

Intelligent Automated Assistance System

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Abstract—In this paper we introduce an Intelligent Automated Assistance System is a Device which will be a Portable smart device. IAAD can be used to make a smart home, smart office or smart clinic. The device will be working based on raspberry pi computer. It will be basically a voice based device which works basically on voice input. User can also give other kind of inputs through phone or web. The project features some of the latest trends in current IT scenario such as Smart devices, IOT, Home automation, Artificial Intelligence, Cloud Computing etc... The device will be an assistant for the user who can give reply to user's wide number of queries either as voice or through android device. It will interact with other systems by means of IOT, thus provides a fully automated system. A node MCU makes the devices to be controlled from anywhere .Implementation of sixth sense technology concepts are another aim we would like to implement. 'Sixth Sense' is an interface that augments the physical world around us with digital information. The device can communicate with each other and work at a same time or by interacting with each other within a scheduled time or at a scheduled time.

IndexTerms—Raspberry pi, IOT, Home automation, Artificial Intelligence, Cloud Computing, sixth sense

I. INTRODUCTION

As computing technology becomes more advanced and less expensive, it can be built into an increasing number of devices of all kinds. We introduce a way to eliminate the traditional way of information access, storage and manipulation i.e. the information from paper, screen and digital storage. Although there have been many advancements in technologies that enables us to connect the digital world to physical world, there aren't any technologies as of now which bridge the gap between the digital world and physical interaction with the real world. Our project aims to bridge this gap. A smart device is an electronic device, generally connected to other devices or networks via different wireless protocols such as Bluetooth, NFC, Wi-Fi, 3G, etc., that can operate to some extent interactively and autonomously[1]. Several notable types of smart devices are smartphones, Tablets and tablets, smartwatches, smart bands and smart key chains. The term can also refer to a device that exhibits some properties of ubiquitous computing, including artificial intelligence. Smart devices can be designed to support a variety of form factors, a range of properties pertaining to ubiquitous computing and to be used in three main system environments: physical world, human-centred environments and distributed computing environments[2]. In addition to personal and handheld computers, the almost infinite list of possible intelligent devices includes cars, medical instruments, geological equipment, and home appliances. With the on-going development of the social economy [3], a large number of home appliances and industrial appliances have been presented into our day to day lives. While, people pursue ever-growing high quality of life, this leads to more and more facilities and home appliances poured into their buildings. Recent years have witnessed the emergence of device-to-device (D2D) networks as an efficient means for providing automated communications among distributed devices [4].

The ideas of smart home and smart industry are gaining importance in the present context due to their ability to automate industrial and home environments with great effectiveness. Smart systems are defined as miniaturized devices that incorporate functions of sensing, actuation and control. They are capable of describing and analysing a situation, and taking decisions based on the available data in a predictive or adaptive manner, thereby performing smart actions. The control of such appliances and devices at home or industrial work environment is a complex matter due to two important reasons[5]. Firstly, the control expected out of such automation applications is far more compact compared to the control provided by traditional control systems. Secondly, in such applications there is always the human element that comes to force, wherein the people accommodating the homes or working in the industries expects to occupy a comfortable, healthy, secure, economy and convenient space. Home networking is the core to the implementation of an automation system for a smart home. The project features some of the latest trends in current IT scenario such as Smart devices, IOT, Home automation, Artificial Intelligence, Cloud Computing etc... The device will be an assistant for the user who can give reply to user's wide number of queries either as voice or through android device. It will interact with other systems by means of IOT, thus provides a fully automated system. A node MCU makes the devices to be controlled from anywhere .Implementation of sixth sense technology concepts are another aim we would like to implement. 'Sixth Sense' is an interface that augments the physical world around us with digital information. The device can communicate with each other and work at a same time or by interacting with each other within a scheduled time or at a scheduled time.

Wireless Home Automation system(WHAS) using IoT is a system that uses computers or mobile devices to control basic home functions and features automatically through internet from anywhere around the world, an automated home is sometimes called a smart home. It is meant to save the electric power and human energy. The home automation system differs from other system by

allowing the user to operate the system from anywhere around the world through internet connection. This is a portable system so handling the device will be much more easier[9].

II. LITERATURE SURVEY

A. Intelligent VirtualAssistant

An intelligent virtual assistant is an engineered entity residing in software that interfaces with humans in a human way. Gestures can originate from any bodily motion or state but commonly originate from the face or hand. This paper presents the approach to develop a personal assistant that reduces the use of input devices like mouse and keyboard on our personal computer. Giving commands via speech makes it user friendly. This paper also describes the representation model, available personal assistants in the market, along with the implementation of this system. Details about the additional feature of remote access and addition of new commands that makes it different from others are also mentioned[4].

B. Home automation

Industry alert are based on manual intervention. Notification for any circumstances in Industry not provided. Appropriate action for this condition taking is a system which will automatically monitor the industrial applications and generate Alerts/Alarms or take intelligent Decision using concept of IoT. And also design the system to Take Intelligent Decision and Control Devices[1]. The proposed method is aimed at designing a voice controlled and GSM based smart home system. The system is designed in such a way that it is easy to install and use. The system has two main sections; they are MATLAB section and embedded section. MATLAB section uses a PC with MATLAB software for speech processing and recognition. The speech recognition is done with the help of MATLAB coding. After recognition, corresponding control characters are sent through the ZigBee transceivers to the control part. Microcontroller in the control part will select the required device according to the input voice command. The devices can also be controlled from distant locations through SMS. So, a GSM module is associated with the control part[2]. A system that will provide remote control of home appliances and also provide security against the mishaps when the home host is not at home. This paper is mainly concerned with the automatic control of light or any other home appliances using internet of things(IOT) concept have been used here . It is meant to save the electric power and human energy. This project is made with the help of controller and raspberry pi. The various appliances connected to the micro controller and sensor is connected using wireless network[3].

III. INTELLIGENT AUTOMATED ASSISTANCE SYSTEM

An IOT based home automation system using raspberry pi that automates home appliances Allows user to control them easily through internet from anywhere over the world. Our proposed system consists of a microcontroller based circuit that has lights and fan connected to Wi-Fi connector interfaced with raspberry pi and node MCU. Using a smartphone or using a microphone we can control our home appliances from anywhere.

The overall system will be controlled by Raspberry Pi 3 B controller which act as a mini computer since it has a processor. The system will be supported by Alexa Voice Service (AVS), which is a cloud speech-recognition service from Amazon. It is used in Amazon's Echo. Alexa provides a set of built-in skills and capabilities available for use. Returns an mp3 with an answer. Basic operations on a computer like opening file, playing music, typing file, writing program, etc..can be done through voice command. Alexa will convert the voice commands into corresponding bash commands and it will be executing various applications. User can do basic search operations online just by voice command. User can do basic search operations online just by voice command. Updating Social network status, checking weather info, navigation, and other internet services with the help of voice commands,

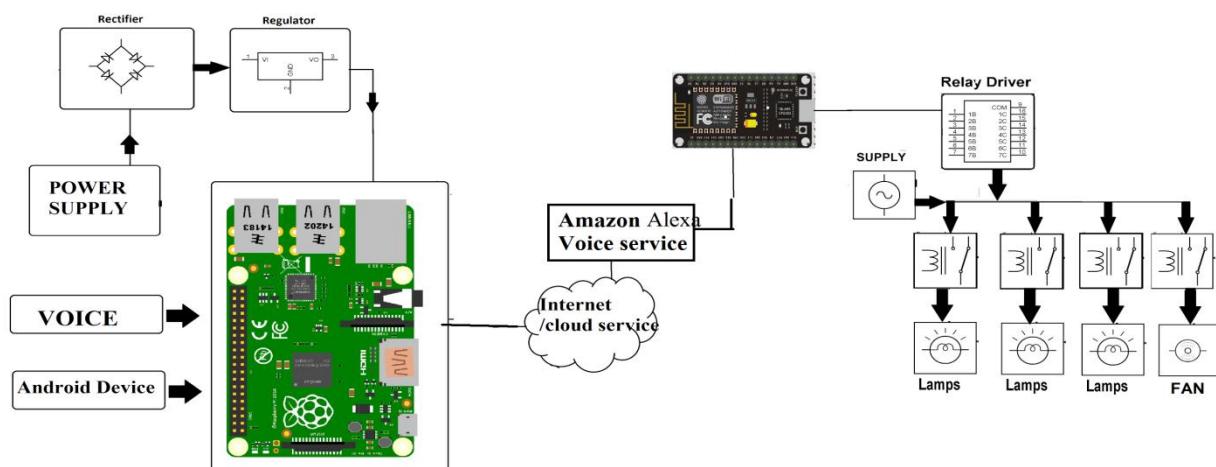


Fig. 2:System implementation

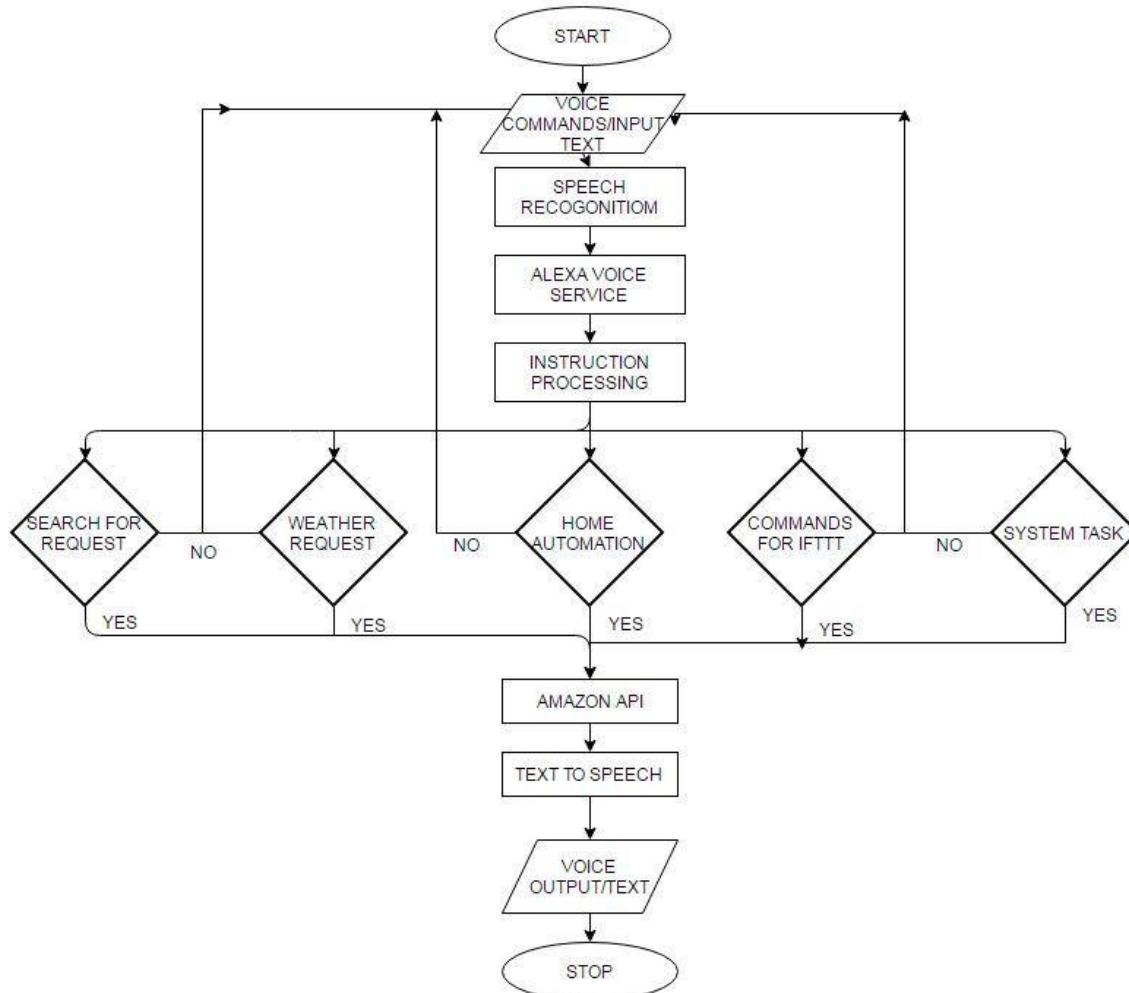


Fig. 3: Input processing flowchart

Home automation can be implemented using IoT .Since its IoT internet is must and has a vital role.IoT facilitates the intercommunicating devices. WHAS using IoT is a system that uses computers or mobile devices to control basic home functions and features automatically through internet from anywhere around the world. An automated home is sometimes called a smart home. It is meant to save the electric power and human energy. The home automation system differs from other system by allowing the user to operate the system from anywhere around the world through internet connection.

All these internet services are run using api requests to corresponding websites. an intelligent automated assistance system which is a device with feature of voice controlled home automation and a voice based personal assistant.The device will be embedded with ESP8266 NodeMcuWiFi Development Board which will help us to control the home appliances like Fan, Lights, Kettle, Heater etc., from a remote location. AdaFruit IO is used to communicate between two devices raspberry pi and node MCU. The AdaFruit works on MQTT protocol. The Wi-Fi module built in this board will help us to access the appliances through Raspberry Pi.The system uses IFTTT service. IFTTT is a free web-based service that people use to create chains of simple conditional statements, called applets. An applet is triggered by changes that occur within other web services such as Gmail, Facebook, Instagram, or Pinterest. Using this IFTTT and Alexa service we are implementing intercommunicating devices.

IV. CONCLUSION

Although there have been many advancements in technologies that enables us to connect the digital world to physical world, there aren't any technologies as of now which bridge the gap between the digital world and physical interaction with the real world. Our project aims to bridge this gap. In addition to personal and handheld computers, the almost infinite list of possible intelligent devices includes cars, medical instruments, geological equipment, and home appliances. The project features some of the latest trends in current IT scenario such as Smart devices, IOT, Home automation, Artificial Intelligence, Cloud Computing etc...The Smart device will be an assistant for the user who can give reply to user's wide number of queries either as voice or through its display. It will interact with other systems by means of IOT, thus provides a fully automated system. Which also contains 'Sixth Sense', is an interface that augments the physical world around us with digital information. The different types of application using sixth sense gives expendability to project.

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