



Samiksha Jain¹, Sakshi Raut², Ashwini Sakrawat³, Sudhesh Bachwani⁴

¹Student, Computer Science and Engineering Dept., JDIET, Yavatmal, Maharashtra, India, samikshajain321@gmail.com

²Student, Computer Science and Engineering Dept., JDIET, Yavatmal, Maharashtra, India, sakshi.raut31@gmail.com

³ Student, Computer Science and Engineering Dept., JDIET, Yavatmal, Maharashtra, India, ashwinisakrawat17@gmail.com

⁴Professor, Computer Science and Engineering Dept., JDIET, Yavatmal, Maharashtra, India, sudesh_bachwani@jdi.ac.in

Abstract

The emergence of Google glass prototype was done with a vision to provide a ubiquitous computer system. Sergey Brin launched the first prototype on April 2012, at the Foundation Fighting Blindness, at San Francisco. Google glass is launched to satisfy the needs of today's world by providing them a technology which can be used at any place by using smartphones or pc's. The prototype includes camera, Bluetooth, touchpad, display, speaker, etc. which makes it easier to use. The Google glass is used in many areas like military, medical, industry, education, etc. It uses the technologies such as wearable technology, smart clothing, 4g technology, ambient intelligence, android operating system, etc. the first prototype launched failed door to its high cost, more weight, and due to poor understanding of users. The glass is designed for all types together as there is no compatibility issue for the OS. Glass uses a small prism in it through which, it enlarges the view of the screen. The glass consists of features like it can be used to shoot videos which will help the reporters to capture live news and also helps the doctors with surgery. There are many other applications of the glass. The google glass helps us to connect to the GPS which will make it easier for travellers to travel all over the world. The google glass will be used by more people in coming years as its features are upgraded and more convenient for the peoples.

Index Terms: Google glass, technology, prototype, etc.

1. INTRODUCTION.

Google glass is the computing device providing the optical display through head mounted gestures designed in shape of glass wear. It was developed by Google X and powered by Foxconn. The Google glass technology was introduced in Feb, 2013 for the developers and around 2015 for public (for US only). The prototype of a Google glass resembles to the head up display devices replacing the lens. The prototypes of the Google glass were launched in US on April 15, 2013 for qualified glass explorers for \$1500 for a limited period. It became available for public on May 15, 2014. It was launched with a mission to produce ubiquitous computers systems. It is categorised as a wearable technology. Google launched it with the aim to produce a hands free glass display device which helps the user to communicate with the internet by using voice commands or head gestures.



Fig-1: Sergey Brin

The previous prototype launched weighed around 8 pounds which was soon replaced by a new prototype weighing less than the actual sunglasses. On April 5, Sergey Brin wore the prototype at the Foundation Fighting Blindness, in San Francisco. In April 2012, Google announced the Google glasses publically and provided a demonstration on it on May 2012

showing the demonstration on how to shoot video with the glasses.[4]

It contains a lithium-polymer powered device which is used as a battery improving the quality of life for people who are blind and also improving the fields of medicine contributing in areas like patient doctor interaction. For a Google glass, there is no issue for OS compatibility. It works for both the androids and iPhones.

The Google glass uses the concepts of augmented reality, virtual reality, artificial intelligence, android applications, etc.

2. HOW DOES GOOGLE GLASS WORK?

The Google glass is a technology which combines a number of different functions provided by a smart phone into a smaller unit. It provides all the functions like capturing images, shooting videos, voice input, maps, etc. It provides GPS access, internet connectivity to make it more convenient for the user to use it. The Google glass provides you with a layer placed over the reality.

The Google glass provides facilities such as Accept/Reject a call, Display the weather, Reading emails, Take a picture and share it, Read text messages, GPS tracking and Navigation, Show reminders, Cloud computing (uploading, viewing and sharing files), Playing games online, Watching movies.

The Google glass design consists of several different hardware components. These components are as follows:

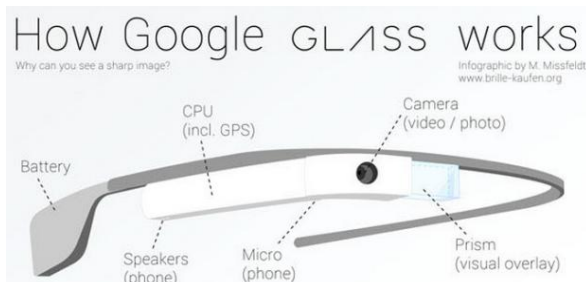


Fig-2: Design

2.1 Touchpad: Touchpad is used to allow users an interface displayed on screen. The touchpad show two type of event first is current event, such as weather, and the past event, such as phone calls, photos, circle updates. Sliding backward shows current events, and sliding forward shows past events.

2.2 Camera: The camera is one of the important features of Google Glass. It helps us to click pictures of up to 5 MP and record 720p HD video. It also has the front facing video camera with which photos and videos can be taken in a glimpse.

2.3 Display: The screen is used to see output result. Its feature is to display the pop up hands free information which is displayed on the screen by using the video display.

2.4 Speaker: The speakers are designed by the ear. The Google glasses are the Hand free wearable device that can be make or receive call too.

2.5 Button: The button work with the physical touch input. There is a single button present on side of the frame.

2.6 Microphone: The microphone can take the voice commands of the wearer of user. Using microphone we can also having telephonic communication. The Google glass working is mainly depend on the voice commands of the user.

3. PRINCIPLES

The Google glass is built to provide the users the best experience. It fundamentally differs from existing computing platforms with respect to both design as well as its use.

3.1. Google-glass design:

Glass is designed in such a way that it works best with small, simple and relevant information. Users usually have multiple computing devices that stores and display information for certain period of time. Never compare a tablet, laptops or smart phones with Google glass by shifting their features to Google glass which is designed for those devices. Instead focus on the compatibility and service provided by your glass and transmit the experience and views that are unique in it.

3.2. Don't get in the way:

Google glasses are always meant to be there when you actually need them and when you don't they should be out of the way. Your glass must function similarly. It should always indulge in the functionality that supports and supplements the consumer's life rather than taking away from it.

3.3. Keeping it relevant:

Whenever your glass delivers the accurate information at the right place and time to their users, leads to the most magical experience to the user leading to the increased indulgement, engagement and satisfaction.

3.4. Removal of unexpected:

mostly the faulty outcomes like unexpected functionality and bad experiences on Google glass are more dangerous and worst competed to other computing devices because it is very close to the users body and specially eyes that are very sensitive

and crucial part of the human body .Preventive methods should always be kept in mind to void such situations which can affect the users senses.

Avoid sending information or data too frequently and unexpected time as it is a machine hitch can hang when give unexpected inputs. Always give clear commands which make the glassware intensions clear and never try to pretend and expect the Google glass to make you something which you are not.

3.5. Human friendly:

The Google glass is the user interface which is designed to provide imaginary use through vocal interactions and body gestures.

It provides the user the maximum usage model where the user can start actions quickly and works without getting interrupted with what they are doing.

4. TECHNOLOGIES USED

4.1. Wearable Technology:

Wearable computers are small computing devices that are worn by the wearer under, with or on top of the clothing. It has been developed to enhance the wearable technology especially for general or specific use information technologies and multimedia development.

Wearable computers provide a continued interaction between computing device and the user. It is more beneficial for complex computing devices that are especially useful for applications that require more complex computational support. It additionally supports multitasking which helps the user to consistently keep in touch with the device without stopping the task that is in progress on the device. It acts as an artificial body part that can be incorporated by the user; in short it can be used as extension of the brain or body part of the user.

4.2. Ambient Intelligence (AmI):

Ambient Intelligence (AmI) refers to the environments that are sensitive and stable providing responsive nature to the presence of people in its surroundings. Ambient intelligence is an insight on the future of electronics, telecommunications and multiple computing.

In an ambient technology devices work with respect to provide support people in carrying out their day to day life activities, tasks and processes in easy manner and naturally using the technology and intelligence that is residing in the network connecting the various devices.

The ambient intelligence provided devices are becoming smaller leading to more connectivity and integrity in surrounding environment. The technology remains hidden in background until the user wants the interface remain understood by them.

4.3. 4G Technology:

4G is the fourth generation of mobile communication technology. It is an advanced version of the third generation (3G) communication technology. A 4G system is 6 to 7 times faster than 3G mobile communication technologies providing ultra-broadband Internet access to n number of computing devices like laptops, tablets, modems and cell phones.

The benefits of 4G technologies briefly fall under the 3 benefits:

1. Improvised uploading and downloading speed.
2. Reduced time interval between stimulation and response.
3. Clear voice calling functionality.



Fig-3: Connectivity

4.4. Smart Clothing:

The clothing is made with a new single transfer fabric technology installed with digital devices is called as smart clothing. It is the combination of fabric technology and digital technology. The next generation of apparel is smart clothing. The absence of the standardization of technology many problems have occurred due to this smart clothing is still under development. The industrial standardization can be strengthened through the efficiency of technology development.

This smart clothing consists of three phases. The selecting standardization factors to propose a standardization road map is the first phase. To research and collect related test evaluation methods is the second phase of smart clothing. Establishing a standardization road map is the third phase of smart clothing.

In this study, test evaluations have not yet been conducted and proved. We expect that it will be valuable for developing smart clothing technology and standardization in the future. It helps us to achieve standardization.

4.5. Android Operating System:

Android is a Linux- based operating system for mobile devices such as a tablet, Smartphone's and computers, developed by Google in conjunction with the Open Handset Alliance. The android is the Open source operating system and under the Apache, License Google releases the code. Because of the Open source code and permissive licensing to be freely modified software and the device

manufacturers, wireless carriers and enthusiast developers. The writing applications (“apps”) are the largest community of developers of the android application that extend the functionality of devices, written primarily in a customized version of the Java programming language. There are 700,000app available for Android's In October 2012, and the estimated number of applications downloaded from Google Play, Android's primary app store, was 25 billion.

5. REAL-TIME APPLICATIONS

5.1 Industry: Google glass provides maintenance and reparability in technical industry and also users are able to collect the information in manuals and consults checklists which adds up to its important features.

5.2 Education: The advanced E-learning (electronic learning) tool is upgraded with the help of Google glass. It enhances the teaching learning process through augmented reality.

5.3 Market research: In this Google glass computing monitors the actual behaviour of the users and effectively helps in qualitative research and shopping.

5.4 Public services: Google glass has been used as an experiment in US and Europe by police and firemen so that this device will provide right information in crisis situations where every second is crucial.

5.5 Navigate: location information's with actual translation is helping the user to navigate the cities and countries abroad that they are visiting

5.6 Multimedia: Provides a large coverage especially for live functions to journalists in their field and helping them with hands free cameras.

5.7 Medical: Doctors are now able to check their patients from a remote location without being physically present and can also access the vital information on their display prior of visiting the patient.[5]



Fig-4: Medical Application of Google Glass

5.8 Military: Google glass is presently supporting US air force. The US Air force is testing Google Glass as a heads-up display (HUDs) for the militants which can help them to take better and accurate decisions on the battle field .The HUDs are integrated on the helmets of the militants when they are in aircraft.

5.9 Food: Cooking is a tedious task but the fun activity as well, but one requires hand free cooking so, Google glass provides the feature to usefully see a recipe and with step-by-instructions with timers running simultaneously with it.

6. ADVANTAGES & DISADVANTAGES OF GOOGLE GLASS

6.1. ADVANTAGES

1. Wearable headgear that allows user's hands-free technology that is Capable of recording video and audio from the user's perspective.
2. Users can receive information and notifications instantly without using their mobile phones.
3. Screen display is always in touch of user's visual field and Information can be stored or is accessible from cloud based storage.
4. Useful for doctors and nurses, Google Glass could display real time updates on vitals and other medical information on patients while they are being treated.
5. Glass is intended to grow towards becoming a revolutionary way to communicate with the similar technology everyone uses on their mobiles.
6. Individuals will not be bound for reading texts, following GPS routes, or recording video, the Google Glass has the potential of providing a powerful tool to perform such events.
7. The technology can be placed on mannequins or patients for medical students which helps them in learning, and it can be worn by surgeons and watched live by the students in another room.[7]

6.2. DISADVANTAGES

1. The people having issue with their eye and wears Glasses in daily those cannot use the Google glass.
2. In Google glass the picture, video or data will be in front of the eyes of the user, which can distract them while driving.
3. Google Glass is a very sensitive device it can easily break because it's a glass not a bullet proof glass
4. In the Google glass face recognition technology can be easily misused and it might turn out to be offensive for that person.

5. The biggest disadvantage of Google glass is that video and camera can be misused and anybody can capture anything without letting the other person know about it. There is a chance of breach in the privacy.
6. Glasses are very delicate and so it may be possible that it will get damaged while dancing, running, etc.
7. Google Glasses are costlier and hence is another issue of concern.
8. Also the privacy may be bridged.[6]

7. FUTURE SCOPES

Google glass is increasingly amazing technology generating a buzz in the digital market. Really is appreciable and watchful how people are crazy about this new launched product. And why shouldn't they be? It is a complete package of things that people need .Google glass is fastest growing newest Google technology providing you to view the applications that you would normally see on your smart phones through a glass wears infact does much more than it. In this survey we are making some predictions for the future scope of Google Glass.

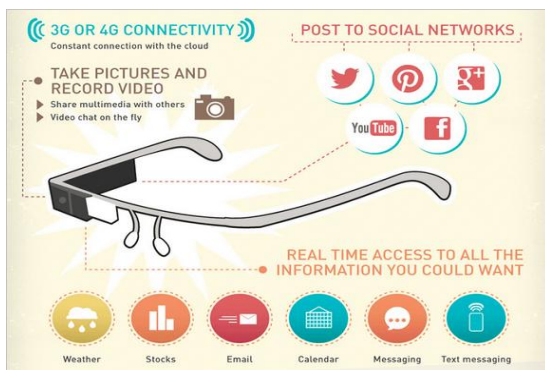


Fig-5: Future Scope

7.1. Limited world to social media:

No doubt that Google glass will be a game changer for social media Face book, Twitter, YouTube, Google +, LinkedIn etc. will require dealing with this new computing technology and developing some strategies to cope up with this upgrading technology. There are many questions arising that how will these sites allow image uploading! How will Face book create its own device etc... But one this is sure the social media will be in loss with this device but yes the Google will surely be creating seamless integrated applications that will work smoothly with the Google glass

7.2. More market sharing:

The market companies won't have to make many changes in their browses as Google glass will be able to work safely with the various browsers available. However if new browsers will be introduced later

they will earn a lot more market share as Google owned browsers. This will result in most of the users preferring that browsers and put them first for their use.

7.3. Developing functionalities:

People often switch from one application to another to achieve an objective but with the help of Google glass we can start with the core abilities which are inherited by the operating system. The glass applications will apparently grow and propose their effective use to the people. Instead of all this Google glass will get the grand success at developing n no. of functionalities that are necessarily needed for this computing device. This will ultimately result in the gain of entire control over this new market.

7.4. Expanding capabilities:

Voice recognition is the most important characteristics of the Google glass, this device is always activated based on vocal commands. Google has drastically improved the voice technology here. Many people are not so fascinating about the new capabilities like improved voice recognition and activation.

If Google wants to sustain for a long term it would have to improve the product technology and expand its capabilities by spreading the knowledge about its attractive functionalities.

7.5. Smart Phones & Websites Racing To Integrate

Google Glass is scary to everyone. For the development of the ad hoc Google Glass strategy companies like apple, Microsoft is searching different ways. They are asking, "Do we create our own technology to compete? Do we look for ways to integrate? Or, do we just sit back and watch?" These companies are heavily invested in the smart phone battle right now. Google Glass is a whole new opportunity to create a new device which will stand with the expectation of the new generation. Each one of these companies is developing a strategic plan.

8. SURVEY COMPARISON

The first launch of Google glass was in 2012 and was available in market by 2015. After the launch, because of high cost the product's market failed. The first prototype launched weighed around 8 pounds, this was also a reason contributing to failure of the glass. Also the consumers were not clear about the version of Google Glass affecting the market value of the product. Google Glass has the potential of becoming a beneficial project worth purchasing. Although there are many hurdles and barriers affecting success of the glass. But Google is working on finalizing the user's vision for glass and our survey shows that technology wise the glass has never failed but instead people were unable to

interact with the glass technology. We surveyed that by three to five years this wearable technology will be in demand and cost will also become inexpensive by the end of 2025. The new prototype prepared by the companies now is prepared so as to remove the drawback of the weight by decreasing its weight to around the weight of a normal sunglass.

9. CONCLUSION

Google glass is a technology which provides a new and easier way to access the daily activities. It is a wearable technology which makes it easier to access anywhere and at any time. This paper provides a survey on Google glass. The Google glass when launched didn't succeed but in next three to five years it will be in demand by the new generation. This technology will be used by all the peoples in every sector like medical, military, education, industry, market research etc.

10. ACKNOWLEDGEMENT

This has been the best opportunity to learn and present our survey topics in this national level paper presentation event. We are also thankful for giving us the freedom to carry out the proposed topic. With immense pleasure I thank our guide Mr. S. A. Bachwani sir for sparing their valuable time and guiding us by providing valuable suggestions.

11. REFERENCES:

- [1] Pooja S. Mankar, "Propelled innovation google glass" International Research Journal of Engineering and Technology (Volume-02 Issue-01 March 2015)
- [2] Shrinivas Pundlik; HuaQi Yi; Rui Liu; Eli Peli; Gang Luo "Amplifying Smartphone Screen Using Google Glass for Low-Vision Users" IEEE Transactions on Neural Systems and Rehabilitation Engineering
- [3] Umair Rehman and Shi Cao, "Expanded Reality-Based Indoor Navigation: A Comparative Analysis of Handheld Devices versus Google Glass" IEEE Transactions on Human Machine Systems (Volume: 47, Issue: 1, Feb. 2017).
- [4] https://en.wikipedia.org/wiki/Google_Glass
- [5] <http://www.shareforce.eu/en/blog/google-glass-applications>
- [6] <http://www.shareforce.eu/en/blog/google-glass-disadvantages>
- [7] <https://blog.hostonnet.com/advantages-disadvantages-of-google-glasses/>
- [8] <http://large.stanford.edu/courses/2016/ph240/werner2/>
- [9] <https://www.slideshare.net/mobile/PRADEEP-CHEEKATLA/google-glass-18054370>
- [10] <https://www.varifocals.net/google-glass/>

Issue

ISSN:-.....