

Voice Control Assistant

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Abstract— Present day innovation is advancing now a days.To the faster the process that will help the people using current advancements. This paper depicts the development of an economical, easy to use, and secure home robotization process in view of Android. The venture is executed with the voice assistance of Arduino Bluetooth board. What's more, the home devices are connected with a 4 channel hand-off module. The remote association is made for correspondence between the Arduino Bluetooth and the Android telephone. In this undertaking one needs to be conservative and Control of a quantifiable scope of gadgets with few upgrades to its tasks. To forestall unapproved clients from getting to the hardware at home,secret key assurance is required. In this administrative work one high level component is added that is the successful use of EEPROM.

Index Terms— Bluetooth, Relay Module, Speech Recognition, Local Command Processing.

I. INTRODUCTION

Present in the 21st century, before we are familiar with mechanical control system technology. Now we would consider contemporizing the conventional old technology to advanced technologies and control systems to improve human life. Because of the quick advancement of technology, we can ever handle ménage appliances using smart phones. An independent device can operate with low quiescence and more accurate control. researchers and home appliance manufacturers are concerned about the generality of home automation systems. In addition to enhancing mortal life, automation systems also save time and energy, before we were allowed to give assistants for people who are in old age and have physically challenged bones. The major ideal is to give to the aged persons and also people who are having physical disabilities that means to perform quotidian duties and even operate ménage appliances. It costs more to make and simple to install a Bluetooth- predicated wireless home automation system in a house. According to my data collection it suggests that Bluetooth systems are better than IR- controlled and GSM systems. Depending on the type of Bluetooth device, Bluetooth technology has a physical range of over 10 meters and also data transmission rate of 3 Mbps. The Arduino board, a Bluetooth module, and a smartphone operation which are base of the functional plan. An operation for smart phones is used to grease 3 communication between the bias.

II. RELATED WORK

Numerous ever operated home robotization ways has been taken into account appliances with an Arduino uno and a mobile phone. According to those exploration Arduino board attached to home appliance which was controlled by an SMS operation. Another study suggested a smart home system that employed bluetooth and the android operation. Still, here it was only made for four lights, and it was ineffective for managing further than four ménage appliances. Another study described a wifi- grounded smart robotization systems for senior and physically challenged people. Wireless connectivity between the remote control device and master control panel board was performed using Wi-Fi television receiver. 1 D.Chowdhary and P. Laforge study states , it's possible to manage wirelessly home Experimenters wants to make a low cost, wirelessly operated smart robotization system. The provision of wireless remote control access to consumers was allowed by clever robotization technologies of employment. From the over all exploration papers work we enforced a new fashion that is introduced to the being Home robotization systems that's the effectively operation of EEPROM. Because of this EEPROM we can avoid the former being state of the appliances when power fails in the process. Indeed though this technology is affordable, it provides more accurate control. The ideal of Arduino Bluetooth home robotization is to produce a system that enables remote control and robotization of colorful home bias or appliances using an Arduino board and Bluetooth communication. The primary pretensions and objects of such a design include. 1. Remote Control Enable druggies to control home bias ever using a smartphone or any Bluetooth- enabled device. This could involve turning lights on/ off, controlling suckers, managing home security systems, or regulating other appliances. 2. Convenience and Availability give druggies with a accessible way to interact with and manage home bias without being physically present near them. This is particularly useful for individuals who want to control home appliances from a distance or while being in a different part of the house. 3. robotization utensil robotization features grounded on certain conditions or triggers. For case, the system could be set up to automatically turn on lights when stir is detected or acclimate the room temperature grounded on predefined settings. 4. Learning and Experimentation The design can serve as an important tool for learning about the Arduino, Bluetooth communication, detector integration, and robotization. It allows individualities to experiment and explore the possibilities of IoT(Internet of effects) and 5. Customization and Expansion Enable druggies to customize the system according to their specific requirements and expand its capabilities by integrating fresh detectors, incorporating scheduling features, or connecting it to other smart home systems. 2 smart home technology. 6. Energy effectiveness and Cost Savings enforcing robotization can lead to better energy operation, potentially reducing mileage bills by icing that bias are only powered on when demanded. 7. Enhancing stoner Experience perfecting the overall stoner experience by furnishing a stoner friendly interface, allowing for easy and intuitive control of home bias. Overall, the ideal is to produce a protean and stoner-friendly home robotization system that offers both control and robotization features while using the capabilities of Arduino and Bluetooth technology. This system aims to bring convenience, effectiveness, and customization to home operation.

III. LITERATURE SURVEY

1. Bluetooth grounded home robotization system using Bluetooth which is exist in the cell phones grounded home robotization system the appliances or devices of the home are linked to the Arduino board as input affair anchorages using relay module. The coding of the Arduino board is grounded on high position an interactive program by the C language that runs on microcontrollers. These microcontrollers can be connected to other devices or systems using Bluetooth technology, allowing through wireless communication and control. The word safeguarding is handed so only considered stoner was permitted for pierce devices. The wireless connection is made between the Arduino board and mobile based on bluetooth communication. In the given system a python code is generated and that can easily downloaded on any of the OS terrain, it's movable . One design is created and enforced for entering the feedback from the mobile and will check the condition of the device.
2. Zigbee grounded home robotization system using mobile to cover and manage the home devices or applications the system has been developed and enforced using the Zigbee module. The prototype performance is recorded and stored by the network coordinator. Zigbee grounded home robotization system using mobiles to cover and manage the home devices or appliances the system was developed and enforced using the Zigbee module.
3. GSM grounded houses robotization system uses the mobile phone because the cell phone(communication) and GSM(Global System for Mobile Communication) technology, The GSM grounded home robotization is to probe. The SMS grounded home robotization, GPRS(General Packet Radio Service) grounded home robotization and binary pitch multifrequency (DTMF) grounded home robotization, these options will be considered substantially

for the communication to the GSM module. The detectors of system will convert the physical rates like temperature, moisture and sound into other volume like volts. The microcontroller will be analysed all the signals and converts them into a statement to understand by the help of GSM module. elect applicable communication system among SMS, DTFC and GPRS grounded on the statement which entered into the GSM. 4 recorded and stored by the network coordinator.

4. Wi- Fi grounded home robotization system using mobile phones Wi- Fi grounded home robotization substantially correspond three phases they are the garçon, the software package and the tackle interface module. The garçon is linked to the internet, so remote druggies can pierce garçon web grounded operation through the internet using web cybersurfer. Software of the rearmost home robotization system is resolve to garçon operation software, and Microcontroller (Arduino) framework. The Arduino IDE software, erected using C language, using Arduino IDE comes with the built-in microcontroller itself. Arduino software is reproachable for gathering information from connected detectors, also enables action to selectors and pre programmed in the garçon. Another job is to check and store the history in the garçon DB. The garçon operation software dataset for the designed home robotization system, is a web grounded operation erected using asp.net.

5. Home robotization using RF(Radio Frequency) module. The important thing of Home robotization System to make a home robotization system using Radio Frequency controlled remote. As technology continues to advance, homes are becoming increasingly intelligent and connected ultramodern homes are designedly shifting from present switches to centralized control systems, containing Radio Frequency controlled switches. Today traditional wall switches positioned in colorful corridor of the home that makes it laborious at the end stoner will goes near to operate and control. Indeed further it turns into more problematic for the old aged persons or physically hindered people. Home robotization using remote tools an easy result with Radio Frequency technology. In sequence to negotiate this, Radio Frequency remote is joined to the microcontroller on the transmitter side to send ON/ OFF signals to receiver side where bias were connected. By operating remote switch on 5 transmitter, the devices can be turns ON/ OFFencyclopically using wireless technology.

IV. METHODOLOGY

In this system we will give access druggies to activate commands in numerous languages using a Home automation System .The system present in the request doesn't support numerous language. This system will have two main modules which tackle the interface component to connect to the web and the software communication component. The main control unit of these systems is an Arduino uno which will be able to perform as an interface and also a computer of the connected tackle components. All transmission's and controls in the provided system through this debit card size computer inbelted with ARM microcontroller. All these devices can also be controlled from 2 all over using smartphone operation or multiple language voice recognition using Arduino bluetooth uses. AI tools to fete our natural spoken language and can supports up to multiple languages varies with 20 different languages. This operation converts the stoner vocal command into textbook and transfer to the regulator by the help of an Arduino bluetooth is used. The computer can be developed according to the asked home systems. The system is worked through a vocal command given through a smartphone, and the Arduino executes an action grounded on the vocal command given. The verbal communication is counter plotted through vocal command by the Arduino.

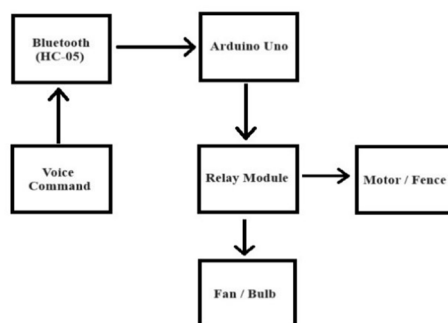


Fig no: 1 Block diagram

Bluetooth receives the command manually as a voice command. From Bluetooth the command reaches the Relay module which is connected with Arduino Uno. Relay module helps to perform the program based on our

commands. Relay modules receive the commands and based on the command the system works. With the help of a relay module we operate the home applications fan/bulb and agriculture application motor/fence. With the help of our command which is manually given in the Bluetooth Arduino app performs the system to get the output based on our command.

Architecture of the Device

This adventure revolves around the integration of automation in machinery, supported by an android system. In the current era, the primary focus is on continuous improvement. Every framework developed aims to streamline human efforts to the minimum, and our framework shares the same objective. The core of this device, named "The Stoner," establishes communication with the Android operation through the Arduino Uno using a Bluetooth module. This model is highly adaptable and scalable, ensuring maximum efficiency, safety, and the seamless integration of smart home appliances with minimal human intervention. The Bluetooth signal employed possesses optimal energy, enabling it to connect to any signal without data loss and with minimal harmonics. The central component of the home automation system is the Arduino with a microcontroller. Users must have mobile access with a reliable connection, allowing for multi-appliance functionality. The Arduino board is programmed for each home appliance using code in the microcontroller. Through the assistance of the microcontroller, we can manipulate electromagnetic relays, functioning as switches to receive signals from the Arduino via the Bluetooth module HC-05.

As the transmitter sends data sheets, the relay acts as a switch, effectively controlling numerous smart home appliances concurrently, showcasing the system's multitasking capabilities. There are three main corridors of this home robotization which is given below.

1. Arduino Uno
2. Bluetooth HC-05
3. Relay Drivers



Fig no: 2 Architecture of block diagram

ATMEGA328P Microcontroller

Grounded on the AVR ® advanced RISC armature, the Atmel ® picoPower ® ATmega328/ P is a low power CMOS 8- bit microcontroller. The ATmega328/ P achieves throughputs close to 1 MIPS per the MHz by executing strong instructions in a single timepiece cycle. This allows system contrivers to optimise the device for power of the consumption against processing speed. Grounded on the AVR armature, the Atmel ATmega328P is a 32K 8-bit microcontroller. At 20 MHz, a large number of instructions are completed in a single timepiece cycle, yielding an out turn of nearly 20 MIPS. The ATMEGA328- PU can be used with our 28 leg AVR Development Board and is packaged in the PDIP 28 leg package.

V. RELAY MODULE

A relay module functions as a switch by utilizing electricity. While numerous relay modules employ an electromagnet to mechanically operate the switch, others operate on different principles, such as solid-state relays. Relays are essential in scenarios where it is necessary to control a circuit through a separate low-power signal or when a single signal must control various circuits. The initial application of relays was in long-distance telegraph circuits, serving as amplifiers to replicate and re-transmit signals from one circuit to another. Subsequently, relays found widespread use in telephone exchanges and sophisticated computers, facilitating consistent operations. Certain relay modules can manage the substantial power required to directly control electric motors or other loads, earning them the designation of "contactor." In these instances, relays govern power circuits with minimal moving components, opting for relays instead of semiconductor devices for switching execution. Relays with precisely

measured operating characteristics and, at times, multiple operating coils are employed to shield integrated circuits from the load. In modern electric power systems, digital devices known as "protective relays" have taken on these roles, ensuring the safeguarding of the system. Glamorous latching relays bear one palpitation of the coil power to proceed their connections in a unique direction, and several, diverted palpitation to the move back. Repeated the beats from the matching input have no effect. Glamorous fasten relays are the useful in operations where breaking power shouldn't be suitable to transition connections. Glamorous latching relays have either one or binary coils. On a unique coil gadget, the relay will operate in single direction where when power is applied with only one opposition, and will corrected when the opposition is reversed. On a binary coil gadget, then concentrated voltage is implemented to the corrected coil connections will transit. AC controlled glamorous latch relays have one coil that employ the guide diode to separate between the controller and reset commands.

Basic design and operation

In a basic electromagnetic relay, there is a coil wound around an annealed iron core (solenoid), an iron armature providing a low-reluctance path for magnetic flux, a movable iron structure, and one or more sets of connections (commonly two in the relay illustrated). The structure is dependent on the armature and typically linked to one or more sets of movable connections. A spring holds the structure in place, creating an air gap in the magnetic circuit when the relay is not energized. In this state, one of the two sets of connections in the relay photo is closed while the other is open. The number of connections in relays may vary based on their specific functions. The relay in the image also includes a line connecting the structure to the armature. This ensures continuity in the circuit between the moving connections on the structure and the circuit track on the printed circuit board (PCB) through the armature, which is soldered to the PCB. When an electric current passes through the coil, it generates a magnetic field that activates the structure, causing the movable contact to either make or break a connection with the fixed contact, depending on its construction. The movement opens or closes the connections accordingly. When the current to the coil is turned off, the structure is returned to its relaxed position by a force, typically provided by a spring (though gravity is also used in artificial motor starters). This force is roughly half as strong as the magnetic force. Most relays are designed for quick operation, reducing noise in low-voltage scenarios and minimizing bending in high-voltage or current applications.

Applications of Relays

Relays play a crucial role in electronics by enabling the switching of lower currents to control larger currents. They provide a means for devices, such as "The Stoner," to establish direct contact with the main device being controlled, especially those handling high voltages. These functionalities are comparable to using a remote control to operate a significant electronic system. In industrial settings, larger relays or contactors are utilized to supply power to essential equipment like pumps and motors. Understanding the function of a relay can be illustrated by considering how headlights are turned on. Switches on a vehicle's dashboard, when activated, send a small current to the coil, initiating the relay's contactor. The relay, in turn, controls a high-power load, such as the headlights. Beyond automotive applications, relays perform various everyday functions that often go unnoticed. They find applications in homes, industries, and even on the road. Domestic electronic devices, like refrigerators, contain relays that regulate the flow of energy to ensure proper functioning, managing components such as motors and compressors. Relays also play a role in controlling commercial lighting systems, enabling them to be operated with the use of a switching element. An example of relay application is seen in automatic garage doors. Relays not only amplify the operation of electronic devices but also serve to interrupt their function when needed. These capabilities have significantly contributed to the automation and convenience in our lives, allowing electronics to run smoothly and safely. As a result, we are no longer directly dealing with electronics containing high voltages that could pose a danger if they were to malfunction unexpectedly.

4-Channel Relay Board

This is the low position 5 Volts, 4-channel relay the interface board, and every channel need a 15- 20mA motorist power. It can used in the relay to control the colorful appliances and outfit with large current. In this, we observe that the module is visual insulated from high voltage side for protection demand and aa well as help from ground circle when collaborate to the microcontroller.

Bluetooth Module HC-05

Several home automation systems have been examined, primarily utilizing an Arduino Uno and a mobile phone. In one investigation, an Arduino board linked to a household appliance was manipulated through SMS commands. Another approach involved a smart home system employing Bluetooth and an Android operation, specifically

designed for controlling four lights but proved inefficient for managing more than four household appliances. A separate study focused on a WiFi-based smart automation system catering to the needs of seniors and individuals with physical challenges. The researchers aimed to create a cost-effective, wirelessly operated smart automation system, utilizing clever automation technologies to enable wireless remote control. A key component of this system is the low-position 5-volt, 4-channel relay interface board, with each channel requiring assistance from the ground circuit when connected to the microcontroller. Researchers D. Chowdhary and P. Laforge suggested that home appliances could be wirelessly managed for consumer accessibility. Building on the collective findings from various research papers, a novel approach is introduced to home automation systems, emphasizing the effective use of EEPROM (Electrically Erasable Programmable Read-Only Memory). Incorporating EEPROM allows for retaining the previous state of appliances during power failures, offering more precise control. Despite the affordability of this technology, it enhances accuracy and control in home automation systems,



Fig no: 3 Relay module

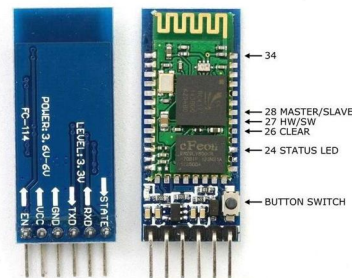


Fig no:4 Bluetooth module

IV. RESULTS AND DISCUSSION

In the experiment we finally get output as voice to text command using the above components. Mainly these voice control assistants help people without the internet only using Bluetooth for a certain range. Voice can be in our preferred local languages which make our work easy and simple. moreover these voice assistant devices can easily communicate with multiple voice commands. Arduino bluetooth app helps to identify the commands and help the system to give output. Here after connecting to the bluetooth we can observe a note as voice control .



Fig 5 : Arduino bluetooth home page

After clicking the voice control we can observe settings symbol where we can observe the point as voice command as mentioned in the figure below. After clicking the voice command we observe the number of commands to be given to work the Bluetooth.

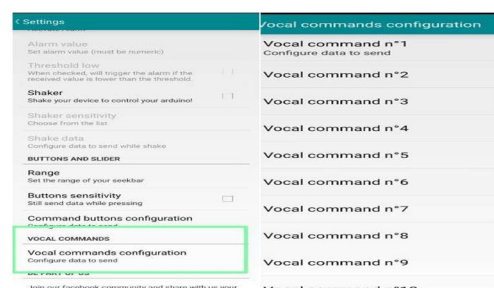


Fig no: 6 Vocal commands

Now if we open the vocal commands we observe two statements as vocal command and data to send .In vocal command we need to give the local language which we can prefer as our choice. In data to send we need to give the number to the command which is connected to the Bluetooth to access easy and get output.The given data command pic is connected to the arduino and bluetooth module through which we can access the command easy to get the output.

Finally ,we can give vocal commands in any language which is familiar to us to access easy output. As an example ,let us consider Hindi and English mentioned in below images to get the required output.By giving the statement as our preferred language ,when the app detect the voice command as mentioned immediately bluetooth sends signal to the arduino and through relay module output is generated.

Experimental table

Command	Output
TURN ON MOTOR	Motor on
MOTOR OFF KARO	Motor off
BULB ON CHEYE	Bulb glows
BLUB OFF MADI	Bulb off
TURN ON FAN	Fan spins
FAN OFF KARO	Fan stop
FENCE ON CHEYE	Power on

While we give the vocal command to the voice control assistants we are giving the command in the speech format and it receive in the text format while our voice is giving command to the assistants it converts the signal from analog to digital format through the electromagnetic waves and we are using an offline app called arduino uno, what are the commands we are given in the app according to that we have to give the vocal command to the assistant that assistant will recognise the command which came from our voice and gives the output according to the applications.The speech which we give as a command concerts to a text format an we get the output.



Fig no: 7 Final output of hardware

V. CONCLUSION

In this paper present a novel approach to creating an affordable, adaptable, and wireless solution 1 for home automation. The system is designed to ensure secure access and prevent unauthorized individuals from interfering with it.To operate the system, users are required to obtain a specific pairing code from the Arduino BT and their mobile device, which helps safeguard against unauthorized access by individuals with malicious intent. In this system can be serve as a practical testing platform for various appliances that needon-off switching capabilities without relying on an internet connection.

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