

## GOOGLE GLASS – A REVIEW

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**Abstract-**The Glass is a Google's developed optical head-mounted display (OHMD). It's based on wearable computing, but appears like a regular eyewear. Glass works under the control of voice commands and so are its alternatives (Recon Jet, Vergence Labs' Epiphany Eyewear, GlassUp, Telepathy One) which are also based on augmented reality and ambient intelligence. It can do everything a smartphone does. It displays information in a hands-free format. Glass not being a finished product at its release turned out to be a notable dissenter as many issues were raised such as privacy and safety concerns, binocular rivalry and visual interference which led to the breakdown of Glass. The techniques used in Glass were further used in Google products with advancements. Its technologies are the heart of Google's new Pixel products. In this paper, the techniques, alternatives, and products which emerged from Google Glass' technology are examined.

**Keywords-** Augmented Reality, Ambient Intelligence, Technologies, Alternatives, Dissatisfaction, Advancements.

### 1. INTRODUCTION

The Glass is a Google's developed optical head-mounted display designed within the shape of a pair of eyeglasses. It is Google X Lab's development under the supervision of Babak Parviz having the mission to produce an ubicomp. The information is displayed in a hands-free format. In January 2015 whilst staying committed to the development of the product, Google stopped producing the prototype model. The OS used inside the Glass will be Google's Android and it can run apps known as Glassware which is optimized for the device.



Fig. 1 Google Glass

### 2. PURPOSE OF GLASS

In history, there were technologies which are not viewed as successful technologies anymore, for example, eyeglasses. Eyeglasses have been enfolded to such a massive amount as the finest of technology is offered— there's no proprietor's guide, the end user interface shouldn't be compromised, and only the absence of these technologies make us mindful of them and not otherwise. The purpose of Glass was to perceive your neural exposure of the surroundings and get it delivered to you in a more liveable, gratifying, more alluring way – while the user doesn't have to compromise on their part. The Glass can become a popular technology consumed by the users if Google reaches this goal and this was the reason Google went on to make Glass a reality.

### 3. WHY ARE GLASSES NEEDED?

The applications are countless: as you put on the Glass while devouring your morning meal, the map lets you know if a heavy traffic is there en route your workplace. While passing by a Subway outlet, a Special Offer on a meal would pop up on the display. People can be framed on your screen at your workplace and you could Google+ them in order to view their profiles. Whilst you could tune in to your favorite song through your earplugs, pausing only when impeded due to phone calls, advertisements, also notifications.

### 4. TECHNOLOGIES & FEATURES

#### 4.1. Android

Android is a Google-developed mobile operating system. It is an open source model based on Linux kernel. The Android OS is mainly designed for touchscreen mobile devices like smartphones and tablets. Android's main benefits are easy to implement features and easy to handle. Android is released under Apache License.

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#### 4.2. Bluetooth

Bluetooth is a wireless technology which helps in the exchange of data over short stretch and builds PAN (personal area network). Bluetooth connections require each device to be discoverable. In Google Glass, on command, the smartphone is paired with your Glass.

#### 4.3. Smart Grid

It's an electrical computing grid used to acquire and act on information, depending upon the behaviours of producers and users inclusive of smart meters, smart equipment, renewable energy resources, and resources which are energy efficient and is also a combination of operational and energy measures. It works in an automated manner to enhance the performance, accuracy, economics, and sustainability of the production and distribution of electricity.

#### 4.4. Ambient Intelligence

It cites to electronic environments which are susceptible to the human presence. People going through their ordinary activities are supported by using statistics and intelligence masked within the networking devices.

#### 4.5. Wearable computing

These types of computers are additionally known as body-borne computer systems, are scaled-down digital devices. They are particularly used for operations which needs more difficult computational support rather than just hardware coded logic strained by means of the physical hardware of the system.

#### 4.6. Eye Tap Technology

Eye Tap is a gadget which lets the eye to function both as a digital camera and a display. It's an eyepiece that displays computer information to the user. It's also a device that allows the computer to operate and also allows the user to alter what he sees.

#### 4.7. Smart Clothing

It is the new generation of clothing consisting of recent fabric and digital techniques. Due to the absenteeism of the standardization of technology smart clothing continues to be under development so, many problems occurred.

#### 4.8 Augmented Reality

It is a candid or oblique view of a physical, real-world whose factors are augmented (or supplemented) by computer-generated neural input inclusive of sound, video, graphics or GPS data. This technology functions via improving user's present notion of real-world.

- It helps you to take a picture by using a simple voice command and let you share it using your Google Plus account.
- It helps you to find the directions turn-by-turn using the Google maps.
- By using voice command, it can perform Google search.
- Basically, Google Glass is a piece of technology that can be wearing and performs just like a smartphone. With the use of a small screen located in the front of your right eye, it can perform a range of tasks. Some of them are listed below.
- Using a simple voice command, you can also answer a call.
- It also lets you start a hangout with your friends using your Google Plus account.

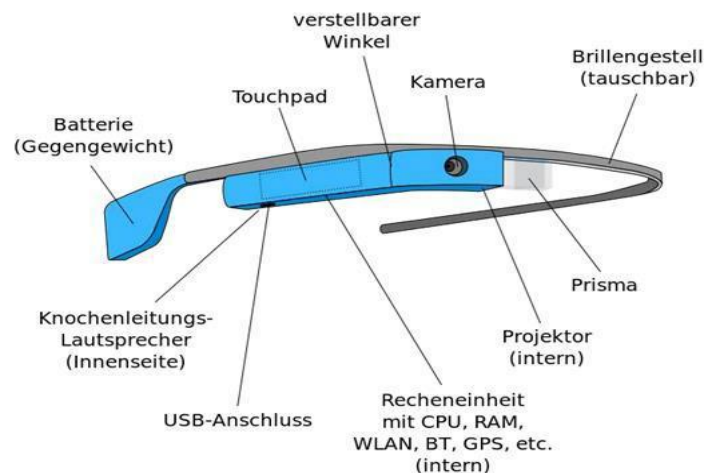


Fig. 2 Components of Google Glass

## 5. ALTERNATIVES

### 5.1 Recon Jet

The 'Recon Jet', is and was, solely made for men and women who have a rushy and fluttery life. These glasses are not only sporty but also asperous and lightweight, and consist of polarized lenses. Technically, the Recon Jet can be connected to your smartphone as well as your wireless network, with ease. It operates on Android 4.2 (JellyBean OS), comprises a high definition camera, and a dual-core 1 GHz processor. On matching it with the price of Google Glass, i.e. 1500 USD, it dishes out 499 USD, as this eyewear doesn't even seem that inhuman.

### 5.2 Vergence Labs' Epiphany Eyewear

Worried about not being smart enough to tell if someone's glasses are actually just glasses or a computer? If yes, then you are going to treasure 'Vergence Labs' Epiphany Eyewear'. At the very first glimpse, these cunning glasses seem to be simply a different pair of glasses, but underneath these glasses is strong and robust mini-computer. These elegant glasses are capable of capturing 720pm, have ten processing cores and also amazing features onboard storage. The Epiphany Eyewear is available in either an 8, 16 or a 32-gigabyte variant.

### 5.3 Telepathy One

Unlike any of the different products cited in the listing, the 'Telepathy One' is alternately smooth and futuristic. Other than that, it behaves more or less the same way the other heads-up glasses or displays do. It has the ability to connect wirelessly to your phone and record videos and click pictures. Another interesting part is the virtual five-inch bright display screen which superimposes computer images and videos accurately in front of your face.

### 5.4 GlassUp

There might be a few ampler options remaining to be cited in this list of alternatives, however, we have decided to mention this company's product, mainly because they have previously been sued by Google. Even though their concept is same as that of Google Glass, GlassUp in, indeed, very distinct from it. Firstly, they genuinely look like real glasses. Secondly, an emphasis has not been laid on a digital camera. And lastly, they cost very less than what Google Glass does. 399 USD as compared to 1500 USD! These glasses can display emails, text messages, directions, heartbeats, translations, or any other information selected by the relevant apps on your smartphone. And the best thing amongst all the other things is that the field of view of this eyeglass is in the center, rather than being in the top right corner of your field of vision.

S. No.	Eyewear	Camera	Price	Memory	Display	Special Feature	Users
1.	Recon Jet	HD	\$499	1GB SDRAM-8GB Flash	720p HD Resolution	Special eyewear for sports	Cyclist runner and triathlete.
2.	Vergence Labs' Epiphany Eyewear	HD	\$299/\$399	8GB/16GB/32GB	720p HD Resolution	Capable of snapping and capturing 720pm, has 10 processing cores and even features on-board storage.	-
3.	Telepathy one	5MP	NA	8GB	960x540 pixels	Works on Linux OS	-
4.	GlassUp	5MP	\$399	-	320x240p	Consists of an accelerometer, a compass, and an ambient light sensor.	Pilot, dentists, employees

Fig. 3 Comparison Table:-

## 6. BREAKDOWN OF GLASS

Releasing the Glass without having to be a complete product was a notable dissenter as Mr. Sergey Brin, co-founder of Google, wanted to iterate and also wanted the betterment of the design by using the consumer feedback. The strategy backfired and led Glass into a bad light. Privacy concerns were raised, as people were afraid of the violation of their privacy, there were safety concerns, such as driving with Glass, and the OHMD (Head-up display) of Glass could cause issues like a binocular rivalry, a latent misalignment of the eyes and visual interference. No steps were further taken by Google to quell these raised issues which in turn led to consumer dissatisfaction at a large level, enough attention was not paid as to what consumers wanted and needed which eventually led to the breakdown of Glass.

## 7. THE IMMORTAL GOOGLE CHILD

After the fallout of Glass, Google decided not to let go of the techniques used in Glass and hereby used it in forthcoming Google products with further advancements. Google Glass technologies are the heart of Google's new products.

### 7.1 Clips: Always on smart camera

Wireless smart camera, photos are automatically captured based on what it senses makes a good moment which was not the case with Google Glass.

### 7.2 Google Lens: A magic world-seeing lens

An app announced by Google during Google I/O 2017, it visually analyzes and brings up relevant information, whereas Glass never could really identify things it saw.

### 7.3 Pixel Buds: One-tap assistance and translation

Wireless earbuds with touch controls and instant language translation shortcuts, Google's new Pixel Buds feel like assistant-meets-headphones. Google Glass had voice activation ("OK, Glass") and a small touchpad, too, mainly for tapping to get Google Now, or swiping to navigate the tiny menu.

### 7.4 ARCore apps: Augmented reality

Apps, they blend the digital and physical worlds together. Glass never did more advanced augmented reality, for the most part, but Google's ARCore apps place realistic 3D objects into the real world using phone screens.

## 8. CONCLUSION

Glass didn't die down; on the contrary, it helped Google with advanced features which were not into development otherwise. The purpose of Glass was to perceive your neural exposure of the surroundings and get it delivered to you in a more liveable, gratifying, more alluring way – while the user doesn't have to compromise on their part. It gave Google an insight into consumer wants and needs, hence improving and making Google more customer-friendly and reliable which was successfully reflected in Pixel products.

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