

Smart Data Glass

Pratiksha Kotwal¹, Priyanka Shahane², Sonali Jadhav³, Prof. P. N. Sonawane⁴, Jadhav Swapnil⁵

^{1, 2, 3, 4, 5} Dept of E & TC

^{1, 2, 3, 4, 5} Savitribai Phule Pune University, Nashik, Maharashtra, India

Abstract- Smart glasses are used as an extension, which can be attach to the spectacles of the wearer to display a data received from smart phone i.e. text messages, notifications. The smart glasses with the smart application have a purpose for every part of your day. It includes all day activity which shows progress towards your daily goals for steps, distance, calories burned. Upon successful pairing with the Bluetooth module and installation of the android app, notifications can be displayed on the glass.

Keywords- Oled display, Notification using Glass, Google Glass.

I. INTRODUCTION

The maturing field of wearable computing aims to interweave computing devices into everyday life. This report focuses on smart data glasses, one of the categories of wearable computing devices which is very present in the media and expected to be a big market in the next years. It analyses the differences from smart glasses to other smart devices, introduces many possible applications for different target audiences and gives an overview of the different smart data glasses which are available now or should be available in the next few years. Interesting technological features of the smart data glasses are highlighted and explained. Smart Data Glass are a wearable computer that adds information to what the wearer sees. Typically this is achieved through an optical head mounted display (OHMD) connected glasses with transparent heads up display that has capability of reflecting project digital data as well as allowing the user to see through it, or see better with it. While early models can perform basic tasks, such as just serve as a front end display for a remote system, as in the case of smarty glasses utilizing Bluetooth or Wi-Fi modem smart glasses are effectively wearable computers. Smart glass can do in order to save people time, by making some daily tasks processing easier and more efficient. Smart glass displayed information in smart-phone like hands-free format. The designed is based on what technology is available today.

II. METHODS AND MATERIAL

A. Working

It consists of Bluetooth module, Wi-Fi module, Arduino Nano, Oled display, Focal length and Glass. Basically the system has two parts first is the hardware part and rest is the software part. Both the parts of a system is connected via Bluetooth connection. The data is nothing but the notifications, how many steps you have to walked, distance you have to travelled, calories burned, etc. This glass is programmed in Nodemcu which is connected to the mobile phones through Bluetooth module HC-06. The received data from phone is then displayed on the Oled screen. Focal length is nothing but the mirror, magnifying glass, and transparent glass. A mirror is an object that reflects light in such a way that, for incident light in some range of wavelengths, the reflected light preserves many or most of the detailed physical characteristics of the original light, called specular reflection. Magnifying Glass is used to produce the magnifying image of data. The design of glass is done by using 3D printing technique.

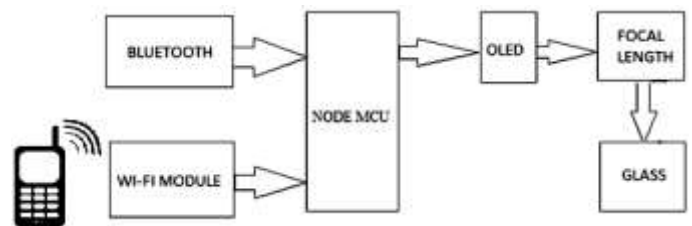


Fig 1. Block Diagram

B. Components Used:

NodeMCU: NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module.



Fig 2. NodeMCU.

The term “NodeMCU” by default refers to the firmware rather than the development kits. The firmware uses the Lua scripting language. It is based on the eLua project, and

built on the espres if non-OS SDK for ESP8266. It uses many open source projects, such as Lua-cjson, and spiffs.

ESP8266: The ESP8266 is a low-cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability produced by Shanghai-based Chinese manufacturer espres if Systems. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at the time there was almost no English-language documentation on the chip and the commands it accepted.

The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, chip, and the software on it, as well as to translate the Chinese documentation.



Fig 3. ESP8266

The ESP8285 is an ESP8266 with 1 MB of built-in flash, allowing for single-chip devices capable of connecting to Wi-Fi.

Bluetooth module HC-06: This Bluetooth module can easily achieve serial wireless data transmission. Its operating frequency is among the most popular 2.4GHz ISM frequency band (i.e. Industrial, scientific and medical). It adopts Bluetooth 2.0+EDR standard. In Bluetooth 2.0, signal transmit time of different devices stands at a 0.5 seconds interval so that the workload of Bluetooth chip can be reduced substantially and more sleeping time can be saved for Bluetooth. This module is set with serial interface, which is easy to use and simplifies the overall design/development cycle.

Oled Display: An Organic Light Emitting Diode (OLED) is a display device which has self-light emitting technology composed of a thin, multi-layered organic film placed between an anode and cathode. In contrast to LCD technology, OLED does not require a back-light.



Fig 4. Oled Display

These displays are small, only about 1" diameter, but very readable due to the high contrast of an OLED display. This display is made of 128x64 individual white OLED pixels, each one is turned on or off by the controller chip. No back-light is required for this display because it makes its own light which reduces the power required to run the OLED. Its Visual Angle is greater than 160. It needs only 2 I/O Port to Control, since the display uses I2C interface.

Li-Po Battery: A lithium polymer battery, or more correctly lithium-ion polymer battery (abbreviated as Li-Po, LIP, Li-poly, lithium-poly and others), is a rechargeable battery of lithium-ion technology using a polymer electrolyte instead of a liquid electrolyte. High conductivity semisolid (gel) polymers form this electrolyte. These batteries provide higher specific energy than other lithium battery types and used to charge data glass.

III. RESULTS

This is the working prototype of our developed system.

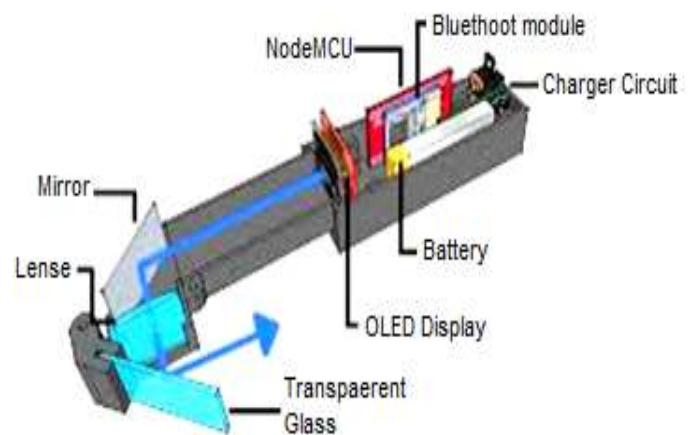


Fig 5. Working prototype of Project.

We have also tested our system. The results of the same are good. We have also developed an application for user.

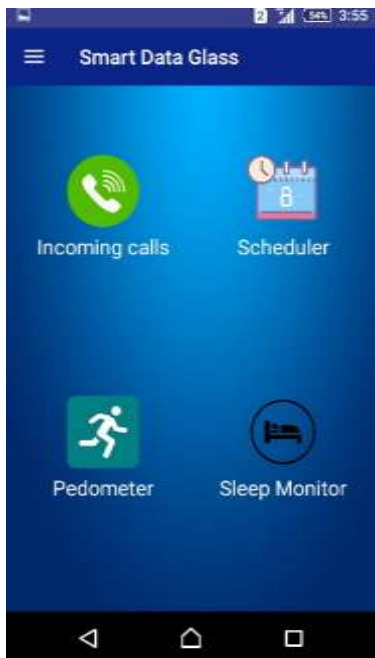


Fig 6: App GUI for Smart glass

It has two main features

1. Counts the no of steps the user has climbed per day,
2. It shows the notification of incoming calls to the user.

These two notifications are shown below:

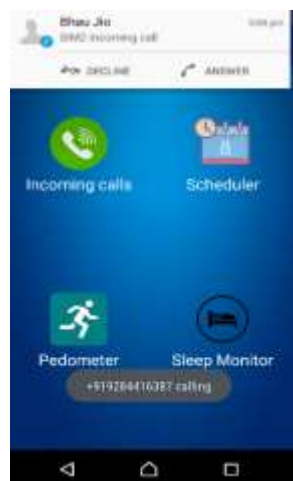


Fig 7. Call Notification GUI

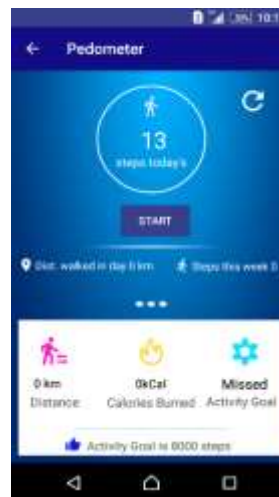


Fig 8. Pedometer GUI

IV. FUTURE SCOPE & ADVANTAGES

In future by using the concept of Augmented and Virtual reality we can extend this smart glass to be a futuristic gadget which has bright future.

Advantages:

- Easy to wear.
- Hands free experience.
- The device is easy to turn ON and turn OFF.
- Notifications do not pop up if glass is OFF.

V. CONCLUSION

This smart data glass is developed with minimum cost. It consists of two mechanisms. The first mechanism consists of hardware embedded in the circuitry in the glass, whereas the second mechanism is the interaction between smart phone and the glass.

REFERENCES

- [1] Miss. Deshpande Shimpali, Miss. Uplenchwar Geeta, Dr. Chaudhari D.N,“Google Glass”, International Journal of Scientific & Engineering Research, Volume 4, Issue12, December-2013.
- [2] Mittal Mayank, Khatri Akash , Tiwari Raghvendra, “Digital data and call notification system in Google Glass using Arduino Nano”, International Journal of Innovative Research in Computer and Communication Engineering, Vol. 6, Issue 5, May 2018.
- [3] <https://en.wikipedia.org/wiki/ProjectGlass>.
- [4] <https://en.wikipedia.org/wiki/Head-mounteddisplay>.
- [5] <https://www.youtube.com/watch?v=pkB1Nahi-X0>.
- [6] <http://www.google.com/glass/start>.