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Android based Wi-Fi Enabled Universal Remote

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***Abstract:** As our world is digitizing, each and every product will have its own remote to get controlled. As a human it is so difficult to handle which remote has to be used for which device as there will be a heap of remotes. Even though smart phones can be used as remote, but in many homes old age peoples doesn't know the usage of smart phones and also we have to download separate apps for each device. This will consume more phone memory. To gradually reduce this burden and make human life easier, required android software will be downloaded and maintained in a system. From this any device can be optimized through this one device. The main aim of this project is to reduce using different remote for each device such as AC, TV, projector, microwave oven, speakers and so on. We know that voice recognition devices have already emerged as it is too expensive so by keeping in mind about cost and easy implementation this idea has been figured. To implement this project, we use the android OS to integrate different remote application in one specific device.*

***Keywords:** Android, Remote, Wi-fi, OS*

I. INTRODUCTION

As we knew nowadays each home electrical instruments comes with separate remotes. The remembering of the function of which is also difficult for operators. All these remotes works with IR rays, each remote uses different frequencies to operate their instruments. As a human it is so difficult to handle which remote has to be used for which device as there will be heap of remote to operate appliances at home. To gradually reduce this burden and make human life easier required android software will be downloaded and maintained in a system. So any device can be optimized through this one device. The main aim of this project is to reduce using the different remote for each device such AC, TV, projector, microwave oven, speakers and so on. The IR remote control performing well with their reliable transmission as signal to noise ratio is less. Hence IR remote applications are most popular in the usage of controlling of all home appliances.

II. LITERATURE SURVEY

Jianjun L et. al developed a new USB Home appliances based on PC and Infrared remote control protocol [1]. The remote which is used separate foe each and every home appliance such as TV, DVD etc. The technology used is infrared transmission. But sometimes infrared signal transmission lacks in manipulating all kind of home appliances. With usage of single chip microcontroller and USB interface, proposed a IR remote control system, which can code and decode all of the infrared remote control protocol, and integrate with the transmission and receiver. M. Puthanial, et. al worked on Android and Bluetooth Technology Enabled remote control with smart phone [2]. This kind of remote is worked using smart phone and Bluetooth is used to connect targeted appliances. Main goal of this project is used to minimize the manual work. So each and every home must have at least one smart phone. Ting-Fang Chueh et. al made Universal remote control using smart phone [3].

They proposed a context-aware plug and play universal remote control recognized by NFC and through Bluetooth to download application with easy to use graphical user control interface by UI generator. These papers mainly focused on using smart phone as a universal remote where the application installed in smart phone and control all home appliances. C S Choy proposed An Infra-Red Remote Control System Designed for Universal Control [4]. This describes Infrared functionality controlling the Switches. Author mainly developed this remote on innovative link procedure which is designed to control switch and custom IC.

Pallavi Patil et. al developed Universal Remote for Next Generation [5]. Universal remote used in our daily life will lead back common remote used for each and every home appliances such as TV, AC, DVD etc. The difficulties faced by the designer of universal remote is used to propose each and every operation of remote and design single transmission home appliances. The programming such remote is complex task. This paper present an implementation of a universal remote control using PSoC #5 which has functionality of IR sensor and it has been decoded the Philips and Samsung separately.

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III. PROBLRM STATEMENT

In an increasingly automated and connected world, wouldn't it be wonderful if we could manage our entire blinking machine from a single super controller? Presently as all we knew each appliance comes with its own IR remote. In a house there are many home appliances like TV, DVD players, AC, and soon these devices are required to be controlled separately and it can be handled using android phones by installing android applications into it. Every user for home appliances need android phone with required android application installed in it. This application is not affordable by everyone such as kids, illiterate, senior citizens or specifically who does not know how to operate android phones. And also signals of the network effects on health of the children. In order to give solution to these problems a single remote will be introduce to control all devices.

IV. HARDWARE AND SOFTWARE IMPLEMENTATION

For the implementation of universal remote control we are using software as well as hardware components .Raspberry pi and Android operating Systems are used to build the project and Python is used as programming language. Hardware requirements are standalone pc, key pad, IR sensors and Raspberry pi 3B model. IR sensors are the cheapest one to control the devices within the visible range. Raspberry pi is the kit which can act as CPU where we can store the data in this kit using Memory card.

V. METHODOLOGY

To construct the remotes mainly we need IR sensors. Initially we need to connect the IR LED with a limiting resistor to Raspberry Pi's GPIO pins, and then we can control the diode using code written in our preferred scripting language. from the coding of Raspberry pi turn into the glorified of IR transmitter.

To build a transistor-powered IR transmitter we need two resistors, transistor and IR LED. Additionally need a breadboard and jump wires to assemble an IR transmitter prototype. Wire the components as shown in Figure 1 to assemble the IR transmitter. The next step is to check whether the IR transmitter actually works. To do this, we can use simple LED Python blinking script that turns the LED connected to on and off. From the methodologies we proposed the universal remote and its overall functions as shown in Figure 2.

A. Proposed system

As there are many users at home for home appliances, they need android phone with required android application installed in it. These applications are not affordable by everyone such as kids, illiterate, senior citizens or specifically who does not know to operate android phones. And also signals of the network might effects on the health of children. In order to give solution to these problems a single remote will be introduced to control all devices. This project consists of software and hardware. The scope can be separated

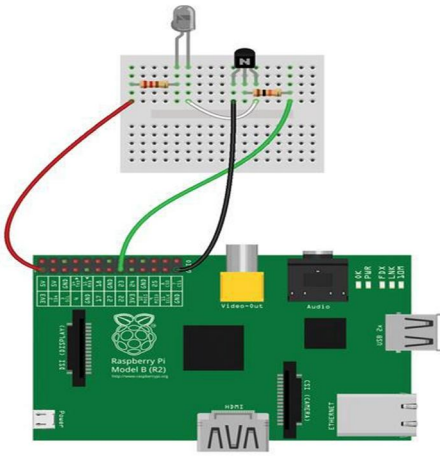


Figure 1: Wiring Diagram.

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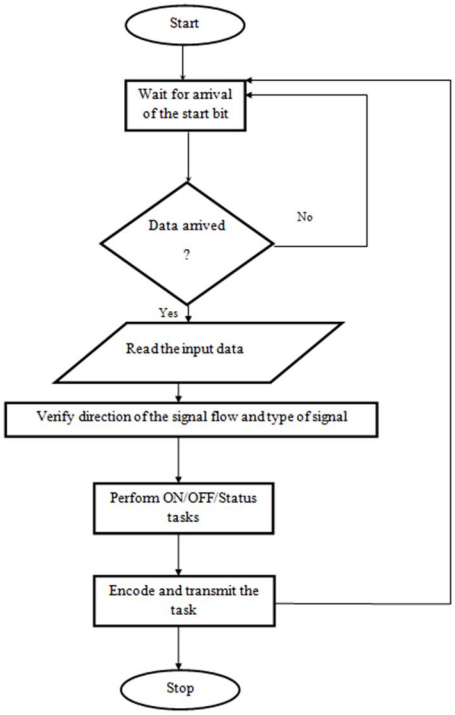


Figure 2: Flow Diagram

B. Proposed System

As there are many users at home for home appliances, they need android phone with required android application installed in it. These applications are not affordable by everyone such as kids, illiterate, senior citizens or specifically who does not know to operate android phones. And also signals of the network might effects on the health of children. In order to give solution to these problems a single remote will be introduced to control all devices. This project consists of software and hardware. The scope can be separated into three parts and there are design of smart phone application, wireless configuration and Infrared transmitter unit. Android application in this project will focus on all operation of all home appliances which is controlled using remotes.

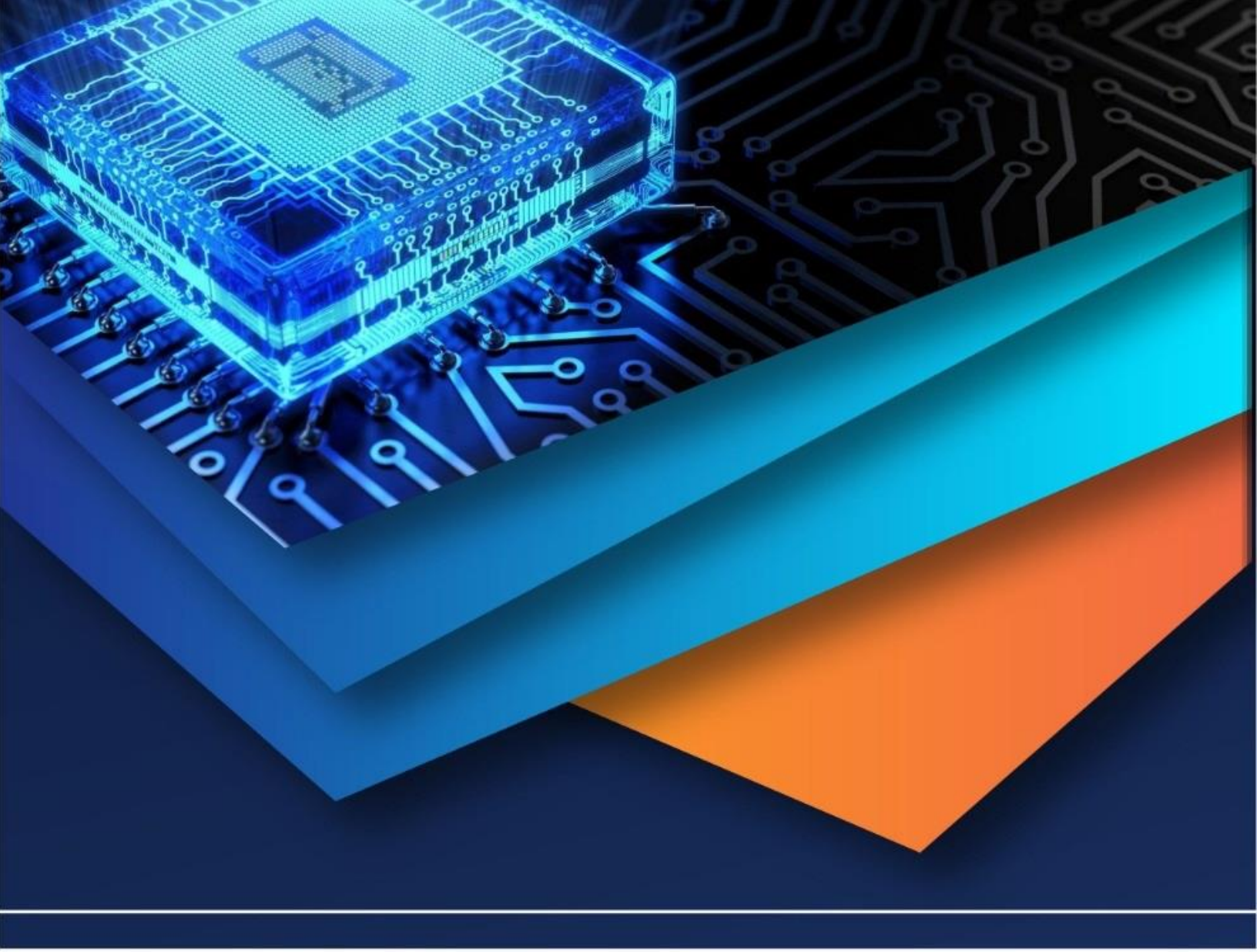
VI. CONCLUSION

A simple and cost effective universal remote control system is described. The concept is demonstrated in controlling home appliances such as TV, DVD and AC. This paper proposes a universal remote control using IR sensors and Android Apps. The advantage of Universal Remote control is one can get relieve from the stress of handling too many remote control units and this remote is affordable for all kind of users. For future enhancement we can add solar power and touch panel for easy and effective use.

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