

# Applications of Google Glass-Review

<sup>1</sup>Lakshmipriya K J <sup>2</sup>Anitha P

<sup>1</sup>Student <sup>2</sup>Associate Professor

<sup>1,2</sup>Department of Electrical and Electronics Engineering

<sup>1,2</sup>Adi Shankara Institute of Engineering & Technology

## Abstract

Google Glass is a brand of smart glasses - an optical head-mounted display designed in the shape of a pair of eyeglasses. It was developed by X (previously Google X) with the mission of producing a ubiquitous computer. It displays information in a smartphone-like hands-free format. Wearers communicated with the Internet via natural language voice commands. Google Glass (styled "GLASS") is a wearable computer with an optical head-mounted display. Google Glass displays information in a smart phone-like hands-free format, which can interact with the Internet via natural language voice commands. It combines numerous functions and features in a very small unit. In addition to phone and camera (photo, video), it offers Internet connection, including GPS.

**Keyword-** Google Glass, OHMD, Smart Phone

## I. INTRODUCTION

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 the mission of producing a mass-market ubiquitous computer. It displays information in a smart phone-like hands-free format, which can interact with the Internet via natural language voice commands. 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 project. Google has patented the design of Project Glass.

## II. USING GOOGLE GLASS

Google Glass introduces an entirely new way of computing, with a simple, voice-driven user interface that strips away complexity and makes a number of tasks much more intuitive. Below are some examples of these.

### A. Start Tap

To start using Google Glass, you tap the frame of the glasses and you're taken to the home screen. You don't see a bunch of icons like on smart phone home screen just a simple overlay box that carries any information and the 'wallpaper' is actually the real-life scene you're looking at. To issue a command, you tap the frame again and say "OK Glass".



Fig. 1: Start Tap

### B. Take a Picture

After you issue the order “OK Glass”, you can instruct the glasses to do something specific by saying something like “take a picture”. That’s it. There’s no fumbling around looking for the camera icon. We’re not sure at this point whether anything on the glasses frame lets the subject know they’re being photographed. Just be aware that if you’re chatting to someone wearing Google Glass, you’re right in their viewfinder.



Fig. 2: Take a Picture

### C. Record Video

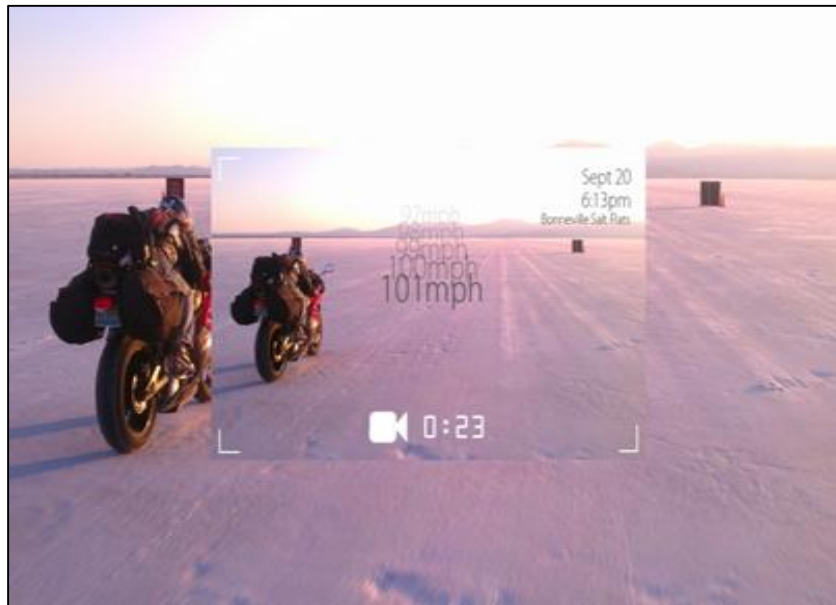


Fig. 3: Record Video

Same goes with video. With Google Glass, you can record what you see without moving a finger. Already, several businesses in the US, ranging from strip clubs to casinos and even movie theatres, have announced that Google Glass will be banned from their premises. The porn industry is in lather over the introduction of Google Glass, with many pornographers pointing to an inevitable increase in the popularity of POV (point of view) porn clips.

### D. Share What You See

“Now this is what we call serious sharing”— actually sharing what you see with your friends (it’s not clear at this early stage whether Google Glass will be able to feed them a live video stream, but this is inevitable).



Fig. 4: Share what you see

The privacy ramifications of this kind of sharing are mind-boggling, but tech history tends to show that privacy concerns never ultimately get in the way of a cool new experience, such as when people agree to give the latest hot mobile apps.

#### E. Find Your Way

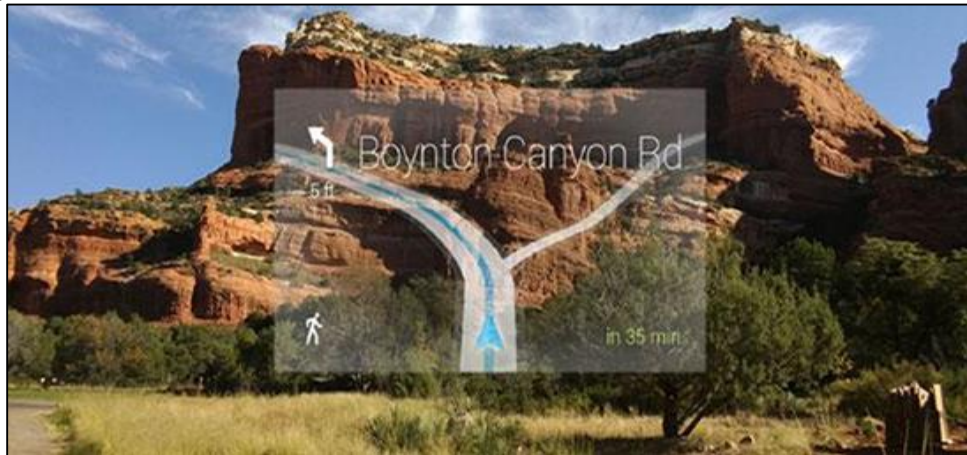


Fig. 5: Find your way

Lost? No problem, you have your very own super GPS navigating device to guide you along in the right direction. It's perfect for the car; except that various road authorities have already said they'll ban Google glasses in cars because of the possible other distractions the glasses can serve up while you're driving.

#### F. Translate

Google Glass will be able to read and translate any text you see, which makes them an absolute boon for travelers. For travelers, Google Glass will be a revolution, going a long way to removing language barriers and making traveling to far-flung places infinitely more convenient.

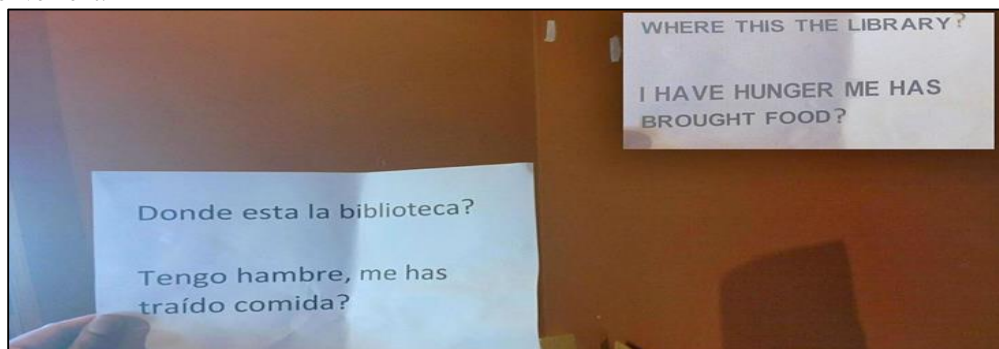


Fig. 6: Translate

### G. Your Info Butler

One of the key features of Google Glass is their awareness of where you are and what you're looking at, at all times. It means they can anticipate your needs and flash up information that's going to be relevant to you. This is what the Google Now search engine, available on the latest Android smart phones as well as on the iPhone, tries to do



Fig. 7: your info Butler

### III. HOW IT WORKS

Google Glass contains the fundamental bits of any computer, including a CPU, sensors such as GPS, speakers, microphone and battery, to which are added a tiny projector and a prism that redirects the light onto your retina. Each component is neatly embedded in the frame. To keep the device as light as possible, most of the processing will actually take place in the cloud (like it does with Apple's Siri), so a good mobile broadband signal is essential.

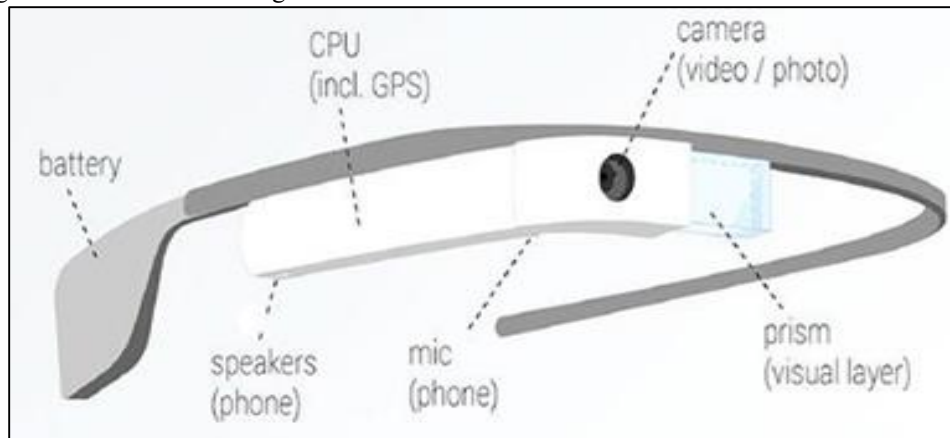


Fig. 8: Google Glass

In this image below by artist Martin Missfeldt, you can see the projector and prism in the Google Glass working together. In essence, Google Glass is just a tiny projector embedded into a pair of glasses frames with some tiny computing components to drive the package.

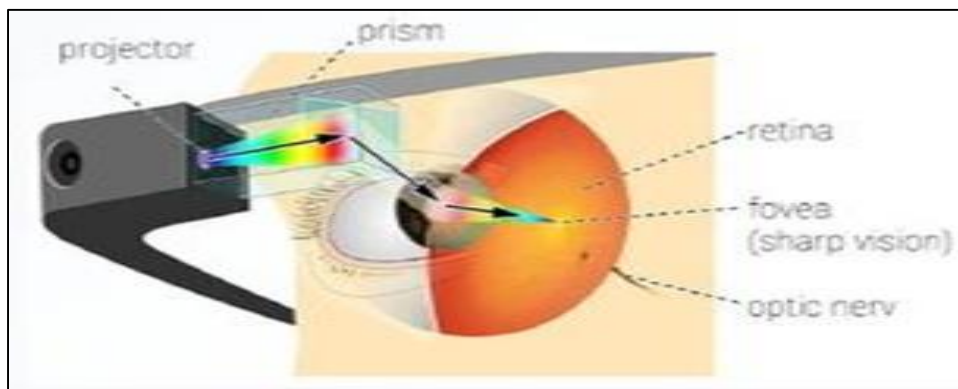


Fig. 9: Tiny Projector Embedded Into a Pair of Glasses Frames

#### IV. WHAT'S IN IT FOR GOOGLE?

Google Glasses are likely to be a revolution for consumers, but what does Google get out of them? The answer is it probably gets far more benefit from Google Glass than you do. Like Face book, Google is fundamentally an advertising business that helps advertisers better target the customers they want to reach. The reason that Google and Face book are valued in the billions of dollars is that through their existing products, from search engines and mobile OSes to social networks, they already know a lot about us (our likes and dislikes, friends and spending habits). They know more than any governmental spy agency, let alone traditional competitors such as newspapers and television.

But Google Glasses take the accuracy of this targeting to an entirely new level. When you use Google Glass, you make it possible for Google to build an infinitely more detailed profile of you. The search engine giant will not only know what you've been searching for, but where you've been and even what you've been looking at, and lots, lots more. It will be able to provide this to advertisers, regardless of whether you're an unnamed user in the data. With Google Glass, the era of privacy is not only at an end, it's about to be nuked. And it's not just Google going this way. Face book's new Home application, which takes over your Android phone, aims to do exactly the same thing: give Face book advertisers much better targeted customers. Info graphic breaks down how Google Glass works.

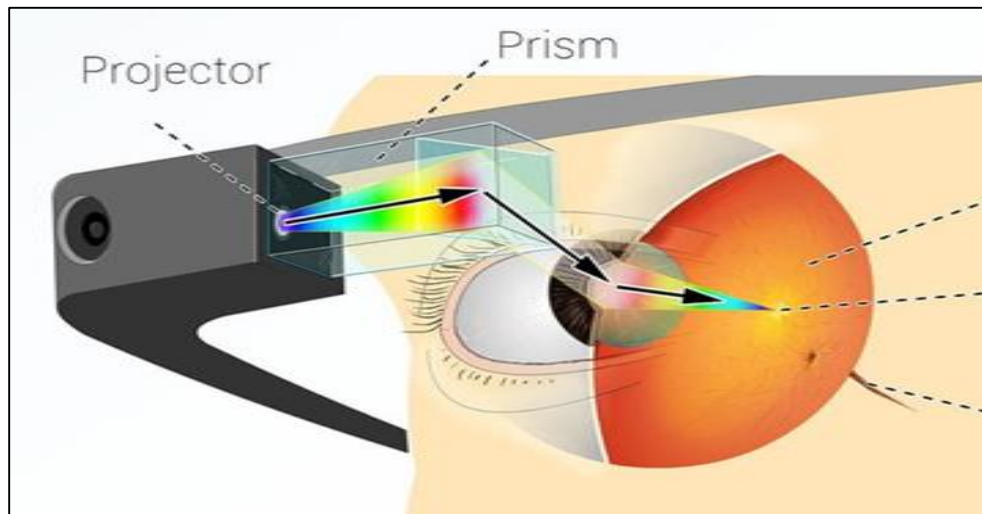


Fig. 10: Google Glass working

Despite all the attention Google Glass has been getting over the last year, there's still a lot we don't know about it. For instance, what are the final specs and how does it work? Artist Martin Missfeldt took it upon himself to compile together an info graphic that explains how Glass's prism and projector system work. As you can see below in Missfeldt's illustrations, Glass uses a prism that "projects a layer over reality light" and "focuses the image directly on [a person's] retina." Missfeldt's info graphic also questions how well Glass will work for people who need prescription glasses. Hopefully Glass won't be a big problem for people who already have really bad eyes.

#### V. WAYS GOOGLE GLASS WILL CHANGE US -WHETHER WE'RE READY OR NOT

##### A. True Panopticon

Some would say that Jeremy Bentham's "panopticon" is already upon us. But if you think that closed-circuit TV surveillance implicates privacy issues, consider a system where everyone around you is potentially recording everyone else, all the time. And not just recording, but instantly uploading their experiences online for potential viewing worldwide.

##### B. Transformation of Advertising and Commerce

If someone can access information about a real-world object instantly by merely looking at it in front of them, consider what the advertising industry could do with this product. The implications for online retailers, as well as brick-and-mortar retailers, are staggering. Imagine walking into a Starbucks and being pinged with pop-ads in real-time, just like visiting a website.

##### C. Personal Safety Issues

Safety concerns are already being voiced over Google Glass. If we thought texting and driving was bad, consider the possibility of an overlay of information which would be constantly available in our field of vision while driving, walking, running, or even navigating any real-world environment. The results could be disastrous, and strict safeguards should be built in or at least acknowledged.

#### *D. Effects on Law Enforcement and Terrorism*

As we saw following the Boston bombing, the case was broken wide open due to a commercial surveillance video. Imagine if some or all of the crowd had been recording their experiences via Google Glass. The use of Google Glass by law enforcement presents even greater possibilities for coordinating special response teams, communication among law-enforcement agencies, monitoring, command and control, and documenting illegal activities. Of course, terrorists and others could use the technology as well in their own nefarious ways.

#### *E. Legal Challenges*

Legal challenges will abound. For example, there are privacy laws in most states which prohibit the recording of conversations without the consent of all participants. If everyone has Google Glass, will those laws be amended, made instantly obsolete, be routinely violated? Other potential legal challenges include equal protection, First Amendment rights, and due process. A bar in Seattle, for example, has already banned Google Glass wearers from its establishment. Is this constitutionally permissible, or a violation of the wearers' free speech rights or the right to travel? On a more sinister note, what will it mean for a corporation, Google, to become the mediator of all Experience? Imagine not just the Google search engine defining what exists in cyberspace, but Google glasses defining what exist for the wearer in the real world. Are we ready for this?

#### *F. Working Online and Speech Recognition*

Most professionals currently go to an office and bang out reports, memoranda, or emails on a keyboard day in and day out. Imagine having work done on a virtual screen anywhere, and writing by voice command. Admittedly, the brick-and-mortar working world has been slow to allow employees the independence such a new tool would allow. If used well, it could revolutionize the way we work.

#### *G. The Transformation of Education*

Traditional education today is (in most places) very outdated. The concept of sitting in a classroom listening to a teacher hasn't changed in a couple of millennia, although new online courses, massive open online courses (MOOCs), may be coming soon to a computer near you. Imagine how education will be transformed when information can be projected immediately into our field of vision whenever and wherever we want it. We all will have the potential to be "home schooled" anywhere, all the time.

#### *H. News Gathering and Reporting*

News-gathering has already been transformed by "I- reporters" and social media. This is a further evolution building upon those advances, which reporters (well, really, all of us) will use to "capture" news events. The possibilities for journalism and real-time reporting, not to mention the danger and confusion of information overload, will be endless.

#### *I. Effects on Leisure and Entertainment*

There is no question that people find out about the world through social media. They search for and find meaning, make new connections, and even find love through current technologies. The many advances that Google Glass has in store can (and will) be used by Face book and all the other online resources already out there that are geared to searching for and maintaining connections. Gaming and entertainment will also be similarly transformed.

#### *J. The Singularity Is (Almost) Here*

Ray Kurzweil, Google's current engineering director, has written extensively about the "singularity," the point where mankind and computers merge. Although Google Glass is not the singularity, it really does bring us closer to that (fateful, terrifying, dreaded, utopian, pick an adjective) day. I do not mean to be overly optimistic in thinking about the potential of Google Glass. It will have positive benefits and negative consequences, as with all new technologies. But the cumulative effects, both good and bad, will be transformative.

## **VI. BENEFITS OF GOOGLE GLASS**

It has all the qualities of a computer, smart phone, tablet, iPod, GPS navigation system, camera and more in a tiny piece of glass and stylish frame. Sure, we can already do it now with an iPhone or iPod.

Times article discusses the virtual reality behind the Google smart glasses.

- Augmented Reality: This PDF document provides seven things people should know about augmented reality including what it is, how it works, and the future of this technology.
- Wearable Computing: This link provides a brief timeline history of wearable computing from 1268 to 1997.
- Ambient Intelligence: This PDF document discusses the important role wearable computing and wearable sensors have on ambient intelligence.
- Smart Clothing: This article discusses some of the benefits of having clothing which is enabled with smart technology.
- Smart Technology and the Elderly: This PDF document discusses the perceived smart technology needs of an aging population who have mobility impairments.
- Smart Sunglasses: This article discusses the development of smart sunglasses which will help eliminate a blinding glare.

- Smart Grid Technology: This article provides more information on smart grid technology; one of the many smart technologies of the 21st century.
- Drugstore Smart Tools: This article discusses some smart tools which are being developed such as memory glasses, smart socks, anger alerts, and smart bandages.
- Portable Spatial Information Technologies: This PDF document discusses new technologies which include GEO sketch pads, smart horizons, smart compasses, smart glasses, and magic wands

#### K. Disadvantages of Google Glass

What comes first in the case of every Gadget to make it a benchmark product for company is its cost. The price of this gadget will be around \$1500 according to a source. Other sources say that this benchmark from Google will be offered at the cost in between \$300-\$600. Isn't it's a matter of thinking, that such an innovative technology will be offer at low cost, if its \$300-\$600 then it's fine but in our view the price is surely going to be high.

A Smart phone can drive apps, can be used for gaming purposes, have different varieties, large range of affordable price and much more flexibility than this Glass, then what makes a sense to buy it.

Google Glass does not seems to be a pocket friendly Device. Google Glass design makes it more complex to put it in your pocket or bag, as you do with any other existing gadget because of its sensitive design, so this could be one of the lacking issue. This product can't be categorized in the category of the spy product, as you have to wear it on your eyes. Google Glass cannot be used by those people who already having some issue with their eyes and wears glasses in their daily routine. You cannot use these Google Glass while driving, as the picture; video or data will be in front of the eyes of the user, which can distract them. Google Glass can be easily broken as it is a sensitive device; after all it's a glass not a bullet proof glass. Wearing it on your eyes can result in various biological issues. The images formed in the glass will be too close to our eyes which can harm the retina of your eyes. Common glass are even not wearable while Running, Dancing or similar activities. So would you expect that you can wear these sensitive glasses.

## VII. CONCLUSION

Google Glass hopes to be one of the newest and most innovative technologies in recent times, the world of wearable computers and augmented reality has barely been introduced, & glass intends to be a pioneer into 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 application that could be very useful for consumers, such as live videos and data streaming. Users will be able to utilize email, video chat such as Skype and serial networking services such as twitter face book. However, not all in perfect with Google Glass the ever present fear of security threads, 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.

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