Android Application Based Responder and Controller

Suresh Kumar[1], Binod Gupta[2], Shadab Ahmad[3], Rajesh Halke[4]

1,2,3 UG Students of Electronics and Telecommunication Department,
Dr DY Patil School Of Engineering and Technology,
Lohegaon via Charoli, Pune, India-412105

4Assistant Professor, Dept. of Electronics and telecommunication Engineering, Dr D Y Patil School of Engineering and Telecommunication, Maharashtra, India

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Abstract - *Now-a-days in such a busy life we have a greater need to manage all the things around us. At such point of time it's very important to have all in one controller. Most of the time a person spends unnecessary time and effort in finding lost objects and sometimes ends up never finding them. So here, a voice controlled android application can be used to find those lost objects like keys, wallet etc and controlling things around us like car ac, lights, fans etc. "Android Application Based Responder and Controller" is consisting of two electronic devices, a Responder and a Controller which can be controlled by a voice command and android application. The Controller is an embedded system used to control home appliances. It uses relays and relay driver to control appliances. The Responder can be attached with any object that responds to the commands by triggering a buzzer and a LED. These commands such as voice and graphical user interface can be reprogrammed using Android application according to individual's convenience.*

*Key Words***: android application, responder, controller, voice command, lost objects**

1. INTRODUCTION

The motive of this project is to help people in controlling and monitoring things around them. Generally we have the tendency of forgetting our important things just after we place them somewhere e.g. Keys, Wallet, Bags, Pen drives, laptop, etc. People get frustrated when they lose such things.

In this situation our responder device can be very useful especially for old age persons. A Responder is capable of locating an object of interest in an adjustable range around 20-30m. Today most of the smart phone uses Android operating system. Android powers hundreds of millions of mobile devices in more than 190 countries around the world. In this project we are using android application and Bluetooth low energy module having 4.0 version.

This project relates in general to a device for enabling persons to easily locate and find lost or misplaced objects or items common to a household or office environment, and more particularly by utilizing a wireless transmitter (Android mobile) and plurality of wireless receiver (Bluetooth module) attachable to objects or item to be located at various places.

The controller is a device as a part of our project. This can be used to control electronic appliances around us and password protected home door with the help of an Android application, Bluetooth module, Arduino board and relays. We can easily Switch ON and Switch OFF all the switches in our home using an android application with reducing human involvement to a minimum. This makes not only an efficient way but also an economical use of the electricity and reduces much of the wastage.

2. EXISTING SYSTEM

An object finder includes a transmitter and a receiver. The receiver is generally attached to an object of interest, for example, a pen drive, while the transmitter is held by a user. In operation, the transmitter periodically sends signals to the receiver, which is able to receive the signals in an available range. Once the receiver loses contact from the transmitter, an alarm device of the receiver may be activated to signal the receiver party that the object is out of the range.

Some of object finders on the market may not be user friendly. For example, a super-regenerative receiver may have low signal sensitivity, undesirable stability and low signal-to-noise ratio. To solve this problem, an additional amplifier circuit may be integrated into such receiver product and thus results in higher power consumption and circuit complexity. As to a super-heterodyne receiver, signals can only be received in a range of a fixed distance from the transmitter. If the transmitter and the super-heterodyne receiver draw closer or go beyond the range, signals coming from the transmitter would no longer be received. It may therefore be desirable to have an object finder that has a receiver capable of receiving signals in an adjustable distance from the transmitter. It may also be desirable to have an object finder that has a power saving receiver of relatively high signal sensitivity, desirable stability and high signal-to-noise ratio.

In recent years, the home environment has seen a rapid introduction of network enabled digital technology. This

technology offers new and exciting opportunities to increase the connectivity of devices within the home for the purpose of home automation. Moreover, with the rapid expansion of the Internet, there is the added potential for the remote control and monitoring of such network enabled devices. However, the adoption of home automation systems has been slow. Because existing systems have security concerns.

3. PROPOSED SYSTEM

The aim of proposed system is to develop a system of improved facilities. The proposed system can overcome most of the limitations of the existing system. The system provides proper security and reduces the manual work.

Proposed responder has following features
- Two way communication with android mobile.
- Simple and user friendly android application interface.
- Very less power consumption.
- Comparatively less cost.
- High accuracy of data transfer and better security.

Proposed controller has following features
- Simple user interface.
- Better Scalability and flexibility.
- Secure communication.
- Very high door security with password protection.

4. SYSTEM DEVELOPMENT OF PROPOSED SYSTEM

The transmitter is nothing but a Smartphone and receiver is a Bluetooth low energy module in both responder and controller devices. It is basically android based project in which Bluetooth smart 4.0 technologies is used.
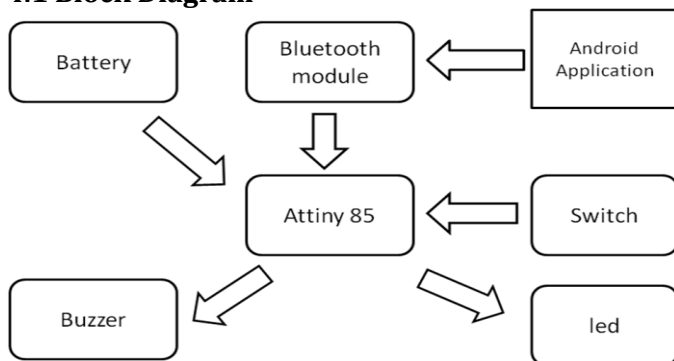
4.1 Block Diagram

Fig -1: Block diagram of Responder

    Responder is consisting of following blocks –IC Attiny85, Battery, Bluetooth module, Buzzer, Switch, LED and Android application as input medium. A 3V Battery provides operating power to Attiny85, Bluetooth module, Switch, LED and Buzzer. Input to Bluetooth module i.e.HC-05 is given from an android application and after processing that input IC Attiny85 triggers buzzer and LED. A button in android

application is used to turn off LED and buzzer when responder is found. A switch on responder is used to turn ON the alarm in android mobile when our mobile is lost.
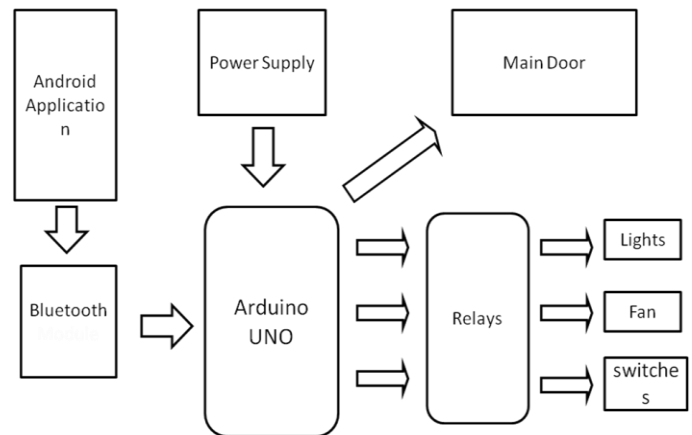

Fig -2: Block diagram of Controller

    This controller module consist of Arduino UNO board, Relay board, Bluetooth Module and android application as input medium. 5V Switch Mode Power supply is given to Arduino UNO board. Power to all appliances is supplied through household power supply. We can give input to Arduino UNO board using android app for switching on/off the appliances. Relays mounted on Relay board act as electronic switches for household appliances.

    For main door security we have password protected it with password stored in Arduino UNO IC i.e. Atmega328 and user can enter password through android application. If password matches then only door opens otherwise it remains closed. One authorized user can change door password only by entering authorisation code which is unique and not given to all users.

5. RESULT

The code for android application is written in "MIT App Inventor". It allows users to code using pre existing modules and coding is very easy for all users.

    The code for controller and responder part is written using Arduino Integrated Development Environment and responder IC Attiny85 is programmed using Arduino as In System Programmer.
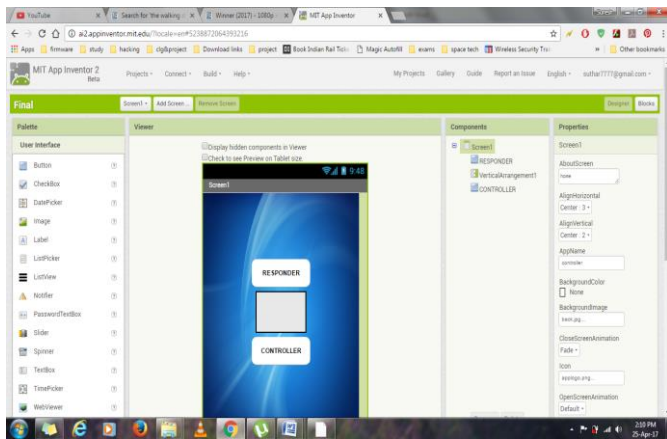
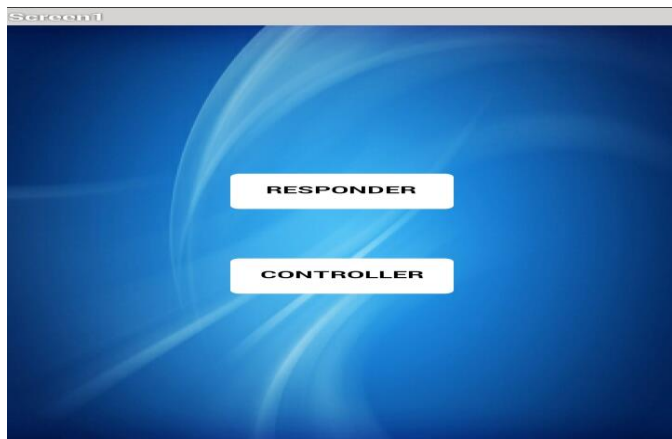**Fig -3**: Graphical Layout of Android App in MIT App Inventor

Fig -4: Screenshot of Android Application

6. CONCLUSIONS

The proposed system overcomes most of the problems of existing system and by security point of view it is much better system. As our android application is free of cost so it helps in further reducing the cost.

ACKNOWLEDGEMENT

REFERENCES

[1] Hung Cheng-Chen, (Us); Keng-Hao Chang (Us),"Object Finder", Patent Application Publication, March 14 2013, Publication No. Us 20130063261 A1.

[2] Bianca Gallo Pucci, Donald Pucci," Radio Frequency Object Locator System",Patent Application Publication, May 16 2013, Patent No. Us 7046141 B2.

[3] Rina Sunil Dofe, Sukanya Kantarao Jadhav," Smart Object Finder by Using Bluetooth Low Energy", Patent Application Publication, Jan. 1 2015, Publication No.ISSN 2351-8014.

[4] Khusvinder Gill, Shauang-Hua Yang, Fang Yao and Xin lu, "A ZigBee-Based Home Automation System", IEEE Transaction on Consumer Electronics, Vol.55, No.2, MAY2009, Consumer Electronics Vol.60,No.2.

[5] Mit Apk Application Inventor (https://appinventor.mit.edu/explore/)

[6] ARDUINO Beginner (https://www.arduino.cc/en/Tutorial/HomePage)