Google Voice Assistance based Smart Home Automation Using Artificial Intelligence

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Abstract **- This paper framework utilizing Artificial Intelligence to control home appliances using google voice assistance. Home automation or domotics a term for home automation coined by Jim Hill has been evolving drastically. We saw many home automation technologies introduced over these years from Zigbee automation to Amazon Echo, Google Home and Home from Apple. It has become a craze these days. Our main aim is to automate our house within less cost unlike other modules like Alexa echo dot and can control up to 8 appliances using Google Assistant. In this system we have 2 AC loads (Bulb or Fan) connected to the microcontroller by 2 relays. When we send a voice command or a text command through the Google Assistant the command is received by the microcontroller through the Wi-Fi module.**

Index Terms **- Artificial Intelligence, Automation, Arduino Nano, Google voice Assistance, Relays, Regulated Power Supply, Wi-fi Module.**

I.INTRODUCTION

The framework utilizing Artificial Intelligence to control home appliances using google voice assistance. Home automation or domotics a term for home automation coined by Jim Hill has been evolving drastically. We saw many home automation technologies introduced over these years from Zigbee automation to Amazon Echo, Google Home and Home from Apple. It has become a craze these days. Our main aim is to automate our house within less cost unlike other modules like Alexa echo dot and can control up to 8 appliances using Google Assistant.

II.LITERATURE SURVEY

A brief overview of existing work in various papers, which have been referred for implementation. Potamitis, Georgila, Fakotakis, and Kokkinoss, G. suggested the use of speech to interact remotely with the home appliances to perform a particular action on behalf of the user. The approach is inclined for people with disability to perform real-life operations at home by directing appliances through speech. Voice separation strategy is selected to take appropriate decision by speech recognition. In the year S. M. Anamul Haque, S. M. Kamruzzaman and Md. Ashraful Islam proposed a system entitled "A System for Smart-Home Control of Appliances Based on Time and Speech Interaction" that controls the home appliances using the personal computer. This system is developed by using the Visual Basic 6.0 as programming language and Microsoft voice engine tools for speech recognition purpose. Appliances can be either controlled by timer or by the voice command. Jawarkar, Ahmed, Ladhake, and Thakare propose remote monitoring through mobile phone involving the use of spoken commands. The spoken commands are generated and sent in the form of text SMS to the control system and then the microcontroller on the basis of SMS takes a decision of a particular task. Prof. Era Johri in have successfully completed the project on "Remote Controlled Home Automation". Withings is a consumer electronics company is the leader in the connected health revolution. The Home camera alerts the user to many motions or noise while out of the House. It also tracks the indoor air quality, notifying the user if dangerous levels of voltaic organic compounds are detected. It has taken security, privacy and home health to the next level through a partnership with IFTTT, a service that allows rule-based actions and triggers between a range of devices and services. Users can enhance their Withings Home, the comprehensive Home monitoring solution was first presented at Consumer Electronics. Home automation

refers to the monitoring and controlling of home appliances remotely. with the never-ending growth of the Internet and its applications, there is much potential and scope for remote access and control and monitoring of such network enabled appliances. The effort targeted on the home automation concept of where the controlling and monitoring operations are expediting through smart devices. Wide-ranging home automation systems and technologies considered in review with central controller based (Node or Raspberry pi), cloud-based, Bluetooth-based, SMS based, ZigBee based, mobile-based, RF Module based, web based and the Internet with performance. One of the most important Hardware requirements of the project is Arduino Microcontroller.

III.PROPOSED WORK

The module which is used here is Artifical Intelligence, Artificial Intelligence System was a distributed computing project undertaken by Intelligence Realm, Inc. with the long-term goal of simulating the human brain in real time, complete with artificial consciousness and artificial general intelligence.

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IV.IMPLEMENTATION

In implementation, the hardware and software used are described as

A. Artificial Intelligence

Artificial intelligence (AI) is a single or collection of computer systems able to process information and perform tasks usually done by humans.

AI can have simple forms of intelligence, such as recognizing speech or analysing visual patterns in images. Or it can be more complex, such as learning from past mistakes and problem-solving. To understand what artificial intelligence means, think about what you observe in nature which makes you convinced something has intelligence. Something as simple as a lab rat learning the correct path through a maze represents a simple form of intelligence (there are (four types of AI). It involves memory and learning, similar to human intelligence.

In 1950, Alan Turing described "thinking machines" as recognizable because they could use reason to solve puzzles. In the 1950s, John McCarthy said computers could "do things, which, when done by people, are said to involve intelligence."

These ideas boil down to three characteristics used to identify a machine or computer as having "artificial intelligence." They can:

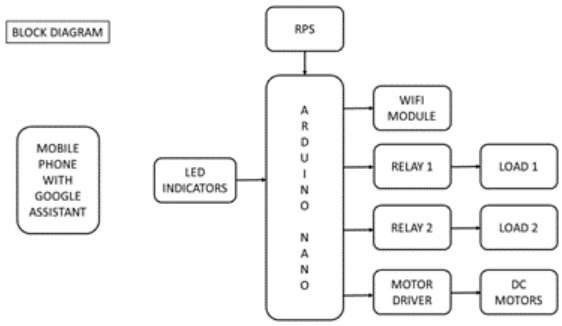
- Use inputs, such as sensors or data, to analyse information.
- Process vast amounts of data to identify patterns, trends, or correlations.
- Adapt their decisions and actions based on learnings derived from inputs and data.

It's precisely how human intelligence helps humans learn and adapt in our daily lives.

B. Software Used

Embedded C programming in Arduino: A general term for such subsets is “Embedded C” because they apply to programming embedded controllers. The language in which Arduino is programmed is a subset of C and it includes only those features of standard C that are supported by the Arduino IDE.

V. BLOCK DIAGRAM

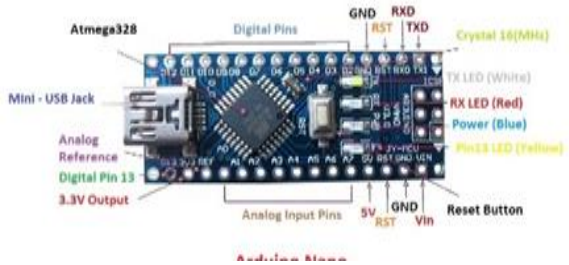


Regulated Power Supply:

The power supply system has an input which is either ac or dc and, for our discussions, a dc output. This dc output is used to power some form of electronic circuitry. The input could be the 240V 50Hz mains supply or a dc supply from a car battery or even a power rail within an existing circuit.

Arduino Nano:

Arduino is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button.

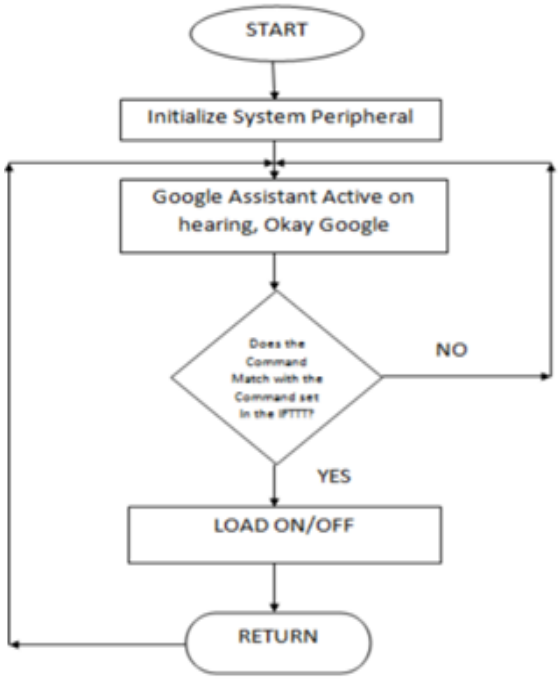


Microcontroller: Atmega328
Operating Voltage: 5V
Input Voltage (recommended): 7-12V
Input Voltage (limits): 6-20V
Digital I/O Pins: 14 (of which 6 provide PWM output)
Analog Input Pins: 6
DC Current per I/O Pin: 40 mA
DC Current for 3.3V Pin: 50 mA
Flash Memory: 32 KB of which 0.5 KB used by bootloader
SRAM: 2 KB (Atmega328)
EEPROM: 1 KB (Atmega328)
Clock Speed: 16 MHz

Relay:
A relay is an electrically operated switch. Many relays use an electromagnet to operate a switching mechanism, but other operating principles are also used. Relays find applications where it is necessary to control a circuit by a low-power signal, 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.

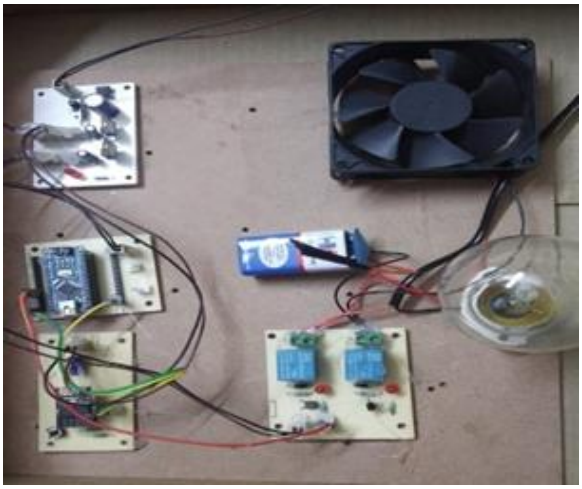
Wi-Fi Module:
Wireless Technology is an alternative to Wired Technology, which is commonly used, for connecting devices in wireless mode. Wi-Fi (Wireless Fidelity) is a generic term that refers to the IEEE 802.11 communications standard for Wireless Local Area Networks (WLANs). Wi-Fi Network connect computers to each other, to the internet and to the wired network. computers to each other, to the internet and to the wired network.

FLOW CHART

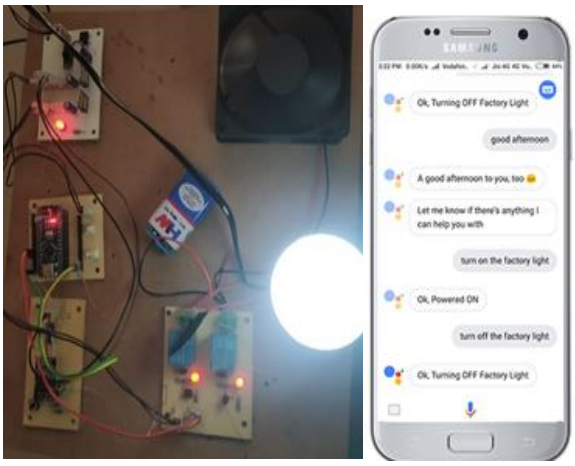


VI RESULT AND CONCLUSION

Connections of Google Assistant controlled home automation.



The output for Google assistant-controlled home automation is shown below.



In this project, voice commands are given to the Google assistant. In this home automation, user have given commands to the Google assistant. Home appliances like Bulb, Fan and Motor etc., are controlled according to the given commands. The commands given through the Google assistant are decoded and then sent to the microcontroller and it control the relays. The device connected to the respective relay turned On or OFF as per the users request to the Google Assistant.

The microcontroller used is Arduino Nano and the communication between the microcontroller and the application is established via Wi-Fi (Internet). There has been tremendous growth in the home automation sector. Consumers are looking to secure their home environment in today's unpredictable world, and the new home automation service gives them the peace of mind that they need to protect their family's well-being.

This project is about wireless home automation using Android mobile helps us to implement such a fantastic system in our home at a very reasonable price using cost-effective devices. Thus, it overcomes many problems like costs, inflexibility, security etc. In addition, will provide greater advantages like it decrease our energy costs, it improves home security. In addition, it is very convenient to use and will improve the comfort of our home. The project has proposed the idea of smart homes that can support a lot of home automation systems.

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