are in the habit of Googling things a lot, you will

find that your task has been made easier by the new Glass. You simply need to ask a question and the device will pull the answer from the internet. For example, you can ask when Red Fort was built or to give you a few photographs of the monument and the device will provide appropriate replies on the small screen in front of your eye.

#### **Translate:**

This is a neat feature that may come in handy when you travel abroad. You simply need to ask Google Glass to translate a phrase or sentence from one language to another and it will speak that out.

### **V. SECURITY CHALLENGES TO GOOGLE GLASSES**

#### **Hacking Attack:**

Just by getting Glass to see a malicious QR code, an attacker could force a connection to a malicious Wi-Fi or Bluetooth connection, then eavesdrop on all communications. Admittedly, the attack wouldn't have triggered a countdown to global doom, but it did highlight the automated, promiscuous network-connecting habits of mobile devices, Glass included[9].

Therein lies a problem with wearable computing devices: They lack either physical or virtual keyboards, and thus require a relatively greater degree of automation than your average Android device or iPhone. With that automation, however, comes the risk that the device may automatically do something bad, from either an information security or privacy perspective. Unfortunately, as the Glass QR vulnerability patched by Google in June -- illustrates, wearable computing faces still some tricky security and privacy questions. Furthermore, useful solutions to these problems may not yet be on hand.

One problem is user authentication. For starters, unlike a smartphone, Google Glass doesn't offer access restrictions based on passwords or a PIN[2]. That means a thief could easily access any Google account tied to a stolen device[9].

#### **Piracy Concern:**

Google Glass is a wearable computer that looks like a pair of glasses, except it has a small prism display that projects images to the wearer's right eye. The device offers much of the same functionality as smartphones, allowing people to watch movies, check emails, and take photos, and record audio and video[2]. Unlike smartphones, however, the device is easily accessible. Glass wearers who want to, say, watch a video clip, need not fish a phone out of their pockets.

Glass also may record events more unobtrusively than smartphones do. Wearers need only give a verbal command or press a button at the top of the device to

start recording. People who want to take photos can do so by winking with their right eye[9]. Google Glass also can be outfitted to prescription lenses. Wearing a device with the capability to record video was inappropriate at the movies. The National Association of Theatre Owners said last May that it expects to develop policies regarding the use of Google Glass in theaters. Glass wearers who become accustomed to reflexively capturing their lives with the devices could end up violating those laws without realizing it[2]. While the same could be said for smartphone users, most people don't walk around with their phone's video camera already pointed at a subject.

### **VI. BARRIERS TO GOOGLE GLASSES**

Google Glass is an innovative, unpolished technology. But it is a fundamental flaw: Designed to be worn on the face throughout the day, Glass is a barrier between users and the real world around them.

For those who have somehow avoided the hype, Glass is the new computer from Google that's shaped like an eyeglass frame.

Glass does some very cool things and shows what a wearable computer might look like and how it might work. But both the hardware and the software need a lot of polishing, and no matter how much Google improves Glass, who want to constantly wear a computer on their head[2].

The Glass is designed around a display that's contained in a small, clear box connected to the device's frame just above a user's right eye. Users interact with Glass either by talking to it or by swiping or tapping its touch-sensitive temple. Glass responds by displaying information on its screen or by transmitting sounds and words to your ear through a speaker that uses bone-conduction technology.

#### **Comfort:**

When text appears in the interface, it simply overlays the rest of what the user sees. But a test drive reveals that the interface is, at present, a smallish prism-based projection just above the user's right eye. Looking up at the display is fairly uncomfortable, and this reporter found himself squinting to take in the information on the projection. While Glass owners at the conference, said that they liked wearing the device, less intrepid technology users will calculate the inconvenience/reward tradeoff differently.

#### **Battery Backup:**

I/O, battery life has not been improving at the same rate as processors have shrunk. Currently, the Glass battery lasts about 5 hours, the company has said not the 10 or 12 hours that would mean users could leave their smartphones at home. That may not matter much to tech geeks who travel with a bagful of devices, but it will matter for average users.

### Health Concern:

The health effects of cellphone use remain an open question, but Glass will open it still further by dramatically increasing the amount of time the user is exposed to electromagnetic radiation sourced next to the head.

### Walking Spectacle:

Earing Glass is equal to being a human in-store demo. The Explorers talked about how, during the course of an average day, dozens of people approach them, wanting to ask questions about Glass, try on their pair, and otherwise make a big deal of their special status. That's fine if you're an extrovert, but, for most people, it would become annoying after about the 50th day of nonstop interactions with puzzled strangers, asking to borrow the computer on your face for an Instagram selfie.

### Price:

Google Glass may be far more affordable than the cumbersome tele health carts or surgical cameras currently in vogue, but for the buy-in to be universal, the purchase price has to be lower. Although it's not quite yet for sale the fancy pair of specs is nearly four times the price of other popular mobile devices[11]. And if you wear glasses, a prescription pair will run you an extra \$250.00. For Glass to have some skin in the game, Google will have to get competitive when it comes to cost comparison.

## VII. CONCLUSION

Google Glass faiths to be one of the latest and most ground-breaking technologies in current times. The world of wearable computers and augmented reality has barely been introduced, and Glass intends to be an innovator in this field in the same way that the iPod was in the electronic music player industry. Although Google Glass is still in the development process and far from the production phase, there are already numerous of capabilities and applications that could be very useful for consumers, such as live video and data streaming. Users will be able to utilize email, video chat such as Skype, and social networking services such as Twitter and Facebook. However, not all is perfect with Google Glass. The ever-present fear of security threats, such as theft and malware, must also be taken into consideration. Some precautions have already been taken to thwart thieves; however, steps of protection against malware have not yet been discussed by Glass' designers. There are also potential ethical problems, such as privacy issues that may come up with the use of Google Glass. While production and sale of Google Glass for the public will not occur for at least a few years, many consumers will be resentfully waiting for the chance to get their hands on one. Google Glass will definitely be a very exciting new development in the field of information technology, and will have a significant

impact on the direction that the technology industry follows in the future.

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