

Remote Control Dynamic Bot

Prof. S. P. Pattanaik
Asst. Professor
RajarshiShahu College
of
Engineering
Pune - 411033
Maharashtra, INDIA

pattanaikswapnalini@gmail.com

Tabassum Patel
Undergraduate Student
RajarshiShahu College
of
Engineering
Pune-411033
Maharashtra, INDIA

tabassum.patel19@gmail.com

Neha Shelhalkar
Undergraduate Student
RajarshiShahu College
of
Engineering
Pune - 411033
Maharashtra, INDIA

nehashelhalkar75@gmail.com

Vaishnavi Sonar
Undergraduate Student
RajarshiShahu College of
Engineering
Pune - 411033
Maharashtra, INDIA

ishuvibhanik000@gmail.com

Simran Shaikh
Undergraduate Student
RajarshiShahu
College of
Engineering
Pune – 411033
Maharashtra, INDIA

sim.shaikh7867@gmail.com

Abstract

The Internet of Things is nothing but concept which says that connect whichever device to internet. It also connects the other available connected devices. In a nutshell it is a kind of Network consists of physical things embedded into software, sensor, electronics, and a network connectivity that allows these things to transfer, exchange, gather the data. Such devices usually work to gather the necessary data and flow between many other devices. The implementation of a private virtual assistant which might take the human voice commands to perform tasks that otherwise would want the dependence on others. It allows user to understand the weather outlook report, observe the fireplace and also the smoke within the area, victimization Speech to Text Engine, Text to speech Engine and electro-acoustic transducer for the input and speakers for the output. It conjointly calculates the wet and temperature victimization totally different sensors.

Keywords: Tongue process, Raspberry Pi, Home Automation, Robot

1. Introduction

In 2015, A. Mishra managed to developed a personal assistant robot which can be operated using voice commands by sitting at a remote location. In this approach there was power wastage as well as there was huge need requirement of hardware. Using IoT we can use the above concept without procuring and using any of the hardware. Since IoT objects communicate with the help of network. There is no need of P-P interaction. AI is a powerful tool for creating intelligent machines which requires intelligence. We can build a virtual personal assistant for blind which will not be difficult to operate. It enables user to send and receive emails, know the weather forecast report, detect the fire and the smoke in the room, recognize face to unlock the door etc., using Speech to Text Engine, Text to speech Engine using microphone for the input and speakers for the output. Proposed device is portable. It can be controlled through mobile application. It is also integrated with camera that is why it adds security parameter to device as well.

2. Literature Review

There are various approaches are present for Remote Control Dynamic Bot. Some of the important literature which covers the more important techniques are discussed below.

Vishwakarma et. al. [1] proposed smart energy efficient home automation system which will access and control the house equipment from every corner of the planet. System compatibility controls all aspects of home automation. Advancement in IoT based

application has become the state-of-the art technology. Web based and android based technologies have gained their importance during this cutting edge technology.

Shubhang Khattar et. al. [2] have published a paper on how IoT can connect devices on different platforms. The Internet of Things (IoT) means learning and interacting with millions of things including services, sensors, actuators, and lots of other objects on the net. The trail of advancement has been done through keyboard, mouse, touch Screen and now it's Voice. This new user interface may be achieved by Alexa Voice service. The most important factor is privacy .

Septimiu Mischie et. al. [5] Investigated the implementation of the voice Google assistant on a Raspberry Pi microcomputer. First, is presented. The Voice Kit of Google has attached to a Raspberry Pi In this way a Voice Google assistant may be made more easily and versatile. This newly created device has several working modes that are analyzed. Finally, a speech recognition system that works in Romanian language is presented and evaluated.

Jose A. Solorio et. al.[6] have presented a paper on on speech recognition system and Internet of Things .This may be a new trend in technology that's already changing the globe within which we live by interconnecting physical objects that may collect or transmit information to us and to every other. The system consists of hardware and software elements. Intelligent vehicles and connected infrastructure interference of bandwidth will have negative impact on ability

Chan Zhen et. al. [7] have published a paper on smart systems which have played a vital part in human existence. The services provided include voice controlled alarms, personalized calendars with weather outlook, and report reminders. Lack of accuracy and misinterpretation, accent ,speech recognition is the limitation of paper.

3. Proposed System

It is proposed to implement a whole Digital Assistant for the house Security using Raspberry Pi and AI. A voice controlled system, which transreceives information within the type of audio: a private virtual assistant which might take the human voice commands to perform tasks which otherwise would want the dependence on others. It also enables the user to:

- Weather Information
- Access Daily news
- Fire Detection
- Gas leakage detection
- Switch On or off appliances
- Human Detection

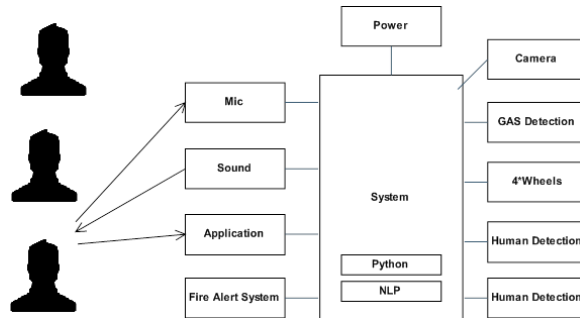


Figure 1: Proposed system

4. Working

Speech Recognition: - It's the mix of STT (Speech to Text) and TTS (Text to speech). Converts speech input to text so text to speech.

Weather Information: - The user can access the weather information about any location for the current day.

Gas leakage: - This module is employed to detect the gas leakage with the assistance of MQ6 sensor and also sends an alert message just in case of gas detection.

Fire detection: - This module is employed to detect the re within the room by measuring temperature and humidity. It also send an alert message just in case of re detection

Home automation: - This module is employed to modify on or o the appliances by voice commands.



Figure 2: Working Model

5. Mathematical Model

Let 'S' be the system
Where $S = I, O, P, F_s, S_s$

I = Set of input ,
O = Set of output
P = Set of technical processes
Fs = Set Of Failure State
Ss = Set Of Success AND State Identify the input data I1, I2, , In
I = (Voice)
Identify the output applications as O1, O2,,On
O = (Perform operation according to voice input) Identify the Process as P
P = (Voice recognition system, Natural language processing, Appliance controlling)
Identify the Failure state as Fs
Fs = (If voice not recognition not work properly, camera not worked)
Identify the Success state as Ss
Ss = (Voice recognition system work successfully, controlling work properly)

6. Methodologies

Natural language processing is used in this model. It is the subfield of linguistics, computer science, information engineering . Artificial Intelligence concerned with the interactions between computers and human (natural) languages, in particular how to program computers to process and analyze large amounts of natural language data. Natural Language Processing, usually shortened as NLP, is a branch of artificial intelligence that deals with the interaction between computers and humans using the natural language. The ultimate objective of NLP is to read, decipher, understand, and make sense of the human languages in a manner that is valuable. Most NLP techniques rely on machine learning to derive meaning from human languages.

7. System Specifications

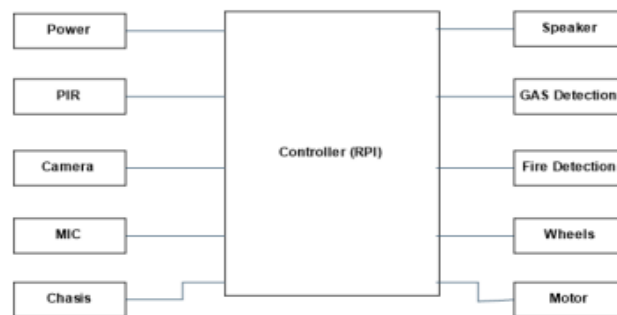


Figure 3: Block Diagram

[1] **Raspberry Pi 3**:-This model is the third generation model which got released by Raspberry Pi. It is 10 times faster than earliest model. It comes with additional feature which is Wifi, Bluetooth connectivity. It is equipped with Quad-core 1.2 GHz processor. Technical specifications are as per below:

- 100 Ethernet Base
- Extended GPIO 40 pin
- USB ports – 4
- Composite vie port and 4-pole stereo
- 1.2GHz Broadcom Quad-core
- RAM capacity – 1 GB

- Up to 2.5A Micro USB power source
- Micor-SD port
- Display port - DSI



Figure 4. Raspberry Pi 3B

[2] GAS Detection: -

This detects many different types of the gasses. By using gas detection sensor we can detect gas leakage and prevent probable future incident. Gas sensors can be used in Home, Hotel industry, office pantry.

[3] Fire Detection: -

Fire detector uses mechanism to identify fire by using Smoke produced and the temperature of the surrounding. Fire detector is used in home, office and warehouses. Sensor can detect some and Fire both. It has ability to do multitasking.

[4] Motor: -Motor containsrotor, starter, commutator and armature. Direct current motors are used for simple purposes mostly household things and toys and tools.DC motor generates magnetic field using inductors which are useful to gain movement.

[5] PIR:- PIR are basically used to detect human movement. These types of sensors are very cheap, affordable and accurate. It can be used to operate in very congested place. It consists of Retrigger select, BISS0001 chip, Protective diode, 3v regulator.

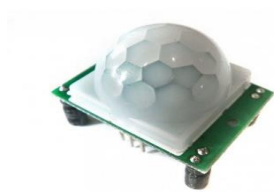


Figure 5. PIR Sensor

8. Conclusion and Future Scope

A complete Digital Assistant for the Home Security using Raspberry Pi and Artificial Intelligence has discussed . It is a voice controlled system transmits audio form. A personal virtual assistant which can take the human voice commands to perform tasks which otherwise would need the dependence on others. It also enables the user to Weather Information, Access Daily news, Fire Detection, Gas leakage detection, Switch On or off appliances, Human Detection. The device will be compact. We can use Face Recognition system to identify the user. We can implement it with power optimization mechanism.

Acknowledgments

We are thankful and would like express our gratitude those who supported, helped us to prepare this paper. Special thanks to our guide who helped us to complete this paper hassle free. Your guidance was precious and your deep knowledge in this subject helped us in understanding this topic multidimensional. Also we thank many well-wishers who helped us to complete this paper.

References

- [1] Vishwakarma, S. K. Upadhyaya, P. Kumari, B.Mishra” Smart Energy Efficient Home Automation System Using IoT”2019
- [2] ShubhangKhattar; Anisha Sac deva ; Rishi Kumar ; Richa Gupta “Smart Home With Virtual Assistant Using Raspberry Pi”- 2019
- [3] Hameem Shanavas Parthasarathy B Reddy, Manoj C Doddegowda “A Personal Assistant Robot Using Raspberry Pi”-2018
- [4] VetonK`epuska, Gamal Bohouta “Next-Generation of Virtual Personal Assistants (Microsoft Cortana, Apple Siri, Amazon Alexa and Google Home) “-2018
- [5] Septimiu Mischie, Liliana M`aiu-Iovan, Gabriel Gaspresc “Implementation of Google Assistant on Raspberry Pi Author” -2018
- [6] Jose A. Solorio, Jose M. Garcia-Bravo, and Brittany A. Newell “Voice Activated Semi-Autonomous Vehicle Using Off the Shelf Home Automation Hardware” – 2018
- [7] Chan Zhen Yue, Shum Ping “Voice Activated Smart Home Design and Implementation” 201