

Wearable Devices: Google Glass & Smart Watch

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Abstract—In this paper various things about the wearable devices have been discussed. It mainly focusses on two wearable devices that are smart watch and the google glasses. In this things like what are wearable devices, what are their pros and cons of these devices, their features have also been discussed in this paper. Also the working of the google glass and the smart watch have been discussed.

Index Terms: Google Glasses, Wearable gadgets

I. INTRODUCTION

The terms “wearable technology”, “wearable devices”, and “wearables” all refer to electronic technologies or computers that are incorporated into items of clothing and accessories which can comfortably be worn on the body. [1] Wearable devices may perform the same tasks as mobile phones or laptops. It is more sophisticated than the hand-held technology.

It provides sensor and scanning features not typically seen in mobile and laptop devices, such as biofeedback and tracking of physiological function. [1]

Wearable technology have some form of communications capability and allows the wearer to access information in real time. It possesses some features like the data-input capabilities, local storage, etc.

Examples of wearable devices include watches, glasses, contact lenses, etc. [1]

Google glass

Google Glass is a type of wearable technology with an optical head-mounted display (OHMD). [2] It was developed by Google. It displays information in a hands-free format. Wearers of the glass can communicate using the natural language voice command using the internet.

Working of google glass

Google Glass contains almost the same components as a computer like, CPU, sensors such as GPS, speakers, microphone and battery, added in mini projector and a prism which is used to redirect the light onto the retina of an eye. All components are neatly arranged in the frame of the glasses. Most of the processing of the glasses occur in the cloud storage that requires good mobile broadband signal to work efficiently.

The figure 1 below shows the components of google glass.

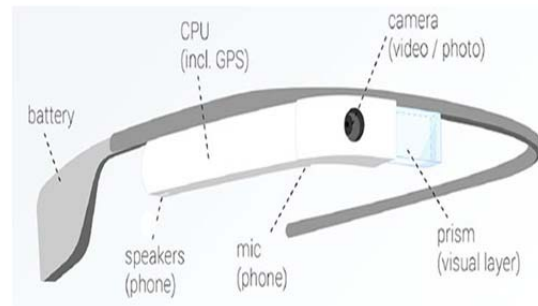


Figure1

Functions of the Google glass

- Video recording: It is possible to record videos using the google glass as it has a camera.
- Capturing of images: It is also possible to capture images using the glass as it has a camera embedded in it.
- Display of messages: The google glass can display/show messages.
- Navigation: It is easy to access GPS on the glasses
- Finding information: It is easy to find information on the glass however, it may appear to be clumsy at times.
- Integration of google now: It is possible to intergrate the glass with google now feature.
- Translation: translation to various languages is possible with this gadget.

The Pros and Cons of Google Glass

The pros

Hands Free: The currently most popular applications for Google Glasses are continuous hands free tasks, such as video recording, maps/directions, and clock/date apps.

Convenience: Another advantage of Google Glasses are the convenience apps, such as taking photos with just a push of a button, head or eye movement, or voice command without the need of taking out a cell phone or camera from a pocket or bag, turning it on, then starting camera application, and then aiming at the camera to take the photo.

Multitask: Users can perform multiple tasks simultaneously using the glasses. For example, drivers do not need to take their eyes off the road if they need directions.

Open Platform: It is easy for any developer to implement new applications on the open platform of Google Glasses.

The cons

Distraction: If a person wearing the google glass is doing an important task and is suddenly flushed by audio or visual information that does not hold for that task, the wearer may get distracted.

Privacy: Other people might not come to know if they are being recorded by Google Glass.

Stress: Google Glasses can always be worn and may be in use therefore, inviting stress and anxiety.

Surfing: Surfing using the glasses can be clumsy. Thus, it is not convenient and easy to use it as a replacement of computer cell phone, etc.

Price: The current price for google glasses is somewhere between US\$500 and US\$1500. But, mostly they are made with commonly available parts or that are easy to manufacture. Therefore, the price of Google Glasses should not be very high.

The smart watch

A device that can be worn on a user's wrist and offering the same functionalities as that of a smartphone. Smartwatches can either be independent or can be paired or synced with a smartphone, but it can be paired using internet, Bluetooth, NFC, etc. It can be used for running mobile applications, making calls, messaging, accessing weather updates, using GPS coordinate, and much more. Companies like Google, Samsung, Apple, LG, Sony, Pebble, etc. have developed smart watches.

Working of a smart watch

A smartwatch needs to be synced with a smartphone so that it can work to its fullest. This syncing can be done using Bluetooth pairing, some devices allows pairing using NFC also.

Once a smartwatch is connected to a smartphone, the user can choose what notifications to get on his/her wrist like messages, emails, calls, etc. Using applications the user can control what music is played on the device or to take a photo remotely. However, functionalities may vary from smartwatch to smartwatch. Shown below in figure 2 is an apple smartwatch with some of its functionality. However the working and design may vary from brand to brand.



Figure2

Features of the smart watch

1. **Replying to texts by voice:** Using the smart watch, the user can reply to the messages using voice.
2. **Vibrate with an incoming message:** the watch vibrates when a message arrives.
3. **Can access Google Now in hands-free mode:** The user of the watch can access google now feature in a hands free mode.
4. **Sleep tracking:** It is a feature where the application tracks the time of sleep and responds to the user based on it. It also wakes up the user automatically.
5. **Variety of the hardware:** it offers a variety of hardware.
6. **Control music:** the watch can be synced to the smartphone using Bluetooth, NFC, etc. which can help in controlling the music through the watch.
7. **Weather and Traffic updates:** The weather and traffic updates can easily be checked using the smartwatch.

Disadvantages of the smart watch

Battery: good battery life is a must for any hardware device. The use of sensors, CPU may consume a lot of batteries so, a smartwatch should have a good battery backup. Most of the smart watches 300 mAh which is very small as compared to the smartphone devices.

Size and weight: Size of these watches is large as compared to normal wrist watches and it may be too heavy to carry on the wrist.

No phone calling: Some of the smart watch does not allow answering the calls directly.

The smartwatch may have microphone and speaker and it is possible to use it as a hands-free device. But, some of the watches does not have the microphone or speaker.

No Camera: The smartwatch cannot replace a smartphone when it comes to the camera as some of the smartwatches do not have camera so they need to use their smartphones in order to use the camera.

II. CONCLUSION

From this paper, it can be concluded that the devices that can be combined with what we wear are known as the wearable devices. These devices are portable and can easily be synced with the smartphones using Bluetooth, NFC, etc. Two devices viz. smartwatch and the google glass have been discussed in this paper. Each of these devices have their own advantages and disadvantages.

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