

Home Automation Activated By Voice Commands Using Bluetooth Technology With More Energy Efficiency

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Abstract:

Automation is a trending topic in the 21st century making it play an important role in our daily lives. The main attraction of any automated system is reducing human labour, effort, time and errors due to human negligence. With the development of modern technology, smartphones have become a necessity for every person on this planet. Applications are being developed on Android systems that are useful to us in various ways. Another upcoming technology is natural language processing which enables us to command and control things with our voice. Combining all of these, our paper presents a micro controller based voice controlled home automation system using smartphones. Such a system will enable users to have control over every appliance in his/her home with their voice.

Keywords — ARDUINO UNO, HOME AUTOMATION, MICROCONTROLLER, BLUETOOTH HC-05.

I. INTRODUCTION

The premier point of innovation has been to expand productivity and reduce exertion. With the appearance of 'Internet of Things' in the most recent decade, we have been pushing for omnipresent figuring in all circles of life. It in this way is of extraordinary significance to improve human interfacing with innovation. Mechanization is one such zone that points that accomplishes straightforwardness while expanding effectiveness. Voice controlled Home Automation System means to encourage the reason for mechanization to accomplish the objective of straightforwardness

The crude man understood that a successful method to speak with each other is through voice. With least exertion, thoughts could be described without breaking a sweat. At the point when the main PCs came around, accomplishing the level of modernity in order to describe summons utilizing voice to a machine was just acknowledged in sci-fi. However with gigantic leaps forward in the field, we are at the incline of genuinely utilizing voice to interface with gadgets. A simple method to conform to the meeting paper designing prerequisites is to utilize this archive as a layout and just compose your content into it.

Using this convincing yet imparted kind of correspondence we would refine development in a manner of speaking. Voice controlled House Automation medium are Multifood.

Initially we would get rid of or fundamentally diminish the need of preparing for working innovation. Furthermore, the rearrangements of administrations would involve a more extensive appropriation of existing innovation and would assist individuals with shifted handicaps get to a similar innovation. We have sent an Android Application as client front end fundamentally on account of the simplicity at which the stage gives us intends to utilize complex innovation and because of the across the board reception in the portable business. Android is being utilized as the working framework for more than 80% of the cell phones. Voice controlled House Computerization Framework use the energy of Arduino to give a comprehensive voice controlled robotization framework. Utilizing Regular Dialect Handling and the accessible equipment in many cell phones, it makes an interpretation of voice to be utilized for controlling electrical gadgets.

II. LITERATURE SURVEY

Home computerization was first brought into the world market in the 1970s, yet it neglected to meet the desires of individuals and was unsuccessful. There were different reasons related with the disappointment of the home robotization framework. The framework was neither easy to use nor cost productive. At present, the first point to be remembered when planning a home robotization framework is that it ought to be taken a toll productive and simple to introduce. K. Y. Lee and J. W. Choi, in their exploration on the Lodging Learning and Change System in 2003, characterized a Shrewd as a "unit where every one of the apparatuses of the house are associated together and controlled and checked remotely." The accompanying passages will give a synopsis of the past research works in the field of Savvy Homes. T. Tamura et. al, in their exploration, developed the welfare techno houses in Japan in 2003. The rationale behind the task was to screen the soundness of the impaired and more seasoned individuals living in the home, in this manner enhancing their personal satisfaction. D. J. Cook et. al. effectively directed the MavHome venture at the College of Texas, Arlington. The undertaking utilized sensors to identify the condition of the earth, and with the assistance of controllers, made the fundamental move to look after harmony. These sensors frame an impromptu system to settle on the choices.

STATEMENT OF PROBLEM

1. Bluetooth module is unable to connect.
2. After Bluetooth connected arduino devices is not working properly/unable to read the value from android app.
3. Relay is not working.

III. OBJECTIVES

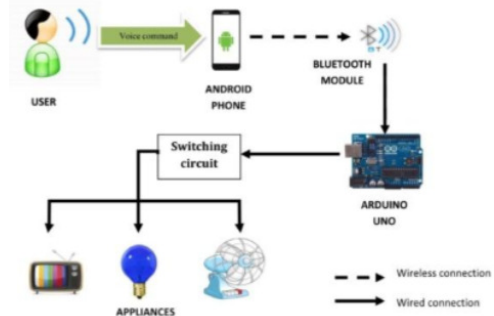
1.A) The bud rate of Bluetooth can be change according to the mobile device. So we have to choose proper bud rate for the specific smart phone/device. For ex. 96000, 84300, etc.

1.B) We are using specific HC05 which can be usable as Master as well as slave device. So first we have to declare or Teach the Bluetooth module according our problem.

2) The IDE (integrated development environment) which we are using to burn the ATMEGA IC (Integrated Circuit) which can read only numeric value and perform the calculation on it. Because of the ATMEGA chip microcontroller and thus it has some limitation. That's why we convert the string value into numeric value using the android application.

3) Relay module which is operated on 5 volt. Have the Different option to turn it on or off. So, some of the release are operate on high value from arduino board and some operates on low value of arduino board. So, first we have to identify that which type of relay we are using.

IV. SYSTEM ARCHITECTURE



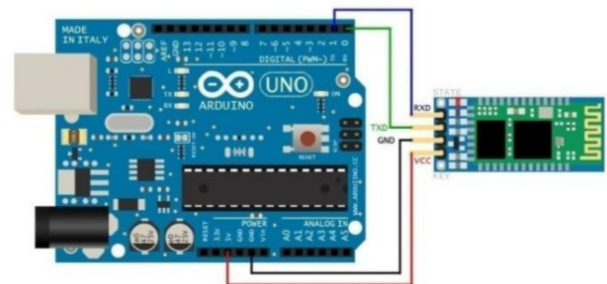
The Voice-operated Android and Arduino Home automation system uses an Android based Bluetooth enabled phone for its application and the Arduino Uno as the microcontroller. The key components of this system are:

1. Android based phone
2. Bluetooth module
3. Arduino Uno
4. Relay boards
5. Reversed engineered Switch

V. MODULES

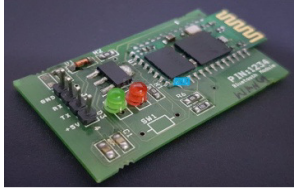
• Arduino Uno

The Arduino Uno is a microcontroller board in light of the ATmega328p. It has 14 advanced information/yield pins (of which 6 can be utilized as PWM yields), 6 simple sources of info, a 16 MHz fired resonator, a USB association, a power jack, an ICSP header, and a reset catch . It contains everything expected to help the microcontroller. We either need to associate it to a PC utilizing a USB link or power it with an AC-to-DC connector. The Arduino circuit goes about as an interface between the product part and the equipment part of the task ..



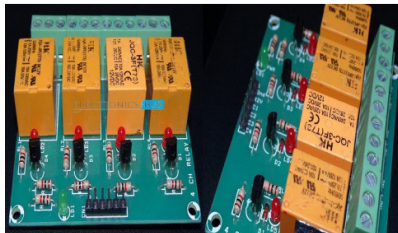
- **Bluetooth module**

Bluetooth is a remote development standard for exchanging data over short partitions (using short-wavelength UHF radio waves in the ISM band from 2.4 to 2.485 GHz) from settled and mobile phones, and building singular zone frameworks (Dish). The Bluetooth module being used empowers us to transmit and get signals. It gets the substance from the Android phone and transmits it to the serial port of the Arduino Uno.



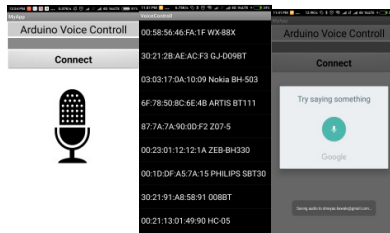
- **Relay board**

A hand-off is an electromagnetic switch. As it were it is actuated when a current is connected to it. Ordinarily a hand-off is utilized as a part of a circuit as a sort of switch (as demonstrated as follows). There are distinctive kinds of transfers and they work at various voltages. At the point when a circuit is constructed the voltage that will trigger it must be considered. In this undertaking the transfer circuit is utilized to turn the apparatuses on/off. The high/low flag is provided from the Arduino Uno microcontroller.



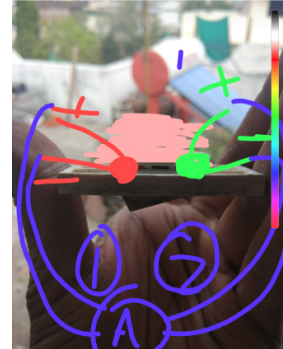
- **Android based phone**

Android is a portable working framework (OS) in light of the Linux bit and as of now created by Google. With a UI in light of direct control, the OS utilizes touch inputs that freely relate to certifiable activities, such as swiping, tapping, squeezing, and switch squeezing control on-screen objects, and a virtual console.



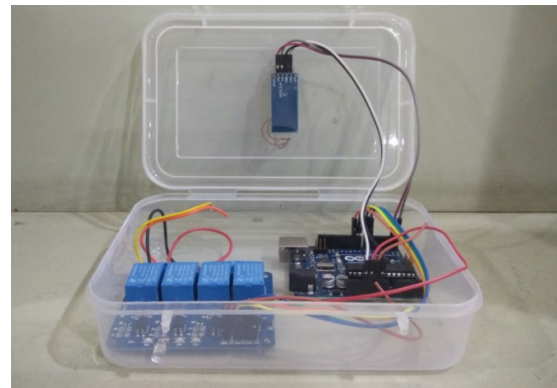
- **Reversed engineered Switch**

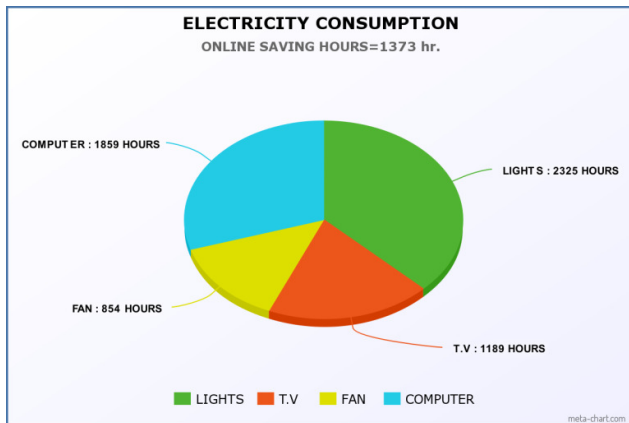
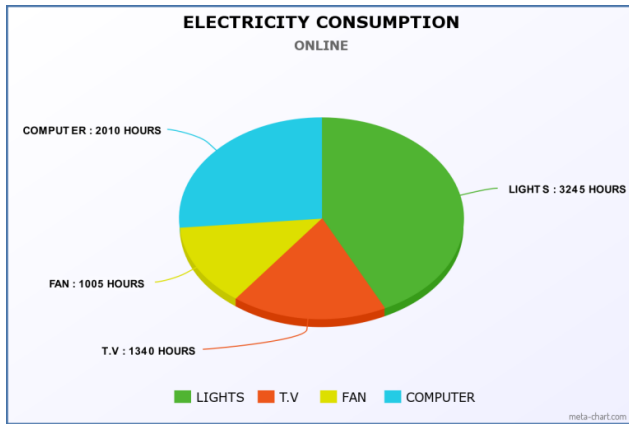
It is opposite to the normal wall mounted switch. When the normal switch manually on it continues the electricity flow through it. But the reverse engineered switch does the opposite task of normal switch, which is when we supply the current through the reverse engineered switch it automatically turned on or off without any manual force.



VI. RESULT

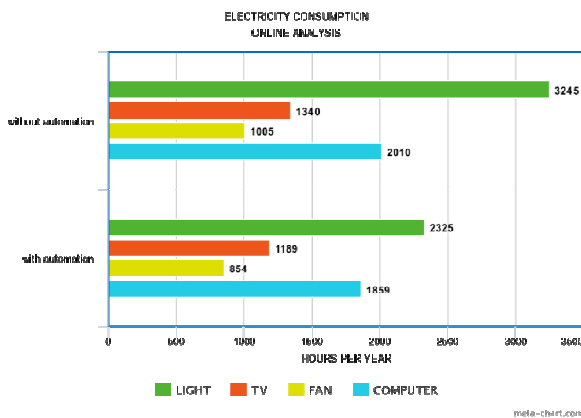
1. It's designed to manage and handle multiple operation easily.
2. Powerful integrated platform that connects the various entities of the institution.
3. Reduces a substantial amount of time & energy
4. Working very fine. Its saves lots of electricity by reducing the consumption of unites per hours.





- Total Saving Hours = 1373 hour.(after using home automation system).
- Device will be free cost after using it successfully for 1 year.

VII. CONCLUSION & FEATURE SCOPE



The proposed project undertakes a viable solution the need of automation at the very basic level, that is, in our homes.

The project will enable us to bring every appliance at every corner of our home under our control from a single.

FUTURE SCOPE

Despite the fact that generally the undertaking is finished effectively, additionally study could be directed to think about expanding the scope of the flag to find a technique to open up its range from the Bluetooth module. Besides, instead of utilizing select couplers and interfacing them to the breadboard, additionally study could consider the utilization of a transfer module to associate the modules.

No.	Appliances	Capacity	Length Use	Electricity Consumption	
1	Light	13 - 15 watt	335 days * 7 hours = 3245 hours	48.6 Kwh	
2	T.V.	90 - 250 watt	335 days * 4 hours = 1340 hours	335 Kwh	
3	Fan	120 - 200 watt	335 days * 3 hours = 1005 hours	201 Kwh	
4	Computer	70 - 90 watt	335 days * 6 hours = 2010 hours	180.5 Kwh	
TOTAL				550 watt	7600 hours

1000 watt = 1kwh

No.	Appliances	Capacity	Length Use	Electricity Consumption	
1	Light	13 - 15 watt	335 days * 6.55 hours = 2325 Hrs	34.8 Kwh	
2	T.V.	90 - 250 watt	335 days * 3.55 hours = 1189 Hrs	107 Kwh	
3	Fan	120 - 200 watt	335 days * 2.55 hours = 854 Hrs	102 Kwh	
4	Computer	70 - 90 watt	335 days * 5.55 hours = 1859 Hrs	130.10 Kwh	
TOTAL				550 watt	6227 hours

VIII. REFERENCES

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