A

REPORT

ON

GOOGLE GLASS

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TABLE OF CONTENT

LIST OF FIGURES

ABSTRACT ON GOOGLE GLASS

Google Glass is a tool with which we can do various advancements in present technology. Few examples are driverless cars, GPS tracking systems and many such others. This role of Google Glass in relation to a possible contribution to network surveillance. The privacy has become increasingly limited throughout the past decades due to the rapid rise of technology and social media. From the fourth Amendment to George Orwell's Nineteen Eighty-Four, society is full of warnings in regards to technology and surveillance's collaboration. This paper will investigate the possible newest link in this collaboration, Google Glass, as well as provide a current status on network surveillance and the subsequent effects. To answer whether Glass is here to improve our everyday life or simply to improve Google's database, selected theories are applied to analyze and interpret Glass' possibilities and potentials in regards to network surveillance. Distrust towards Glass is determined and Google CEO Vice President's arguments pave the way for discussion. His viewpoint is compared to the hypothetical scenario in Orwell's Nineteen Eighty-Four, it is then discussed whether the possible outcome of Glass will move us closer to the ideas presented in Orwell's dystopian novel. Through the use of before mentioned theories and analysis, it is concluded that Glass has a feasible viability to contribute to network surveillance.

I want to discuss about how google glass works, various Specifications of google glass, advancements possible with google glass and other advantages

There are certain requirements for google Glass and certain positive and negative points .So, briefly discuss about such points and how we overcome to these points. Like for accurate working google glass requires WI-FI and bluetooth and very high speed internet (4G).

So, this gives us idea to use google glass and how we can standardize our life with this gadget.

CHAPTER 1

INTRODUCTION

1.1 Virtual reality (VR):

Virtual reality is a term that applies to computer-simulated environments that can simulate physical presence in places in the real world, as well as in imaginary worlds. It covers remote communication environments which provide virtual presence of users with the concepts of tele presence and tele existence or a virtual artifact (VA). The simulated environment can be similar to the real world in order to create a life like experience.

Virtual reality is often used to describe a wide variety of applications commonly associated with immersive, highly visual, 3D environments. The development of CAD software, graphics hardware acceleration, head mounted displays, database gloves, and miniaturization.


Figure 1.1 Virtual reality

1.2 Augmented reality (AR):

Augmented reality is a live, direct or indirect, view of a physical, real-world environment whose elements are augmented by generated sensory input such as sound, video, graphics or GPS data. It is related to a more general concept called mediated reality, in which a view of reality is modified (possibly even diminished rather than augmented) by a computer.

As a result, the technology functions by enhancing one's current perception of reality. By contrast, virtual reality replaces the real world with a simulated one. Augmentation is conventionally in real-time and in semantic context with environmental elements.
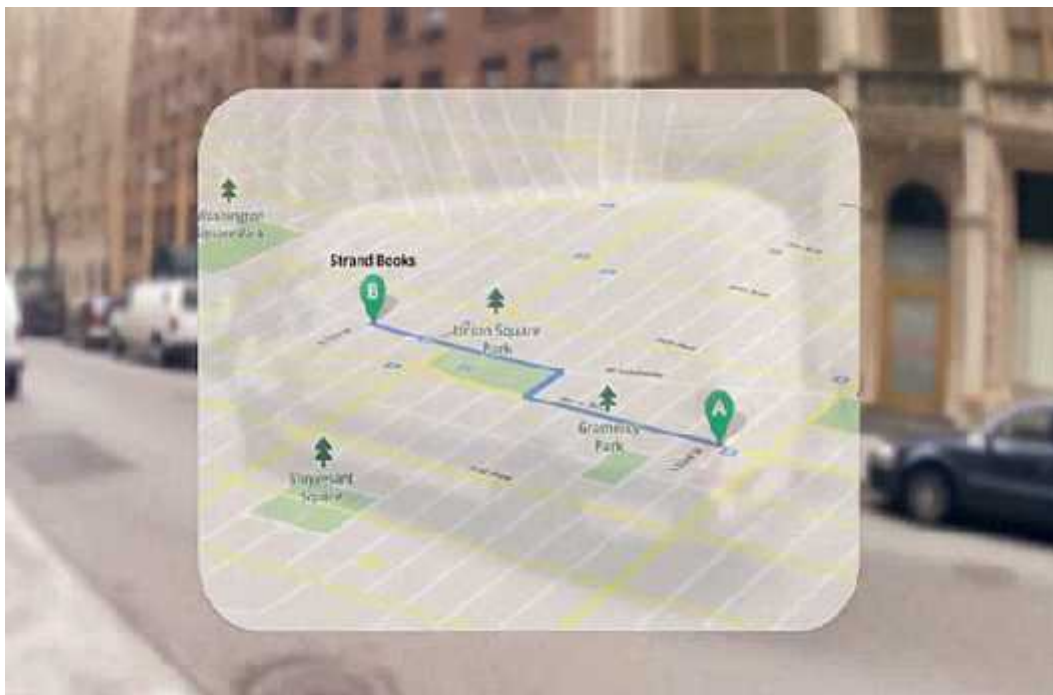
Figure: 1.2 augmented reality

1.3 Project Glass:

Project Glass is a research and development program by Google to develop an augmented reality head-mounted display (HMD). It is part of the Google X Lab, which works on other futuristic technologies. The intended purpose of Project Glass products would be the hands-free displaying of information currently available to most smart phone users, and allowing for interaction with the Internet via natural language voice

commands. The functionality and physical appearance (minimalist design of the aluminum strip with 2 nose pads) has been compared to Steve Mann's Eye Tap, which was also referred to as "Glass" ("Eye Tap Digital Eye Glass", i.e. uses of the word "Glass" in singular rather than plural form "Glasses").

Google Glass (styled "GLASS") is a wearable computer with an optical head mounted display (OHMD) that is being developed by Google in the Project Glass research and development project, with a mission of producing a mass-market ubiquitous computer. Google Glass displays information in a smartphone-like hands-free format that can communicate with the Internet via natural language voice commands.

While the frames do not currently have lenses fitted to them, Google is considering partnerships with sunglass retailers such as Ray-Ban or Warby Parker, and may also open retail stores to allow customers to try on the device. The Explorer Edition cannot be used by people, who wear prescription glasses, but Google has confirmed that Glass will eventually work with frames and lenses that match the wearer's prescription; the glasses will be modular and therefore possibly attachable to normal prescription glasses.

Glass is being developed by Google X, which has worked on other futuristic technologies such as driverless cars. The project was announced on Google+ by Project Glass lead Babak Parviz, an electrical engineer who has also worked on putting displays into contact lenses; Steve Lee, a product manager and "geolocation specialist"; and Sebastian Thrun, who developed Udacity as well as worked on the autonomous car project. Google has patented the design of Project Glass.

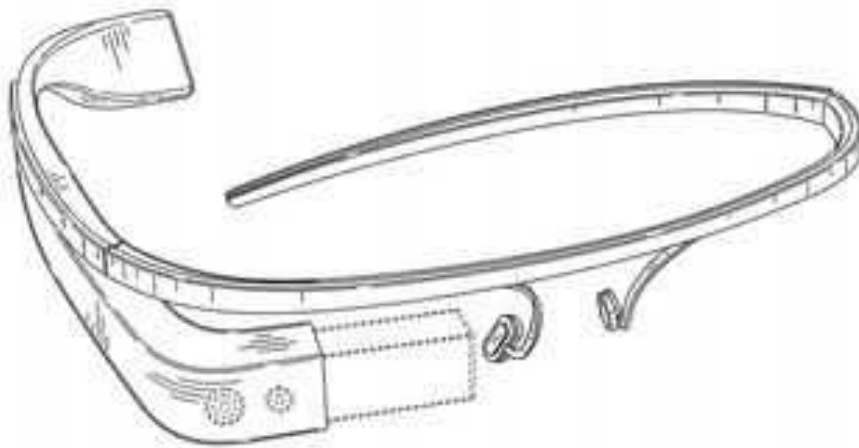**Google Glass**

Figure: 1.3 Google glass

Although head-worn displays for augmented reality are not a new idea, the project has drawn media attention primarily due to its backing by Google, as well as the prototype design, which is smaller and slimmer than previous designs for head- mounted displays.

CHAPTER 2

OVERVIEW

As per many reports, Google is expected to start selling eyeglasses that will project information, entertainment and, this being a Google product, advertisements onto the lenses. These glasses will have the combined features of virtual reality and augmented reality.

The Google Glasses can use a 4G cell connection to pull in information from Google's mountain of data and display info about the real world in augmented reality on the lens in front of your eye. As you turn your head you'll get information about your surroundings and nearby objects from Google Goggles, info on buildings and establishments from Google Maps, even your friends' nearby check-ins from Latitude. The company has no plans to sell ads into your newly augmented view of the world, but will consider it if the product really catches on.

Figure 2.1 Overview of Google Glass

The glasses are not being designed to be worn constantly — although Google engineers expect some users will wear them a lot — but will be more like smart phones, used when needed, with the lenses serving as a kind of see-through computer monitor.

Google glasses are basically wearable computers that will use the same Android software that powers Android smart phones and tablets. Like smart phones and tablets, the glasses will be equipped with GPS and motion sensors. They will also contain a camera and audio inputs and outputs.

Several people who have seen the glasses, but who are not allowed to speak publicly about them, said that the location information was a major feature of the glasses. Through the built-in camera on the glasses, Google will be able to stream images to its rack computers and return augmented reality information to the person wearing them. For instance, a person looking at a landmark could see detailed historical information and comments about it left by friends. If facial recognition software becomes accurate enough, the glasses could remind a wearer of when and how he met the vaguely familiar person standing in front of him at a party. They might also be used for virtual reality games that use the real world as the playground.

CHAPTER 3

TECHNOLOGIES USED

3.1 Wearable Computing:

Wearable computers, also known as body-borne computers are miniature electronic devices that are worn by the bearer under, with or on top of clothing. This class of wearable technology has been developed for general or special purpose information technologies and media development. Wearable computers are especially useful for applications that require more complex computational support than just hardware coded logics.

Glass demo resembles a pair of normal eyeglasses where the lens is replaced by a head-up display. Around August 2011, a Glass prototype weighed 8 pounds and the device is now lighter than the average pair of sunglasses. In the future, new designs may allow integration of the display into people's normal eyewear.

According to several Google employees, the Glass was initially projected to be available to the public for "around the cost of current smartphones" by the end of 2012, but other reports stated that the Glass was not expected to be available for purchase by then.

Figure 3.1 Wearable computing

One of the main features of a wearable computer is consistency. There is a constant interaction between the computer and user, i.e. there is no need to turn the device on or off. Another feature is the ability to multi-task. It is not necessary to stop what you are doing to use the device; it is augmented into all other actions. These devices can be incorporated by the user to act like a prosthetic. It can therefore be an extension of the user's mind and/or body.

3.2 Ambient Intelligence:

Ambient Intelligence (AmI) refers to electronic environments that are sensitive and responsive to the presence of people. Ambient intelligence is a vision on the future of consumer electronics, telecommunications and computing.

Figure 3.2 Ambient Intelligence Environments

In an ambient intelligence world, devices work in concert to support people in carrying out their everyday life activities, tasks and rituals in easy, natural way using information and intelligence that is hidden in the network connecting these devices.

As these devices grow smaller, more connected and more integrated into our environment, the technology disappears into our surroundings until only the user interface remains perceivable by users.

3.3 Smart Clothing:

Smart clothing is the next generation of apparel. It is a combination of new fabrication technology and digital technology, which means that the clothing is made with new signal-transfer fabric technology installed with digital devices. Since this smart clothing is still under development, many problems have occurred due to the absence of the standardization of technology. Therefore, the efficiency of technology development can be strengthened through industrial standardization.

This study consists of three phases. The first phase is selecting standardization factors to propose a standardization road map. The second phase is to research and collect related test evaluation methods of smart clothing. For this, we selected two categories, which are clothing and electricity/electron properties. The third phase is establishing a standardization road map for smart clothing. In this study, test evaluations have not yet been conducted and proved. However, this study shows how to approach standardization. We expect that it will be valuable for developing smart clothing technology and standardization in the future.

Figure 3.3 Smart Clothing

3.4 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 superimpose a computer-generated imagery on the original scene available to the eye. 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 augments the image the user sees allowing it to overlay computer-generated data over top of the normal world the user would perceive. The Eye Tap is a hard technology to categorize under the three main headers for wearable computing (Constancy, Augmentation, and 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.

Figure 3.4 Eye Tap Technology

3.5 Smart Grid Technology:

A smart grid is an electrical grid that uses 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.

3.6 4G Technology:

4G is the fourth generation of cell phone mobile communications standards. It is a successor of the third generation (3G) standards. A 4G system provides mobile ultra-broadband Internet access, for example to laptops with USB wireless modems, to smart phones, and to other mobile devices.

Once Glass is activated, wearers can say an action, such as "Take a picture", "Record a video", "Hangout with [person/Google+ circle]", "Google 'What year was Wikipedia founded?'", "Give me directions to the Eiffel Tower", and "Send a message to John" (many of these commands can be seen in a product video released in February 2013).For search results that are read back to the user, the voice response is relayed using bone conduction through a transducer that sits beside the ear, thereby rendering the sound almost inaudible to other people.

- 4G is the fourth generation of cell phone mobile communications.

- 4G Technology is basically the extension in the 3G technology with more bandwidth and services offers in the 3G.
- This system provides higher data rates of 100 Mbps in mobility to 1 Gbps while stationary.

Figure 3.5 4 G Technology

4.6Android Operating System:

Figure 3.6 Android Operating System

Android is a Linux-based operating system for mobile devices such as smart phones and tablet computers, developed by Google in conjunction with the Open Handset

Alliance. Android is open source and Google releases the code under the Apache License. This open source code and permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers. Additionally, Android has a large community of developers writing applications ("apps") that extend the functionality of devices, written primarily in a customized version of the Java programming language. In October 2012, there were approximately 700,000 apps available for Android, and the estimated number of applications downloaded from Google Play, Android's primary app store, was 25 billion.
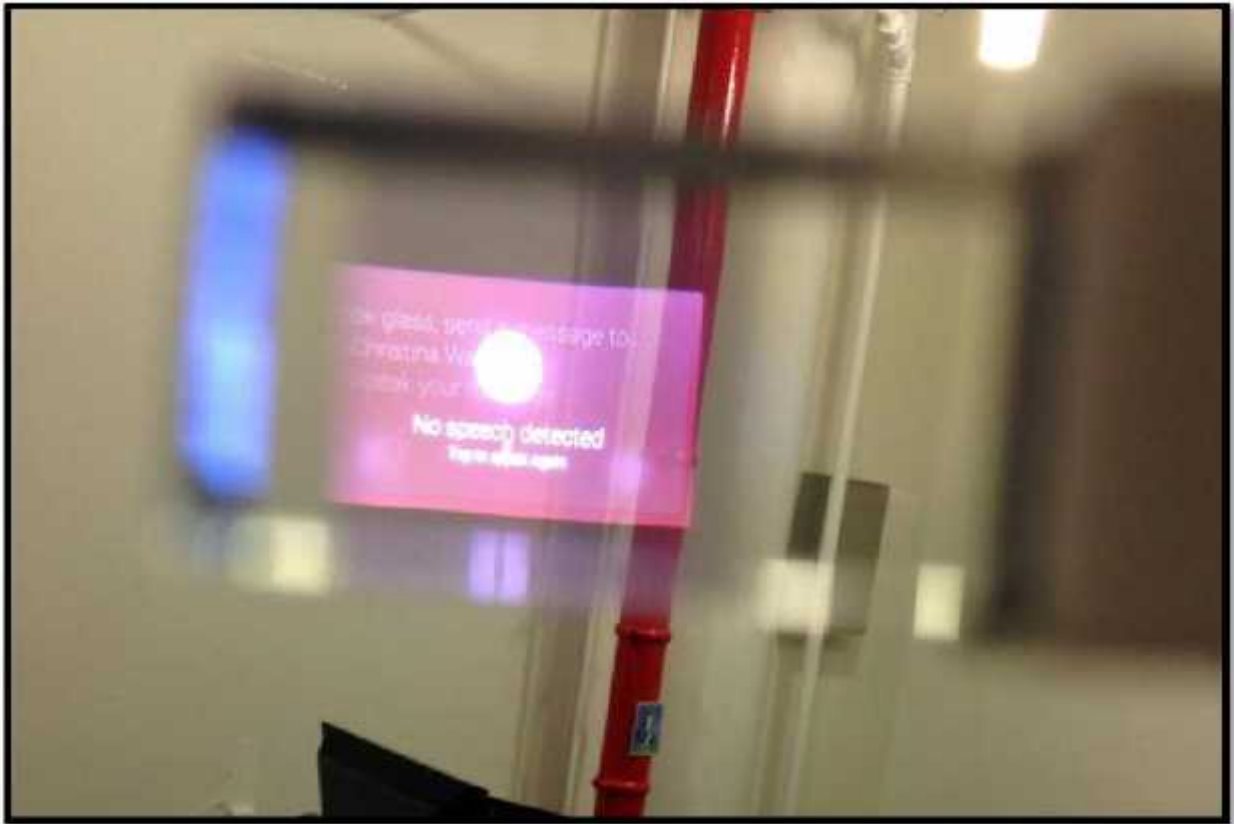
CHAPTER 4

DESIGN

4.1 Video Display:

Its features with the small video display that is used to display the pop up hands free information.

Figure 4.1 Video display of Google Glass

Figure 4.2 Display from glass

4.2 Camera:

It also has the front facing video camera with which photos and videos can be taken in a glimpse.

Figure 4.3 Camera of Google Glass

4.3 Speaker:

Google glasses are designed to be hands free wearable device that can be used to make or receive calls too. So a speaker is also designed by the ear.

Figure 4.4 Speaker of Google Glass

4.4 Button:

A single button on the side of the frame sophisticates the glasses to work with the physical touch input.

Figure 4.5 Button of Google Glass

4.5 Microphone:

A microphone is also put in, that can take the voice commands of the wearer of user. This microphone is also used for having telephonic communication. On April 15, 2013, Google released the Mirror API, allowing developers to start making apps for Glass. In the terms of service, it is stated that developers may not put ads in their apps or charge fees, a Google representative told The Verge that this might change in the future.

Many developers and companies have built applications for Glass, including news apps, facial recognition, photo manipulation, and sharing to social networks, such as Facebook and Twitter.

On May 16, 2013, Google announced the release of seven new apps, including reminders from Evernote, fashion news from Elle, and news alerts from CNN. Following Googles XE7 Glass Explorer Edition update in early July 2013, evidence of a "Glass Boutique", a store that will allow synchronization to Glass of Glassware and APKs, was noted.

Version XE8 made a debut for Google Glass on August 12, 2013. It brings an integrated video player with playback controls, the ability to post an update to Path, and lets users save notes to Evernote. Several other minute improvements include volume controls, improved voice recognition, and several new Google Now cards.

CHAPTER 5

WORKING

How does it Work…?

The device will probably communicate with mobile phones through Wi-Fi and display contents on the video screen as well as respond to the voice commands of the user.

Google put together a short video demonstrating the features and apps of Google glasses. It mainly concentrates on the social networking, navigation and communication.

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.
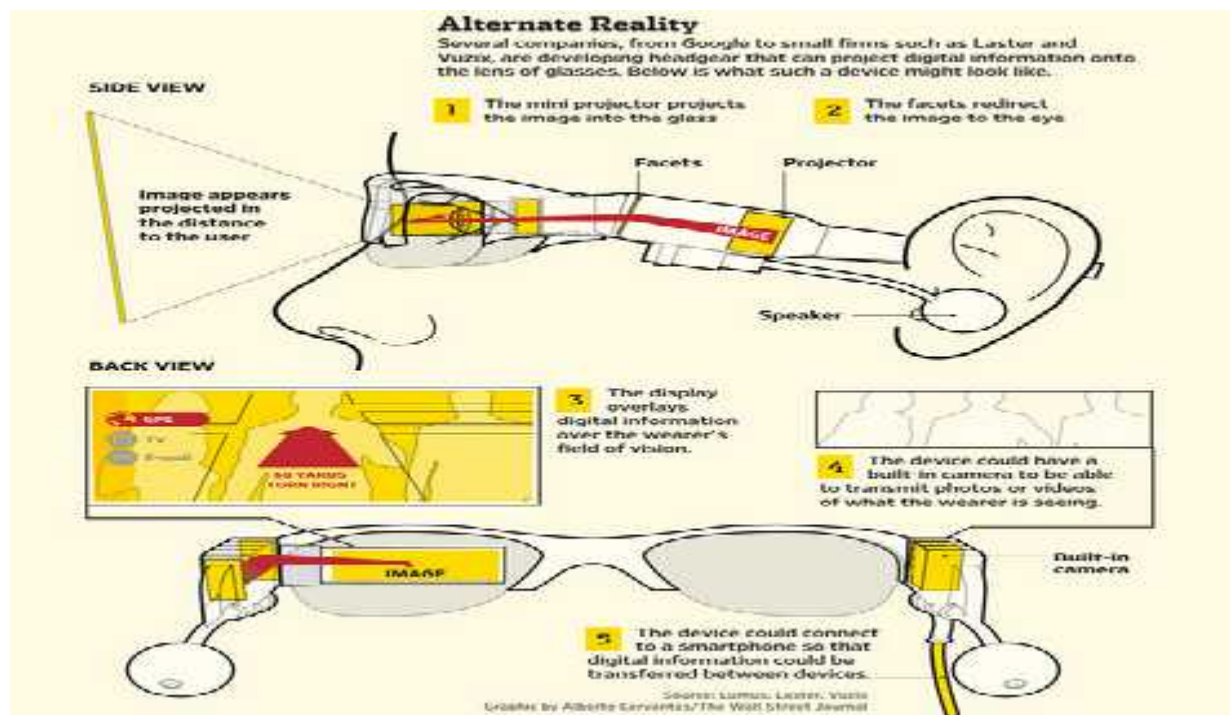

Figure 5.1   The overall working of Google glasses

The Explorer Edition receives data through Wi-Fi, or it can tether via Bluetooth an Android device or iPhone, and use its 3G or 4G data; the Glass also has a GPS chip. Users issue voice commands by first saying "ok glass", followed by the command, or they can scroll through the options using a finger along the side of the device.

- take a picture
- record a video
- get directions to...
- send a message to...

Powered by voice control:

So no keyboards Google Glass overlay the world you see around you with related information beamed onto your retina by a prism that receives from a tiny projector inside the lens. You see both the physical world and all relevant data associated with it, the kind of data that right now. In the relative stone age of PCs, tablets and smartphones, sits on a separate database somewhere, waiting for you to connect the dots.

As simple as u think:

With Google Glasses, the technology disappears from in front of you and you get data and applications in the context of what you're doing or what you're looking at. Want to know the weather right now? You won't have to find the weather app and click on it to get a report.

Weather apps for Google Glass will know when you're looking up at the clouds and provide you with an instant weather report.

Figure 6.2 Weather condition by looking at the sky

CHAPTER 6

ADVANTAGES & DISADVANTAGES

Advantages

- Easy to wear and use.

- Sensitive and responsive to the presence of people.

- Fast access of maps, documents, videos, chats and much more.

- A new trend for fashion lovers together being an innovative technology.

- A spectacle based computer to reside directly on your eyes rather than in your pouch or pocket.

- A useful technology for all kinds of handicapped/disabled people.

Disadvantages

- Can be easily broken or damaged. Though Google wants these glasses to be as modest as achievable, they seem to be extremely breakable. Users will have a tough time taking care of it.

- These glasses show the retrieved data in front of users eyes so it will be a tough experience for them since they will focus on that data and will eventually miss the surroundings that may lead to accidents while driving.

- The resource for running these glasses is still unknown. Will there be a battery or it will run using solar energy?

- Privacy of people may breach with new glasses.

CHAPTER 7

FUTURE SCOPE

Google Glass is as futuristic a gadget we've seen in recent times. It's limited in scope right now. The future, Google believes, is bright and the device itself is "incredibly compelling".

Google is trying their hardest to push the Project Glass through the FCC this year. Reports show that Google is trying to get the approval by the FCC this year but there are already several hundred glasses made for testing internally.

Figure 7.1 Future scope of Google Glasses

Google glasses are basically wearable computers that use the evolving familiar technologies that brings the sophistication and ease of communication and information access even for the physically challenged class of people those literally could not use general way of palmtops and mobile.

CONCLUSION

At SKIT while preparing the presentation on "GOOGLE GLASS" we learn about the history of google glass, its working and its contribution to the modern world. The basic idea of the presentation is to enhance the knowledge about the latest technologies and I studied about google glass to do the same. I learnt about the invention of glass, its features and its positive and negative effects on our society. Google glass is a good device for various purposes like to take photo, to record video and most importantly in Google driverless car. So, it may be called as the glass to see the modern world or glass of future vision.

Conclusion of google glass

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