Smart glass using Internet of Things

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Abstract- *Here we propose that an intelligent glass system would be the display of information currently available to smartphone users. The main objective of smart glasses is to provide users with information and services relevant to their contexts and useful for users to perform their tasks; in other words, these devices improve users' senses. They also allow users to perform the basic operations available on today's common mobile devices, such as reading, writing emails, writing text messages, taking notes and answering calls. Therefore, although most of the use of smart glasses is passive for users, i.e. reading content on the device's small screen, active interaction with these devices is essential for controlling them and providing input. In fact, users need ways to order smart glasses, for example to open a particular app, respond to something they need to know, insert content by email, messages or input fields or to control games. It can support wireless technologies such as Bluetooth, Wi-Fi and GPS. While fewer models run a mobile operating system and function as a portable media player to send audio and video files to the user via a Bluetooth or Wi-Fi headset. Some models of smart glasses, traceability. They also have activities and life records*

Keywords: Arduino micro, Bluetooth connection, Smart glass, Touch sensor, 3D print, Android

1. INTRODUCTION

In recent years, smart glasses have been launched on the market. Smart glasses are equipped with a transparent optical screen, which is placed in the line of sight of human users. The human user can see both the real world environment and the virtual content displayed on the screen. To facilitate mobile users, software engineers had developed intelligent glass technology that helps users use a mobile device. Smart Glass is a portable technology that should become an extension of the human body and mind [5]. It will act as the bridge between biology and technology, to be the catalyst for the convergence between reality and virtuality: transforming human-computer interaction, while encouraging users to interact again with each other and with their environment. . Portable technology is becoming able to meet specific user needs [1].

Therefore, it has considerable potential to increase and improve the lives of the people who use it. Portable technology is defined as technology, which has been integrated into clothing or accessories. Currently, the functionality of portable devices is similar to that of smartphones. However, unlike mobile technologies, portable devices are sometimes equipped with sensors that can measure physiological data, such as heart rate. The predominant application of wearable technology is currently within specialist fields such as military and health-care. Nevertheless, wearable's are slowly emerging as products for the general consumer [4].

Smart glasses are laptop glasses that add information along with what the user sees. Alternatively, smart glasses are sometimes referred to as laptop glasses that can modify their optical properties at run time. Smart sunglasses programmed to electronically change the tint are an example of the latest type of smart glasses. Smart Glass is a tool with which we can make several advances in current technology. Few examples are driverless cars, GPS tracking systems and many others. This role of Smart Glass in relation to a possible contribution to network surveillance [2].

Privacy has become increasingly limited in recent decades due to the rapid rise in technology and social media. This document will examine the most recent link possible in this collaboration, Smart Glass, and provide the current status on network surveillance and side effects. To answer whether Glass is here to improve our daily life or simply to improve Google's database, selected theories are applied to analyse and interpret Glass's possibilities and potential regarding network surveillance. Using the above theories and analyses, it was concluded that Glass has a feasible feasibility for contributing to network surveillance [1].

I want to discuss how smart glass works, the various specifications of smart glass, possible progress with smart glass and other benefits. There are some requirements for smart glass and some positive and negative points. So, briefly discuss these points and how to overcome them. Just like for precise work, smart glass requires Wi-Fi and Bluetooth and very high speed (4G) Internet. So this gives us the idea of using smart glass and how we can standardize our life with this device [6].

2. LITERATURE SURVEY

- **"A Study on Google Glass Technology" BySabapathi.V et al**

Google glass is an optical head display developed by Google in the Google x laboratory to use the Android operating system. Capture images, video interface

between them in personal contact, map and personal data. An advantage of this technique is that it communicates the request to the computer and informs the interlocutor about the use of the machine by the user. In terms of increased public safety, Google's new product can be a revolutionary savoir. As with any new technology, people's privacy will be an issue, but Google Glass is definitely not dangerous or harmful to society. As a high-speed and high-speed culture, we can reap many benefits from such a futuristic product.

- **Working: -**

It has the basic characteristics of any computer, such as a CPU, also sensors such as GPS, speakers, microphone and battery, a small projector and a prism that directs light towards the retina[1].

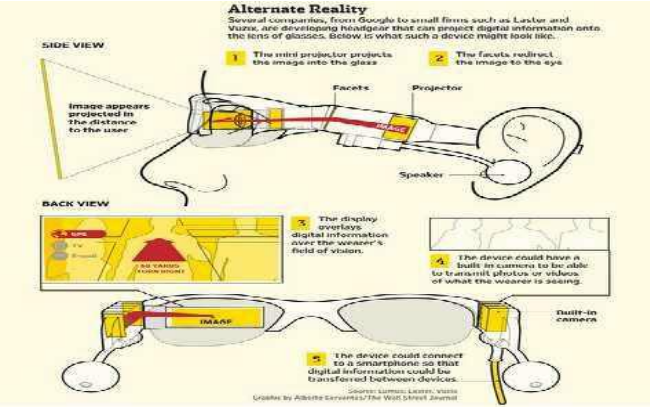

Fig-1: Working of smart glass

- **"Object Detection using Google Glass" By Babak Taraghi& Mahdi Babaei**

Time sensors played a prominent role in head-mounted displays (HMD) and helmet devices to recognize human gestures as input tools. The new generation of portable devices more suitable for everyday use promises easier interaction with digital content. This recently marketed device is one of the first approaches that benefits from a combination of different modes that are able to facilitate interaction on portable devices. User interfaces (UI). This device includes RGB and infrared cameras and microphones to recognize a user's activities. The acquisition of frames from the cameras of this device has the ability to be used for the detection of objects and gestures. In general, it contains multidimensional real-world data that can be interpreted in numeric or symbolic information. Tracing a specific object in a series of images is one of the main objectives in this area. It is a direct or indirect view of a physical environment in the real world whose elements are augmented (or integrated) by computer-generated sensory input, such as sound, video, graphics or GPS data. This technology works by improving the user's current perception of reality. In this survey, we used the iterative design method and the incremental construction model for software development. The combination is long-standing and has been widely suggested for major development efforts. This allowed us to take advantage of what was learned during the development of parts or previous versions of the system. In each iteration, design changes have been made and new functional features have been added. Based on the comments, a plan for the next increases was developed and the changes were made accordingly. The public can become an important factor in reducing crime with the use of Google Glass. Glass is quick and easy because it has no hands. If someone becomes a witness to a crime or is about to be a victim of a crime, a quick activation of Google Glass can launch the camera and ensure that the culprit will be held liable. Take attack 11/26, for example. The 11/26 case would have been resolved faster if someone had used Google glasses. A video of the terrorists who planted the bomb or otherwise got involved would have been captured. Therefore, people's terror could later diminish. In addition, it can be a very useful product for medical students. Senior doctors can use glass during an operation and the whole procedure can be observed by students outside. This was recently implemented by a doctor in Chennai.[2].

3. PROPOSED SYSTEM

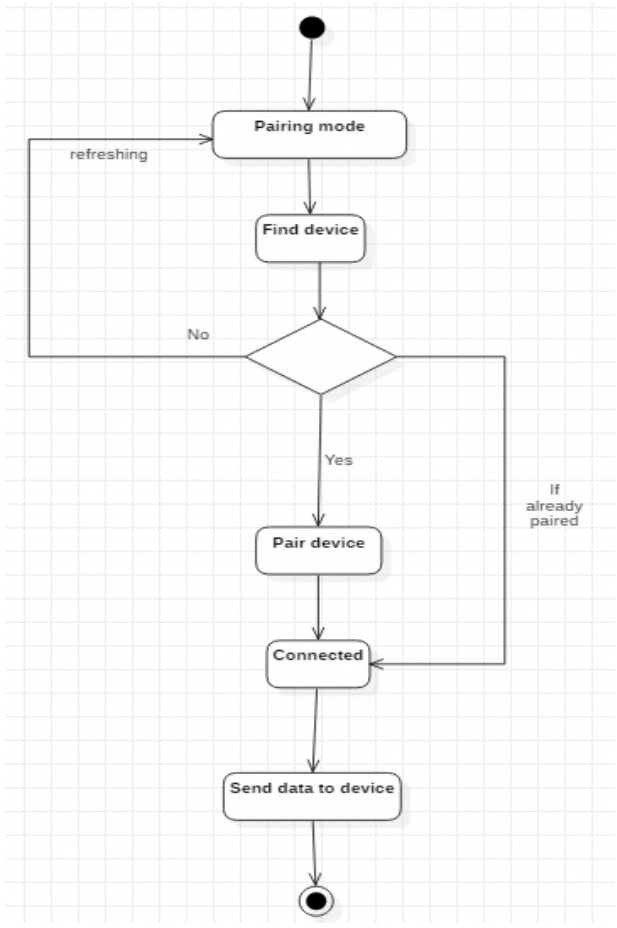

Fig-2: Activity diagram of application

The activity diagram is basically a flowchart to represent the flow from one activity to another. The activity can be described as a system operation. The control flow is drawn from one operation to another. In this diagram, the user first puts the app in pairing mode and fixes the device if no device is found, switches to update mode and searches for the device again. And if it is found, the device connects to the smart glass and sends the mobile data to the app.

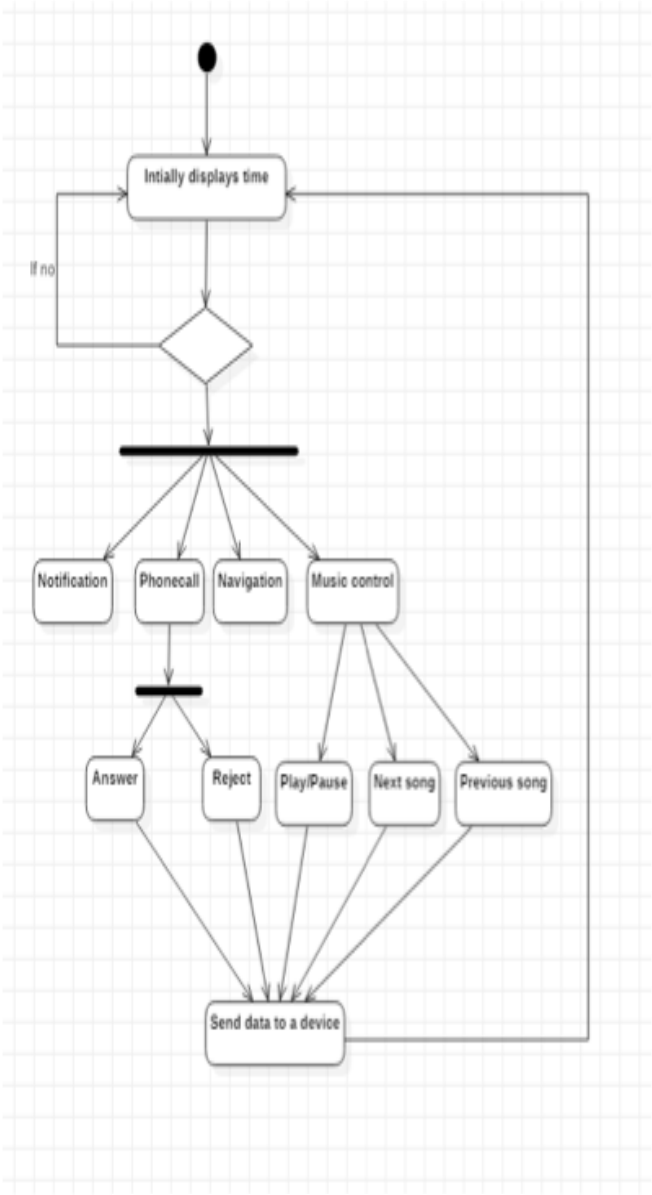

Fig-3: Activity diagram of device flow

On the other hand, the smart glass initially shows the time and if there is an interruption or a warning on the phone, such as phone calls, messages, navigation and music control. According to the user's needs, he answers the mobile phone via Smart Glass

4. METHODOLOGY USED

The device will likely communicate with mobile phones via Wi-Fi and display content on the video screen, as well as respond to user voice commands. The video camera detects the environment and recognizes surrounding objects and people. All the operation of the smart glasses depends on the user's voice commands. Users issue voice commands by saying "ok glass" first, followed by the command, or they can scroll through the options with a finger along the side of the device. See both the physical world and all the relevant data associated with it, the type of data that is currently.

1. Oled display

OLED (Organic Light Emitting Diodes) is a flat light emission technology, created by placing a series of organic thin films between two conductors. When electric current is applied, intense light is emitted. OLEDs emit displays that do not require a backlight and are therefore thinner and more efficient than LCD displays (which require a white backlight). Transparent OLEDs are used for front display screens, such as Google glass or airplanes. Helps display any device notification on smart glass. Falsification: day, hour, phone call, messages, etc.

2. Touch sensor

A touch sensor is a type of equipment that captures and records physical contact or embrace on a device and / or object. Allows a device or object to separate touch, usually from a human user or operator. Touch sensors are also called touch sensors and are sensitive to touch, force or pressure. They are one of the simplest and most useful sensors. The operation of a touch sensor is similar to that of a simple switch. When there is contact with the surface of the touch sensor, the circuit closes inside the sensor and there is a flow of current. With the help of this user you can stop or play music and you can also accept and reject calls.

3. Arduino Nano

Arduino Nano is a small, compatible, flexible and breadboard compatible microcontroller board, developed by Arduino.cc in Italy, based on ATmega328p (Arduino Nano V3.x) / Atmega168 (Arduino Nano V3.x). It comes with the same functionality as Arduino UNO but rather small in size. It is supplied with an operating voltage of 5 V, however the input voltage can vary from 7 to 12V. Arduino's nano pinout contains 14 digital pins, 8 analog pins, 2 reset pins and 6 power pins.

4. Bluetooth module

The Android app is designed to send serial data to the Arduino Bluetooth module when a button is pressed on the app. The Arduino Bluetooth module at the other end receives the data and sends it to Arduino via the TX pin of the Bluetooth module. This is the most important component of the project which helps to connect both devices together.

5. IMPLEMENTED SYSTEM

- Oled display which display day and time of the mobile device.

Fig-4: Initial Display

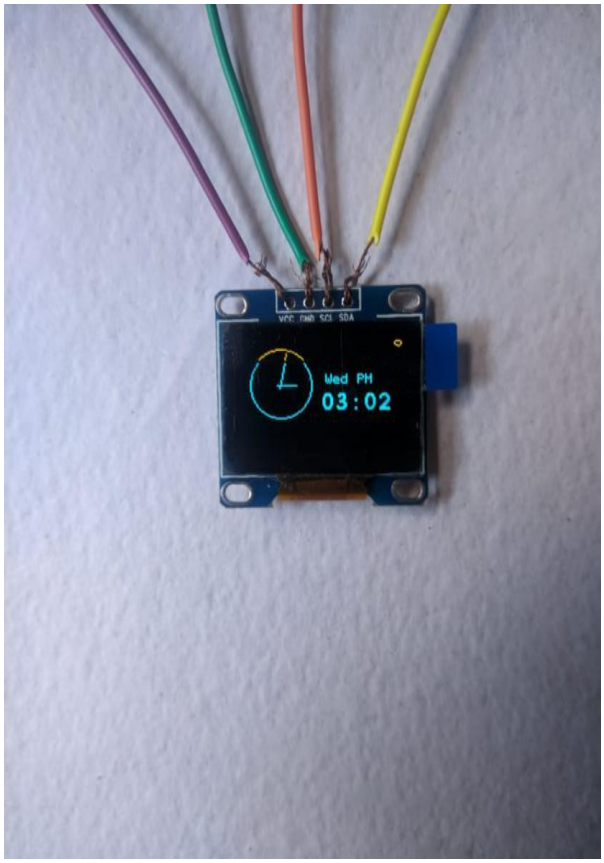

Fig-5: Display Day &Time

- Oled display that displays any notification on the device.

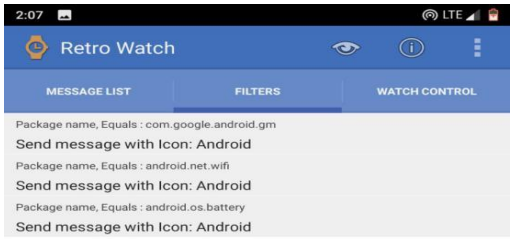

Fig-6: Display Day &Time

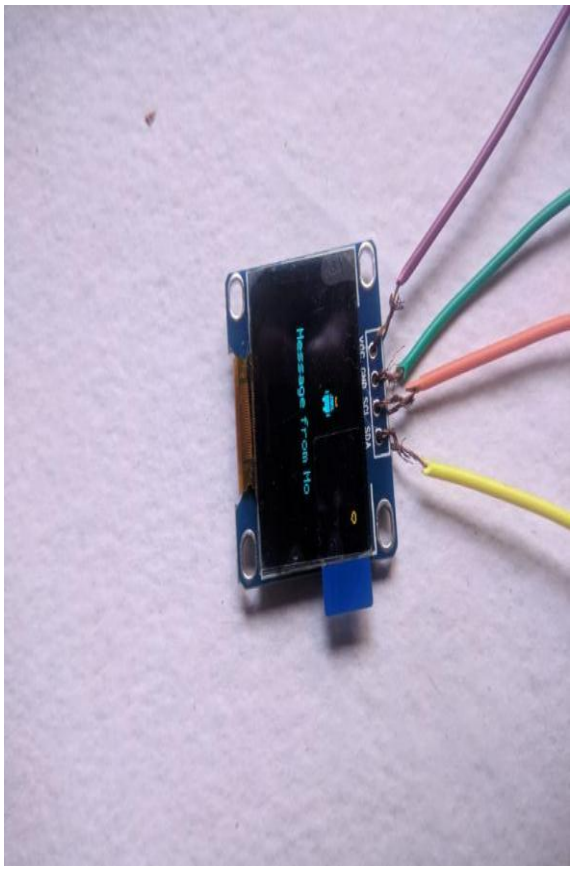

Fig-7: Display Notification

- Oled display that displays that is your smart glass connected to your mobile device.

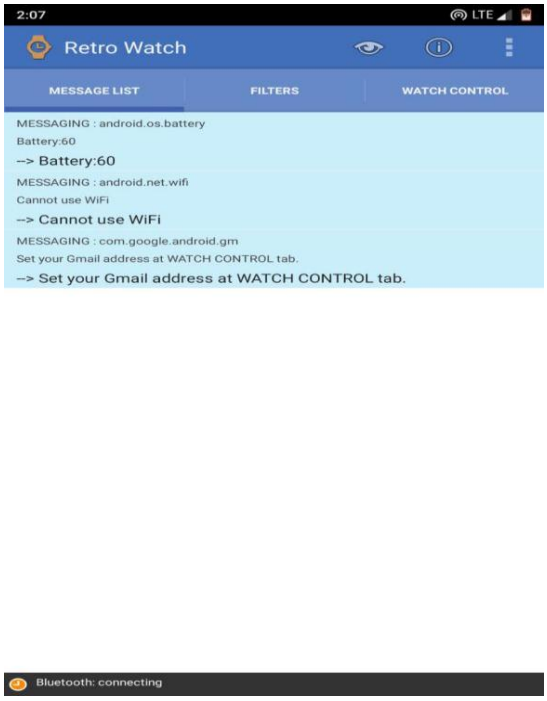

Fig-8: Display Notification

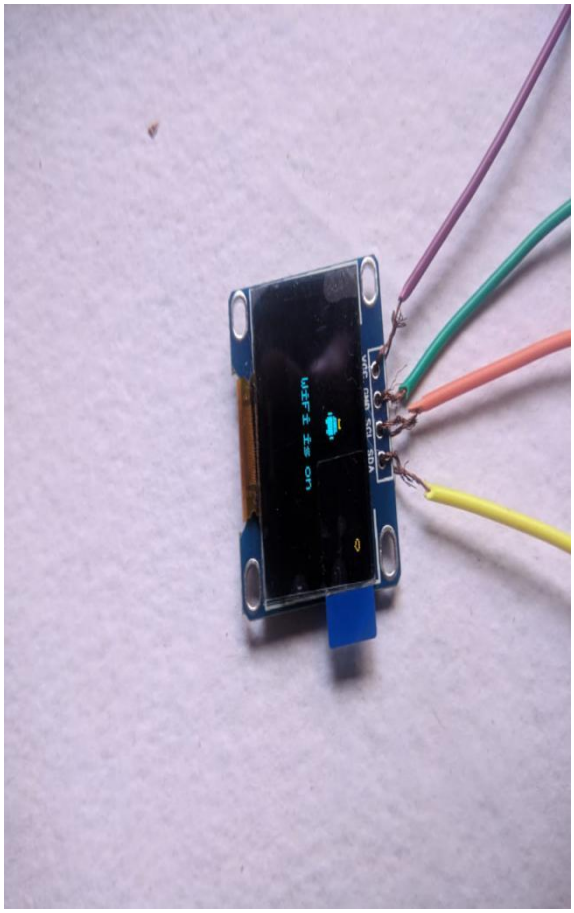

Fig-9: WiFi Toggle State

Fig-10: Final Model (Back View)

Fig-11: Final Model (Front View)

6. ADVANTAGES & DISADVANTAGES

Advantages

- Wearable headgear that allows some uses hands-free.
- User can receive information and notifications from Internet and social media without having to check a Phone or other mobile device.
- This is a neat feature that may come in handy when You travel abroad.

Disadvantages

- Can take pictures without permission.
- Smart Glass cannot be used by those people who already having some issue with their eyes and wears glasses in their daily routine.
- It requires a internet connection.

7. CONCLUSION

Google Glass is as futuristic a gadget we've seen in recent times. It's limited in scope right now. 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. Future scope of Google Glasses Google glasses are basically wearable computers that use the evolving familiar technologies that brings the sophistication and ease of communication and information access even for the physically challenged class of people those literally could not use general way of palmtops and mobile.

REFERENCES

[1] "A Study on Google Glass Technology " Sabapathi.V et al International Journal of Advanced Research in Basic Engineering Sciences and Technology (IJARBEST)

[2] "Object Detection using Google Glass" Babak Taraghi & Mahdi Babaei 2015 IEE Conference on Open Systems (ICOS), August 24 - 26, 2015, Malaysia. Vol.3, Special Issue.25, February 2017.

[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] Pooja S. Mankar, "Propelled innovation google glass" InternationalResearch Journal of Engineering and Technology (Volume-02 Issue-01 March 2015).

[5] Miss. Shimpali Deshpande, Miss. Geeta Uplenchwar Dr. D.N Chaudhari "Google Glass" International Journal of Scientific & Engineering Research, Volume 4, Issue 12, December-2013.

[6] Arockia Panimalar.S 1, Tamilselvi.K2, Vani.K3, Pattabi.M4, Arnold Roodiet.V5, Nandhini.S6, Muthumeenal.L7 GOOGLE GLASS TECHNOLOGY. Volume: 04 Issue: 08 | Aug-2017