Smart AI Representation of Automated Home and Health Systems (SARAHH Smart Home Technology)

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Abstract – With the advancement of technology around the world, we are looking at an era where everything is based on automation. Before the introduction of such kind of technologies everything was done manually and it took a lot of resources and time to complete the task that a particular device was meant to carry but now because of the existence of these modern day technologies, our lives have become easier. Such a kind of technology is a SMART HOME. Smart Home is the automation of house appliances with the help of Internet, it is a branch of Internet of Things (IOT).With the help of smart homes our house appliances become smarter and help in better access of the resources, But upon recent studies it has been found that Smart Home technology lack consistency and is still under development stage.

Index Terms – Microcontroller, Sensors, HTTPClient, IOT

1. INTRODUCTION

Primary goal is to minimize some of the flaws in the smart home technology. SARAHH is an AI based Home Automation System which uses machine learning to teach itself to use the appliances in a better and efficient way. Applying Machine Learning to this technology will help us to improve the basic features of the SMART HOME technology. SARAHH will observe the pattern of how a real user is using his house appliances and on the basis of these patterns it will teach itself to apply these patterns even if the user is not physically present in the home to control it.

SARAHH understands the current environment of the room and based upon that it suggests the user to adapt accordingly. If it is too cold it asks the user to turn on the heater, If It is too hot it asks the user if he wants to turn his AC down to a much lesser temperature. During daytime it suggests the user to turn off the lights to prevent the wastage of power.

SARAHH will be meant to be controlled using voice commands through an Artificial Intelligence system written in python which uses Google's speech recognition technology to understand the English language, The AI can not only just understand the commands but it can also understand the sentiments of the users speech and based upon that it gives the suitable reply. It can reply with a joke if it senses humor, It can suggest to play some good music if the user's mood is not good and do more. SARAHH works on Android/IOS platforms as well as Windows Based Operating Systems.

Features of Sarahh

Speech Recognition-

Sarahh can recognize speech Using TensorFlow Library.

Ease of control-

Sarahh enables user to control home appliances easily.

Efficient-

Use of Tensor Flow Library makes it really efficient.

Faster-

Use of Tensor flow library makes it really aster.

Saves money-

Using Cloud Infrastructure it saves a lot of money.

2. RELATED WORK

As of now the home automation is only focused upon interconnection of the things which are present in the houses to the internet and helping the user to easily control the devices even if they are far away.

But generally is little bit deviating from its core name which is SMARTHOME.

SMART HOMEs lack the consistency which restricts It from being smarter.

Since the devices are connected to the internet there are most chances that there might be security breaches. So it is very important for the Internet based things to be smarter so that it can try and avoid the issues which is restricting it from providing the best of the services.
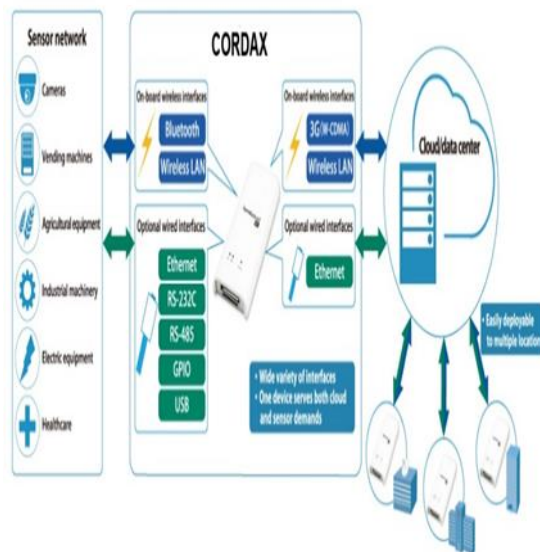
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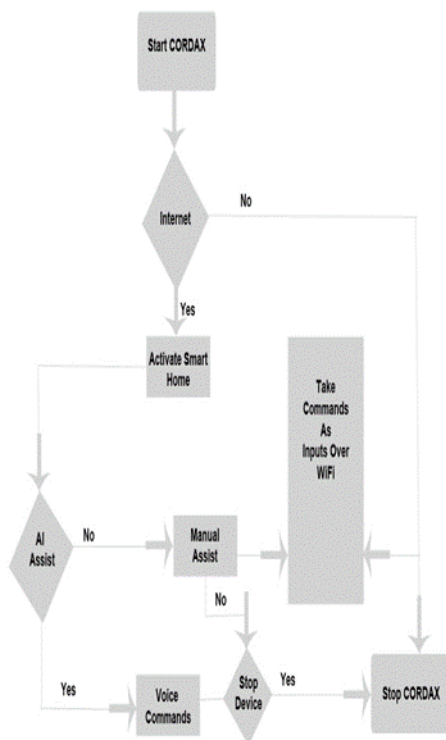

Fig I a: System architecture of SARAHH

Fig I.b: Data flow of SARAHH

3.1. Arduino Connections

The Arduino board has been used for SARAHH, Arduino. Being the open source microcontroller based kits for building digital device and interactive objects that can sense and control physical device.

During the time of execution the values will stored in the EEPROM, so that it can transmit its data to the various device connected to it. The power source is USB

3.1.1 Typefaces and Capacity

There are many different typefaces and a large variety of port in the Arduino board which are been used to connect with the different types of the hardware to it. Each hardware are been connected via Breadboard with the help of connectors. The different ports are likely Ground, Receiver and Transmitter etc. Now, every devices even has different ports to it. Now the challenge remains to connectgit with the Arduinoboard .

3.1.2 Format

Now, every port in the different hardware like Wi-Fi Transmitter, Breadboard, Relay switch, and other sensors is to be connected with the board. The format followed for the connection are like connecting Arduino 5v to RAW pin. Arduino ground to Relay/Sensors ground. Pin labelled X-Acc to A0, Y-Acc to A1, and Z-Acc to A2 Similarly Wi-Fi transceiver ports are also been connected to the board accordingly with every cross matching. Because the transmitter port are never been connected to the transmitter port of the board, its cross matched so that transmitted data can be stored by the boards memory and can be shared to the other devices connected to it.

3.1.3 Display

The code below will create a web server in the ESP 8266 Wi-Fi transmitter to allow the python based User Interface to control the device.

4. SYSTEM IMPLEMENTATION

4.1. Support

To execute the overall project the need of many supporting background to it is required. These are been provided and then the execution starts. In project SARAHH tough acrylic board has been used to support both the Arduino board and bread board. Now the connection are been given to the Arduino from the breadboard using connecting cables. Now, challenges for transmitting the data are been completed using Wi-Fi added to it. The Wi-Fi shield is been given to support the overall system.

4.2. Working

The projects are to be provided with the power system so the microcontroller board can control its functional units attached to it. The board is given by the battery of nearly 3000 mAh so that it can last for a minimum of the 76 Hours. The board are been receiving the data and stores it in their flash memory and

then, as it is been paired with another microcontroller device it shares all its data to that and where that device becomes host to other devices. It creates a record of the shock of the car during an accident.

4.3.   Solutions to problems

Inconsistency of Smart Home, Power Wastage, Appliances not able to think

4.4.   Limitation to the Existing Systems

As of now the home automation is only focused upon interconnection of the things which are present in the houses to the internet and helping the user to easily control the devices even if they are far away.But generally is little bit deviating from its core name which is   SMART HOME. SMART HOMEs lack the consistency which restrict it from being smarter.

Since the devices are connected to the internet there are most chances that there might be security breaches.So it is very important for the Internet based things to be smarter so that it can try and avoid the issues which is restricting it from providing the best of the services.

5.   EXPERIMENTAL RESULTS AND EVALUATION

AI Testing

Case 1 : Normal Greetings Hello, Hi were tested for which the AI responded with the desirable answer.

Case 2: Location Match

The AI was asked to show the location of a place in the map, The location was displayed over the Google Maps.

6.   CONCLUSION

At first, the research experience took me in several directions until getting acquainted with the variety of methods that can be employed in modern day vehicle safety system. As explained throughout this report, IOT was the preferred tool to dive into, as it provides the right abstraction from the hardware details and presents a uniform API to the user. As a Computer Engineering major, I found myself deeply interested in swimming across this abstraction layer - where hardware meets

software – by writing drivers that can fill this void. There is more to be done to achieve a more polished functionality in ACIS, and I feel that leaving this report at hands of the faculty can assure that this goal is reached at some point by the joined efforts. With ACIS more lives can be saved by the use of modern technologies such as Artificial Intelligence and Machine Leaning.

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