

REMOTE ACCESSING USING CONVENTIONAL INTERFACE UNDER MOBILE ENVIRONMENT

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Abstract - In this paper, we are going to survey on how to make automation of home appliances. The main aim of this paper controls the home appliances by remotely. In now a day we are using high-tech machinery and equipment's to get our jobs done with the schedule of time and this technology make our life more life easier. Universal IR Remote Control allows us to use the cell phone as a remote control for your TV, DVD, VCR or set-top box. It uses the infrared (IR) emitter on the cell phone to control any of your devices. For remote accessing of a device infrared technology is better compared to another solution.in this paper we conducted the survey on a new mechanism in which device that uses the internet for home automation using remotely locating the device so that we can control the home appliance, equipment's and make our homes automated. To achieve this a unique circuit for remote control the home appliances is used which gives automatic control of switches and switchboard from locating those devices remotely that can do with or without using any internet connection or mobile networks. The remote control circuit allows only one low power control wire per switch. The remote generates a tone using infrared Light-Emitting Diode(LED). With the help of the internet, we can control PC's, TV,'s projectors and other electronic equipment by remotely locating them.

Keywords-infrared, Remote Control, light emitting diode, decode.

I. INTRODUCTION

As we all know nowadays mobiles and computers are widely used. Mobiles and computers are different from each other, so developing an application in which we can manage our computer work through mobile at any location. We can access our personal computer anytime and at any location, from anywhere. A universal remote is a remote control that can be used to remotely control electronic devices. Low-end universal remotes can only control a set number of devices determined by their manufacturer, while mid-end and high-end universal remotes allow the user to program in new control codes to the remote. The world's first remote controls were radio-frequency devices that directed German naval vessels to crash into Allied boats during WWI. In WWII, remote controls detonated bombs for the first time. The end of the great wars left scientists with a brilliant technology and nowhere to apply it. A universal remote can be a fairly complex procedure; it is most often performed by technically minded individuals, although non-technical users can often operate the remote after it has been programmed. IR learning remotes can learn the code for any button on many other IR remote controls. This functionality allows the remote to learn the functions which are not default. So it makes possible to control the devices which it initially not able to control. The circuit can be operated up to a distance of. 5-10 meter depending on the remote used. The circuit consists of the step-down transformer, regulator, changeover (C/O) relay a timer and IR receiver module and some discrete components. Using infrared a circuit is

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designed to switch on/off the devices such as TV, set-top box, AC, fan, A/V receiver, DVD player, projector, and camera. The home intelligence is a reality in today's world. Using sensors and intelligent circuits attached to the domestic appliances. It saves time and reduces the work. It's useful for elderly and disabled people.

II. RELATED WORK

A. Short-Range remote access media-

Short-range wireless communication is a type of media which uses signals that will travel from a few centimeters (CM) to several meters. Short-range wireless communication media such as Bluetooth, infrared, and Zig bee which is limited to a few meters. Examples of short-range wireless communications are infrared, near-field communication, Zig-Bee, ultra band and Bluetooth. In this media, one device act as master and other devices act as slaves.in this case Bluetooth does not need a direct line of sight, the signals that don't carry very far, and the devices need to be within about ten meters.

B. Bluetooth -

Bluetooth is a type of wireless communication media which used to transmit voice and data at high speeds through radio waves in air. Devices need to be within about ten meters, and transfer rate of the typical data is around two Mbps. In Every smartphone device using Bluetooth has a small microchip that can send both voice and data signals. Bluetooth is media widely used in smartphones. E.g. you can make your smartphone as the mouse for your desktop / laptop device. A similar another example is to use your Bluetooth to set up a link between the mobile phone and car's music system, making it possible to make hands-free phone calls. Bluetooth helps to set up a wireless connection between a smartphone and various peripheral devices, including a digital camera, mouse, keyboard, printer, etc. Using Bluetooth you can remotely control the video games and operates the desktop and laptop.

III. ANDROID APPLICATION BASED REMOTE CONTROL FOR HOME APPLIANCES

The remote control for home appliances using android application is an advanced technique of home automation. The android based remote control of home appliances is given below.

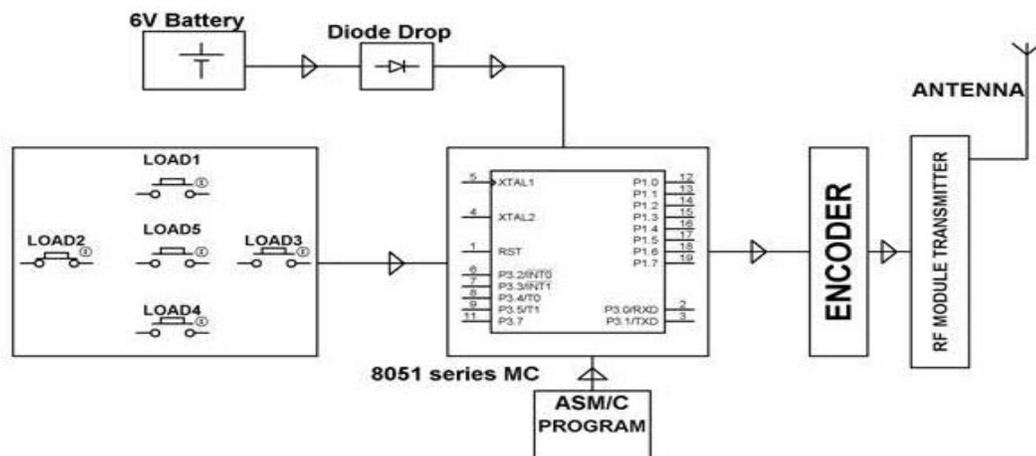


Figure 1. Android Application based Home Automation Project Kit Block Diagram

As shown in the block diagram figure (a) there are different block such as microcontroller, power supply block, home appliances represented as lamp loads for demonstration purpose connected to the microcontroller using Opto-Isolators and trials, Bluetooth device interfaced

to the microcontroller, and android Bluetooth control application installed on user’s android mobile or tablet. Primarily, we need to connect android application mobile with the Bluetooth device of the home automation kit. Then, by using the keys or buttons of the android application, we can turn on or turn off the home appliances.

C. Infrared Signals –

Infrared signals don’t penetrate walls and it requires an approximate line of sight so it can access it. Infrared signals are travels limited range as well as typically don’t carry more than around ten meters. By using infrared signals we can remotely control the electronic device such as your TV or DVD player could be accessed through the smartphone. The remote control that uses an infrared light-emitting diode (LED) to emit infrared radiation that is focused into a narrow beam by a plastic lens. The information being transmitted, such as the number of the channel you want to watch, is encoded into the signal. The receiver converts the infrared radiation to an electric current and decodes the information.

IV. IR REMOTE CONTROL FOR HOME APPLIANCES

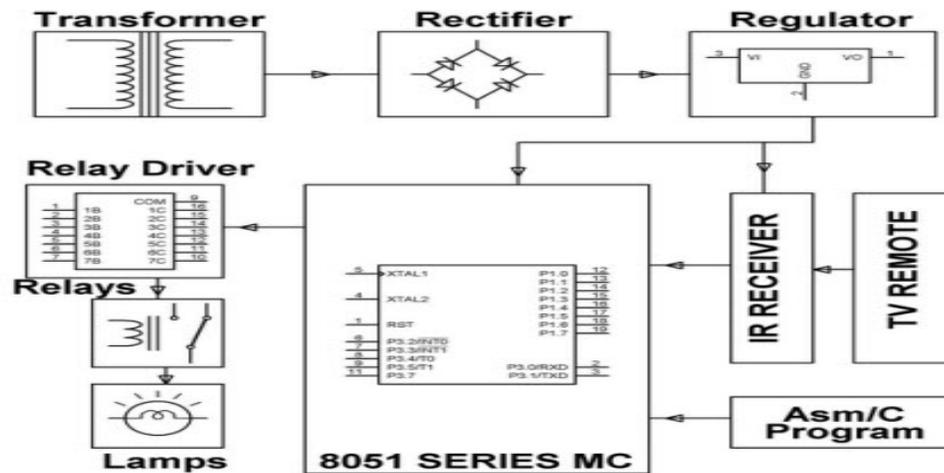


Figure 2 . IR Remote Control for Home Appliances Project Kit Block

The block diagram of the IR remote control for home appliances is shown in the figure (b) that consists of the power-supply block with the transformer, rectifier, and regulator. Relays that are interfaced to the 8051 microcontroller using relay driver, IR receiver which is also interfaced to the microcontroller. TV remote or IR remote is used for controlling all the home appliances remotely, which are represented as lamps connected to the relays.

The power supply block converts the 230V into 5V DC for providing the required 5V DC supply to the microcontroller circuit. The user can assign the TV remote buttons for each home appliance and thus when the particular button is pressed, then the coded infrared data is transmitted to the receiver circuit. This coded data is decoded at the IR receiver circuit and the signal is fed to the microcontroller. After receiving the appropriate signal, the microcontroller sends the command signal to the particular relay to turn on or turn off the specific home appliance. Thus, we can control all the home appliances using the TV remote control.

D. Zig Bee -

Zig Bee is one of most widely used wireless communication technology for short-range, it is typically low-power digital radio communications. Compare to Wi-Fi and Bluetooth medias, Zig Bee uses a low data transfer rate and very little power. Advantage of this media is that lower costs and longer battery life.

E. Medium Wireless Remote Access Media Wi-Fi -

Wi-Fi is the typically one media that most widely used medium-range wireless communication technology. Medium-range is a typical Wi-Fi signal can carry up to hundred meters. This is better than short-range wireless communication, such as infrared and Zig Bee, Bluetooth, which are limited to a few meters. In other words Wi-Fi signals don't travels as far as cellular signals, which can carry signals several km (kilometer), which can carry 1000 of kilometers.

A device need have a Wi-Fi card to set up a wireless connection between smart phone and electronic devices using Wi-Fi technology. These cards are available in all the smart phone and computer devices. . Most new cards are compatible with all the different current versions devices. Wi-Fi allows to user to remotely controlling the devices from various place in the world e.g. such as team viewer ,by the help of team viewer app you can use the desktop, smart phones as well laptop from the different place but you have to make sure that both .These devices have to connected each other by using Wi-Fi connection. Wi-Fi is one of the slowest and least expensive standards.

F. Access Points And Hotspots –

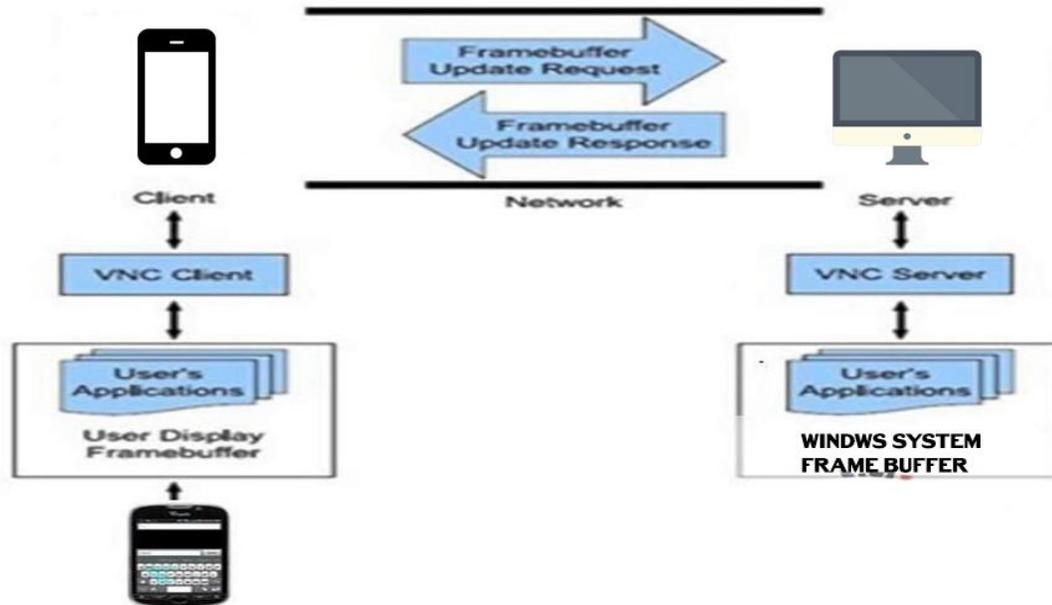
Wi-Fi technology is the typically used to create wireless networks region. This Wi-Fi technology can range from a PAN (Personal area network) within a single home to a WAN (Wide Area Network) that can covers a very large region. The wireless network is established by the help wireless APs or Access Point; this is also called as WAPs. Access points contain small hardware devices with a built-in network adapter, radio transmitter and antenna. They act as transmitter as well as receiver of Wi-Fi signals. When a wireless access point is open to public use, it is called as a hotspot.

A hotspot allows to us wireless access to smart phone.eg share it. By using hotspot we can access and play the video, audio as well as remotely monitoring the devices. The range between devices should be within about thirty meters) indoors and hundred m (meters) outdoors of the physical location of an AP so they able to connect each other's. But for a larger areas connection, you need multiple APs. A single AP can easily cover a single house, small office building, and coffee shop.

G. Wide-Range Remote Access Media –

Virtual Private Network: VPN or Virtual Private Network is a basically type of graphical device sharing system that uses the Remote Frame Buffer Protocol(RFB) to remotely control another device.it transmits the keyboard as well as mouse events from one devices to another device over the network. VNC is platform independent and it follows clients and servers mechanism. It consist Graphical user interface so it will help to user monitor the devices by smart phones. Multiple users/client may connect to a VNC server at a time. This is technology widely used now days because it has remote technical support and accessing files on one's work device to another device. NC was originally developed by Olivetti & Oracle Research Lab. there are n several verities of VNC which offer their own particular functionality. For e.g.: VNC technology used in team view app.it allows to user remotely access the desktop/laptop device by the help smart phones.

WORKING OF VNC



V. APPLICATIONS

In different fields remote accessing of the devices can be applicable. Few of them are as follows:
 The home appliances-Using smartphone you can control the home appliances such as monitoring the TV, controlling the projector, Air-condition, etc. it provides more functionality than the just ordinary remote controller.

Photography-Remote controls are very widely used in photography, in order to particularly take long-exposure shots. Many action cameras like Go Pros and standard DSLRs including Sony's Alpha series incorporate Wi-Fi based remote control systems. So the user can control the camera remotely with the help of a smartphone.

PC control-Now days you can control PC application by using infrared signals as well as other wireless communication techniques like Wi-Fi, VNC etc. You can sit at a place and control the laptop and the desktop device such as installing software, file transferring, file accessing, etc.

Video games-It will improve the gaming experience by the help of a smartphone. In the video game, a smartphone acts as the wireless joystick for the video game. Using infrared and Wi-Fi we can control the video games.

Lock and Unlocking-Using a smartphone we can lock and unlock the vehicle, doors, and gates through infrared signals.

IV. ANALYSIS OF DIFFERENT WIRELESS COMMUNICATION MEDIA

Technology	Frequency	Range(Max)	Data Rate	Application
Bluetooth	2.4 GHz, 5 to 7 GHz	5 to 10 meters	1 Mbit/s standard. 3 Mbits, up to	Headsets, audio, peripherals, video

			480 Mbits/s	
Infrared	870nm infrared	1 meter	2.4 Kbit/s to 16 Mbits/s	Remote controls, peripherals
Wi-Fi	2.4 and 5.8 GHz	100 meters	11 to 200+ Mbits	Wireless LAN
Zig Bee	868, 915 MHz, 2.4 GHz	100 meters	20,40,250 Kbits /s	Wireless sensor nets, mesh nets, monitor / control

V. BENEFITS OF WIRELESS COMMUNICATION

- i. Any data or information will be transmitted faster and with a high-speed.
- ii. Installation and maintenance are less expensive.
- iii. Device can be accessed through with or without internet connection
- iv. Infrared signals are used in monitoring the TV and projector and other electronic device.
- v. Locking and unlocking vehicle like car, etc.
- vi. Infrared signal uses a beam of infrared light to transmit information and so requires direct line of sight and operates only at close range.
- vii. Accessing desktop and laptop
- viii. It is very helpful for home Automation devices such as A/c.

VI. LIMITATIONS OF WIRELESS COMMUNICATION

- i. An unauthorized user can easily hack or access the wireless signals which spread through the air.
- ii. It is very important to provide a security to the wireless network so that the information can't be misused by the unauthorized person.

VII. FUTURE WORK

Home automation devices can be controlled using smartphones. In future, these devices can be controlled by using a computer as well as smart watch.

VIII. CONCLUSION

In this paper we are put together ideas of the communication between devices and mobile phone with wireless communication media. It will help to access the devices remotely. We can access devices using the smart phone with the help of short wireless media, medium wireless media as well as long wireless media. These technologies will make the user life easier as well as more efficient. We researched on this paper various different techniques based on user demands to remotely control the various electronic devices. These techniques will help to improve the user experience about remote access.

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