SMART HOME AUTOMATION SYSTEM BASED ON IOT TO ASSIST ELDERLY PEOPLE.

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Abstract

Our environment is becoming increasingly intelligent. In addition to sophisticated AI services like Google Assistant, we now have the Internet of Things (IoT) that links real-world things to the digital realm. When you think about it, it is incredible, but when these two technologies come together, the real action begins. Have you ever imagined living a life in which you might use your voice to simply tell your household appliances to operate as you require? This paper describes a modest prototype that will allow us to manage light switching via the internet using voice commands and Google Assistant. Similarly, we will be able to operate other home appliances such as lights, fans, TVs, and other devices in colleges, schools, and labs.

Keywords: Esp 32, Servo motor, relay & Google assistant

I.INTRODUCTION

The IOT technology describes the connections between like smart mobiles, PDAs, smart TVs, and sensors to the Internet where the devices are linked to get communicate with people and between themselves. Every day modern people expect a new device and new technology to simplify their day to day life easy and better. It contains the Google Assistant application, IFTTT application, Blynk application, ESP32, ULN 2003 IC.

In this project it tells that the overall design of a wireless Home automation system (WHAS). This is fulfilled by the need to provide supporting systems for the old and the disabled, especially people who live alone. The automation project precognitive of voice commands which is an Analog signal that uses low-power wireless communication modules which are relatively cheap. The system home automation is used to control the appliances like fan, light etc in a home or office using voice commands. The signals are received by the wifi sends the voice data to the micro controller and then the controller converts the voice into required format and then again send the data through the wifi to the another wifi and the devices are feely operated by the Microcontroller where they are interfaced to it. Based on the message it received it either turns ON/OFF the devices. The system Home Automation is used by the old and disabled people for an easy way

of use that can be fully operated based on voice signals. A typical wireless system home automation allows one to control the house hold appliances from a control unit which is a wireless system. These appliances are particularly designed to be compatible with each other devices and with the control unit for home automation systems. The system receives the signals through Bluetooth transceiver and it performs the request function.

II. LITERATURE REVIEW

Many automated advanced door locking system has been developed and it's popularly used in many places like commercial buildings and organization. Some of these automated doors locking system are based on RFID (Radiofrequency identification).

The RFID card reader detects and checks the user accessibility. When the card is brought near the reader, it identifies the radio frequency of the card and thus verifies the key but these systems are very expensive. Various control systems are being designed over the years to prevent unauthorized access. The main aim for providing locks for our home, school, office, and building is for security of our lives and property. It is therefore important to have convenient way of achieving this. Lia Kamelia, Alfin Noorhassan S.R, MadaSanjaya and W.S., Edi Mulyana has implemented a "Door – Automation System Using Bluetooth", the implementation was on Android platform. So the implementation cost is less and affordable by a common user. With the use of wireless Bluetooth connection the system installation in more easy way

. Shilpi Banerjee has implemented an "Automatic Password Based Door Lock System". This system works on pre- decided password concept. It increases the security level to prevent an unauthorized access done by the attacker. In case the user forgets the passwords, certain privileges are given to the user to change or reset the password. This automatic password based lock system gives user more secure way of locking, unlocking the system [5]. Arpita Mishra, Siddharth Sharma, Sachin Dubey, S. K. Dubey has implemented a "Password Based Security Lock Proposed Methodology system".

The system works using keypad to enter a password to the system. If entered password is correct then door is open by motor which is used to rotate the handle of the door lock. System also includes extra features like adding new users and changing old password etc [1]. We surveyed many smart doors locking system. We found that these products are very expensive. Some of the implementation mentioned in the literature survey is very cost effective in implementation but do not provide multi user or multi level functionalities. We identified these requirements and thought to develop a system which is cost effective in implementation and having more advanced features like multi user and multilevel. These features are the need of time and such functionalities will make the system more useful.

III.EXISTING METHOD

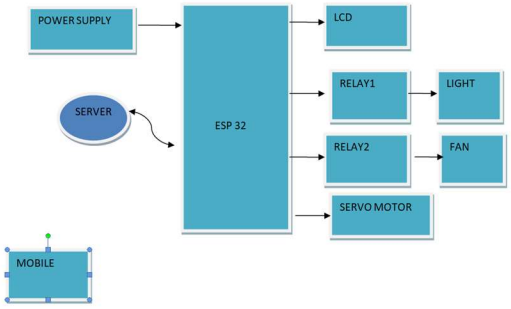
Home Automation Techniques the idea was first implemented in the form of product back in 2009 by implementing control through mobile phone based DTMF tones. It got improved when DTMF was replaced by a reliable technique of GSM implementation SMS based Commands and wired systems inside home were usability concerns home automation was featured with nice human interface devices like Android along with implementation of multiple techniques in order to make it attractive product for consumers. In, modeling of simple home automation system implemented prototype has been discussed along with graphical results and analysis of GSM implementation. All the technologies implemented so far have assisted a fine and quality improvement in realization of intelligent homes but still there is a room for improvement and to make these control systems more efficient and cost effective.

IV.PROPOSED METHOD

The Wireless Home Automation System is an integrated system to facilitate elderly and disabled people with an easy-to-use home automation system that can be fully operated based on speech commands. The system is portable and constructed in a way that is easy to install, configure, run, and maintain.

A typical wireless home automation system allows one to control house hold appliances from a centralized control unit which is wireless. These appliances usually have to be specially designed to be compatible with each other and with the control unit for most commercially available home automation systems. The project demonstrates a system that can be integrated as a single portable unit and allows one to wirelessly control lights, fans, air conditioners, television sets, security cameras, electronic doors, computer systems, audio/visual equipment's etc.

V.BLOCK DIAGRAM



ESP 32

ESP32 based boards come in a variety of shapes and sizes and pinout of each board is different to other. Also, not all pins of the ESP32 Microcontroller SoC will be available on a development board as some pins might be permanently tied to a dedicated function.

One such case is the Flash Memory. We know that all ESP32 boards come with 4 MB of Flash Memory to store the programs.

So, some of the GPIO Pins (6 to be specific) are connected to SPI Flash IC and those pins cannot be used as regular GPIO Pins.

Hence, it is important to understand the pinout of popular ESP32 boards so that you will know what pins are available for use in projects.

SERVO MOTOR:

A **servo motor** is a type of motor that can rotate with great precision. Normally this type of motor consists of a control circuit that provides feedback on the current position of the motor shaft, this feedback allows the servo motors to rotate with great precision. If you want to rotate an object at some specific angles or distance, then you use a servo motor. It is just made up of a simple motor which runs through a **servo mechanism**. If motor is powered by a DC power supply then it is called DC servo motor, and if it is AC-powered motor then it is called AC servo motor. For this tutorial, we will be discussing only about the **DC servo motor working**. Apart from these major classifications, there are many other types of servo motors based on the type of gear arrangement and operating characteristics. A servo motor usually comes with a gear arrangement that allows us to get a very high torque servo motor in small and lightweight packages. Due to these features, they are being used in many applications like toy car, RC helicopters and planes, Robotics, etc.

RELAY

A relay is an electrically operated switch. Many relays use an electromagnet to operate a switching mechanism mechanically, but other operating principles are also used. Relays are used where it is necessary to control a circuit by a low-power signal (with complete electrical isolation between control and controlled circuits), or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits, repeating the signal coming in from one circuit and re-transmitting it to another. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

INTERNET OF THINGS

The major concept using in the Google assistant-controlled Home automation is the Internet of Things. The Internet of Things

(IOT) can be connecting various types of objects like smart phones, personal computer and tablets to the internet, which brings new-fangled type of communication between things and things, and things and people.

Home automation system any man-made objects that can be assigned an IP address and it has the ability to transfer data successfully over a network, the interaction through a network is called IOT. The internet helps us to bring immediate solutions for many problems and able to connect from any of the remote places. The Internets of Things technology is used to come in with innovative idea and large development space for smart homes to improve the living standards of life. The growth of the Internet of Things will reform a number of sectors, like healthcare, automation energy, transportation, etc. The cloud computing can be used in such case to implement the IOT infrastructure that augmented with sensors and actuators to monitor and control “things” from anywhere.

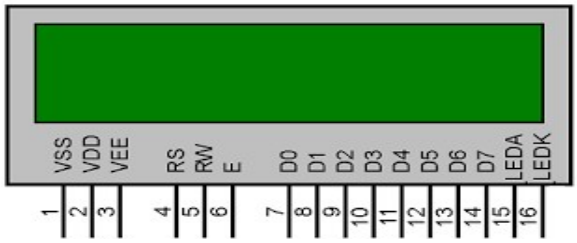
GOOGLE ASSISTANT

Recently all the people have their phones has android and it contains the Google Assistant tool .It is one type of software which permits the humans to respond the all apps which are present in the device by using voice commanding mode. It permits the people to comply and give the signal to the apps in their devices by using sound tone commands.

VOICE RECOGNITION MODULE

The voice recognition module consists of HM 2007 IC, SRAM and keypad. In this module there exist two operations manual and CPU mode. The mode is selected through the keypad and the error code is generated by chip for the correct input from a user. The control signal from the chip is given to controller for the process. The speech recognition system will process the signal and store the command in a static RAM IC. The data from the speech recognition module and the data or command stored in a separate memory location is compared using switch case statement in the program so that the command for each appliance is triggered through wireless communication.

LCD



It is called Liquid Crystal Display. We are going to use 16x2 characters LCD. This will be connected to microcontroller. The job of LCD will be to display all the system generated messages coming from the controller. LCD will provide interactive user interface. This unit requires +5VDC for it proper operation. This module is used for display the present status of the system.

V.EXPERIMENTAL RESULT

Irrigation becomes easy, accurate and practical with the same soil sample impossible. Because of the idea above shared and can be implemented in

agricultural difficulties of accurately measuring dry soil and water fields in future to promote agriculture to next level. The Volumes, volumetric water contents are not usually output from moisture sensor and level system plays major determined directly. Role in producing the output

VI.RESULT

The application first searches for the Bluetooth device. If it is available, then it launches the voice recognizer. It reads the voice and converts the audio signal into a string. It produces a value for each appliance which will be given to the microcontroller device. The microcontroller uses the port in serial mode. After reading the data it decodes the input value and sends a signal to the parallel port through which the relay circuit will be activated.

VII.CONCLUSION

The traditional door locking mechanism has a contemporary replacement in this "GOOGLE ASSISTANT HOME AUTOMATION." This system is valuable since it is quick to install, reasonably priced, and has multiple modes of operation.

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