

GOOGLE GLASS

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Abstract— Project Glass is a research and development program by Google to develop an augmented reality Head-Mounted Display (HMD). 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. These glasses will have the combined features of virtual reality and augmented reality. Google glasses are basically wearable computers that will use the same Android software that powers Android smart phones and tablets. Google Glass is as futuristic a gadget we've seen in recent times. A useful technology for all kinds of people including handicapped/disabled.

Keywords: Virtual and augmented reality, project glasses, eye tap, smart clothing, android, 4G

I. INTRODUCTION

Have you read about the Google Glass project and wondered what kind of apps you can build or design on Glass? This seminar is designed to introduce developers and designers (and everyone else) to the Google Glass interface, the Google Mirror API, and the functionalities and limitations of both. Google is encouraging an ecosystem of developers and designers to build the apps that could make Glass the next iPhone. Glass is part of the evolution from desktop to mobile to wearable technology, including watches, bracelets, and other eyewear. While it is still early and Glass is only released to several thousand "Explorers," designers and developers may eventually consider it essential to understand the fundamentals of development and design for Google Glass.

What is Google Glass?

It's a glass with a Smart Phone in it. It brings the internet world and real world together. It has a micro phone, camera and a screen

II. TECHNOLOGIES USED

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 logs. 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.

Ambient Intelligence (AmI)

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. 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 in our environment, the technology disappears into our surroundings until only the user interface remains perceivable by users.

Smart clothing

Smart clothing is the next generation of apparel. It is a combination of new fabric 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.

EyeTap

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 dimagery 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 EyeTap 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 EyeTap 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.

Smart Grid Technology

A smart grid is an electrical grid that uses information and communications technology together 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.

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 wirelessmodems, to smartphones, and to other mobile devices.

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 acustomized 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.

III.HOW DOES IT WORKS?

Design:

Video Display:

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

Camera:

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

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.

Button:

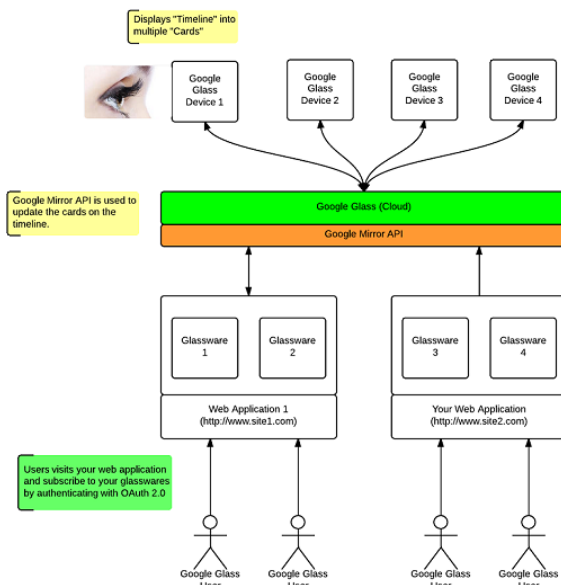
A single button on the side of the frame sophisticates the glasses to work with the physical touch input.

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. Thedevice 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.



IV. GOOGLE GLASS ARCHITECTURE



V. BENEFITS

1. Easy to wear and use,
2. Sensitive and responsive to the presence of people,
3. Fast access of maps, documents, videos, chats and much more,
4. A new trend for fashion lovers together being an innovative technology,
5. A spectacle based computer to reside directly on your eyes rather than in your pouch or pocket,
6. A useful technology for all kinds of handicapped/disabled people

VI. ADVANTAGES

1. Glass is sleek, light and easily wearable and you won't require keeping it on and off your pockets, like mobile phones,
2. No Bluetooth or camera needed when Glass is on, it'll do all for you.,
3. Glass will provide you detailed information and satisfactory results on your queries,
4. Make phone calls, sms, emails through Google Glass, no Smartphone required,
5. Keep your calendar events, information, contacts updated on Glass,
6. Easier navigation and maps will be provided through Glass,
7. Glass will make you look hi-tech and updated on technology and create an impressive impact on people.

VII. DISADVANTAGES

1. Glass might give you a 'nerdy' look that might create clumsiness among people,
2. No indication while clicking pictures (like pointing the camera) which almost sounds like a hidden camera trying to capture a non-ready subject,
3. Chances are there to drop yourself down in the road while reading a text or email since you can't get your eyes off it,
4. No public privacy concern so the worry of leaking out information still remains,
5. Competition is on pace. The future might bring a contact lens version of Glass after which Google Glass is supposed to sink.

VIII. GOOGLE GLASS DESIGN PRINCIPLES

Here are the key guidelines for designing a good Google Glass experience. Straight from Timothy Jordan, Senior Developer Advocate at Google.

1. Design for Glass and its unique interface
2. Don't get in the way or be intrusive (no intermodal dialogues)
3. Keep it timely. Glass is a "right now" device.
4. Avoid the unexpected. Don't surprise the users with unexpected communications or time cards.

IX. FUTURE SCOPE

.Google Glass is as futuristic a gadget we've seen in recent times. It's limited in scope right now, but 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.

X.CONCLUSION

Although there are many barriers and problems Google still needs to work through before finalizing the consumer version of Glass, the potential benefits make Glass a project worth perusing. It is Lee's expectations "expectation that in three to five years it will actually look unusual and awkward when we view someone holding an object in their hand and looking down at it.

Wearable computing will become the norm" (Levy, 2012). With all the wonderfully accessible features and endless potential for applications, it just might catch on.

