DATA GLASS

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Abstract - *Checking the mobile phones while driving is dangerous job that requires accidental demise. One of cause for accident occurred because of the carelessness of the driver himself, for instance, a driver required to attend phone call while he was driving and he accidentally rush into another vehicle while he was using his phone. The result will be his death. To avoid this problem occurred, our data glass will be focused on how to keep focus on hands-on job when doing main work such as attending phone call while driving. The plan for answering this difficulty is to design and develop devices that can results output digital data on front of user's eyes. After doing some experimentation, the most suitable device for this case is data glasses. Therefore, this project will deliberate on designing and improving of the data glass by studying and earn good idea from the previous researcher that also making the data glasses. Lastly, this project is built as cheap and simple as possible for every rank of group to earn it.*

Key Words: Smartphone, Arduino, RTC Chip, OLED etc.

1. INTRODUCTION

This the chapter represents the plan to advance Data Glass. It also covers the objectives, background, project scope and problem statement. The problem statements were condensed to offer solution for this problem. The solutions are expressed as objective of developing data glass project. Therefore, the extent is covering the functionalities offered by this data glass.

1.1 Background

Due to the technological developments, different portable terminal and computer are these days part of the work as usual. Everybody obviously has mobile phone which is a smart phone, but various portable terminal and pertinent application are these days basic apparatus for mobile worker. All wearable technology constitutes next stage of development that is running evenly with hands free and eyes free**.**

It is most needful to have wearable technology where devices are small and design which allows them to be either desegregated to clothing or easily portable. With newest technology, it is very easy to supply changeable accurate and extra details for the mobile workers without disarranging actual work with some device or workflow interferences.

In order to develop the devices that can exhibit data information in front of the user's eyes, Data Glasses has been established. The display may be reflected or projected on the lens of glasses. Most importantly, the user can view the environment without interruptions when he or she doesn't need the details supplied by the Data Glasses.

Fig a: User Viewing Field of Data Glass

Data Glasses normally works with the phenomenon called augmented reality, which means by exhibiting digital information in the real world. For moving pictures or virtual reality or watching video, there is dissimilitude when doing differentiation on display techniques. For example, an item on hands or the data about vision of a person and even identification of human face are mostly supplied by Data Glass systems. The User can communicate with system, for example with a voice, a signs or a finger sweeps. It is important that managing the system is very easy and practical and should be suited for the tasks. The device is ought to fit or suit superbly so that we don´t have to think about utilizing it or giving attention to it while not in use.

There was an increase in development of this project Data Glasses. Because of the characteristics such as the user sharing their point of view with other people with faraway location or users may look into digital exhibited without using hand, Data Glasses are anticipated-for being used on field of worked. An instance of work system, that use Data Glasses is when workers are firstly using the Data Glasses to keep away from whatever failure from gazing at the digital display while focusing on their work done by their bare hands.

The Graphical User Interface (GUI) design based on Data Glasses to help the pilots on harbour operations that has been debated which supply pilots to talk to any details of theirs while pursuing to look outside the window and to thus continue to concentrate on their work

done by their bare hands. The result of this was pilot has capacity to see and solve a problem fast with help of details from the data glasses. Tsunami Evacuation Drill (TED) system has been advanced by (Junya Kawaia, 2015) to answer the problem of contributors who are not interested or committed to the Evacuation teaching. The intension of this project was success where the contributors were able to move fast while view text and map stuff supplied by the system.

2. BLOCK DIAGRAM

For this part, it was test one by one for each device to learn and understand how to use it properly. Among of them is to learn about the connection Bluetooth module to Arduino Nano, connection Micro OLED to Arduino Nano and lastly is the connection charger circuit along with LiPo battery to be the supply for this project.

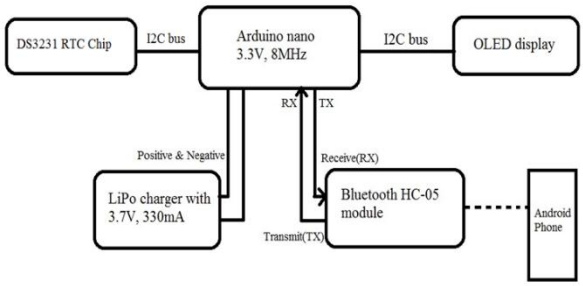

Fig b: Schematic diagram of Data Glasses

Arduino Nano in this project are the brain for system which will control OLED display and Bluetooth HC-05. And because of that, Arduino will need supply which is from LiPo battery. Next, based on the coding created, the Arduino has been set for receiving data at RX from BLE module. For this Project, the data receive is time, calendar, temperature, incoming call and message details of android phone. Next, Arduino will send the information to OLED via I2C Bus in way which users can easily read the data. Then, OLED will display the data which is time, calendar, temperature, incoming call and message details that also display at android phone.

3. FLOW CHART OF THE PROJECT

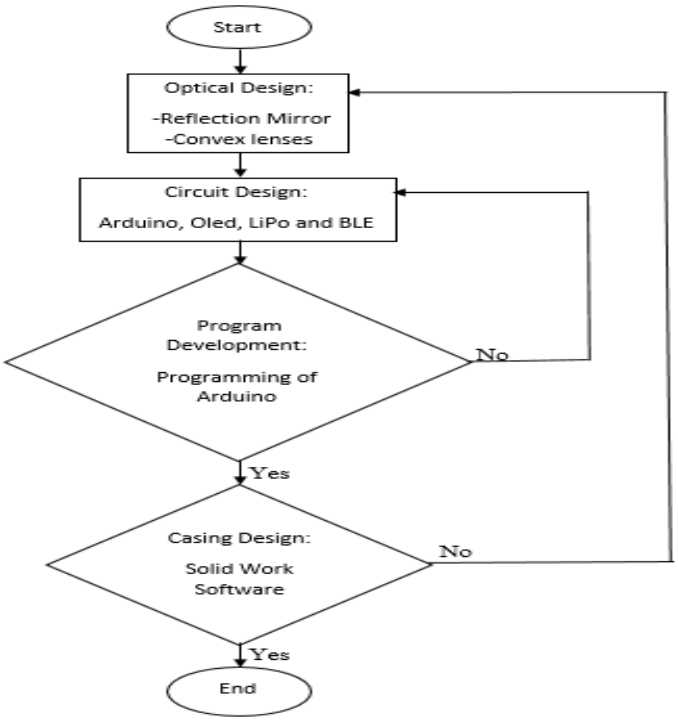

Fig c: Flow chart of the project

Flow chart will decorate flow of overall procedures, for example part taken for attain final goal of project. Diagram of the flowchart shows that quests are made for making each part of the project to achieve plan and develop Arduino Data glasses as shown at figure c.

Figure c shows flow chart of step by step to complete this project. Firstly by finding the appropriate optical design that is able to display the image reflection clearly in front of user's eyes. After doing some research, Arduino Data glasses will used the combination of reflection mirror and convex lenses to display the image reflection. Next is making circuit design that can receive data via Bluetooth and then display the data in digital form.

4. FLOW CHART FOR THE CODE

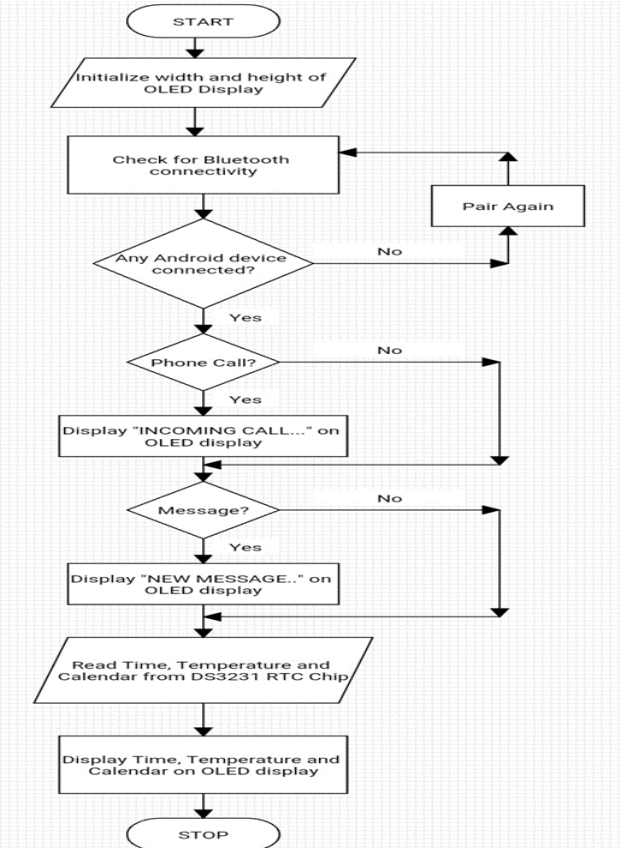

Fig d: Flow chat for the code

- The flow diagram of the project is shown in Fig 6.1.
- Firstly, initialize width and height of the OLED display.
- Check any android phone is connected to Bluetooth module. If not pair again.
- Once Bluetooth module is connected, our data glass is now ready to receive the data from the android phone.
- If any incoming call to the phone, Arduino will send the data to the OLED display and OLED display will display the text "INCOMING CALL…".
- If any message came to the phone, Arduino will send the data to the OLED display and OLED display will display the text "NEW MESSAGE…".
- If no message and no incoming calls to the phone then Arduino will read the time, temperature and calendar from the DS323l RTC Chip and OLED display will display the time, temperature and calendar.

5. FUTURE SCOPE

This Data Glass project can be implemented in future with extra features. There are some areas of improvement for future development of the project. We can add map features in MIT APP inventor. So that we can see the map in front of user's eye. Also we can build the different reflectors with mirror foils and tint, so that glass can function in a bright area. Next is by decreasing weights and redesigning enclosures. Furthermore is try out with small 0.49 inch screen. We can edit extra features in the project based on user's requirement.

6. CONCLUSIONS

6.1 Introduction

This chapter focuses on conclusion and recommendation related to this project. The suggestions given here will involve improvement on existing project.

6.2 Summary of Research

This data glass project was developed to make device that can display digital output signal in front of user eyes. Several method had been used in researching and implementing good plan from other investigators that also building the data glasses. Optical design and circuit design had been developed as main body for this Data Glass project. Reflection mirror and convex lens which is the best method for the optical design had been used. Arduino Nano used as brain to control the circuit which is Bluetooth module HC-05 and OLED. Charger circuit and LiPo battery are added as supply for the electronic circuit to make this project use as a long term useful tool.

6.3 Achievement of Research Objective

The objective of this Data Glass is to build Head-Up screen for mobile details as cheap and simple as possible for suitable to everyone to earn it. As the final result for this project, the person will be able to see the temperature, calendar, time, incoming call and message detail in front of their eyes while doing their hands work especially in area of high voltage which is a very dangerous place. Besides that, the user can easily adapt this project as useful tool because it is a friendly user which is able to recharge back and it has a button to turn the device on and off. In addition, this device will automatically connect to the android phone when the switch is switched on and the phone Bluetooth communication is also open.

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