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Abstract

In today's age modern gadgets & technology, visually impaired persons or physically handicapped person face the problem in their day to day life regarding accessing information, entertainment and what not even when they are at their home. For doing these things the help of a person will be the best option but that is not possible every time. The work aims at the event of a personal assistant that helps users interact with home appliances with the help of speech and gesture commands to produce a more interactive and user friendly living experience and integration of assorted tools and elements developed throughout the execution of the project. In this paper development of "IoT – Personal Assistant using Raspberry Pi" on Python Platform is discussed.

Keywords: *Technology ,IoT , automation, personal assistant, python.*

1. INTRODUCTION

IoT is the combination of two words: the internet and things. the internet suggests that connectivity, a factor cover not solely electronic devices however additionally includes living things and non-living things and therefore the word “of” connect these two words to make an IoT. Additional IoT provides the idea of ubiquitousness.[1] Due to its diversification, it's necessary to grasp what IoT is, defines IoT as “An open and comprehensive network of intelligent objects that have the capability to auto-organize, share info, data, and resources, reacting and acting in face of things and changes within the environment”. [2]

IoT is a association of objects that behave showing intelligence with the case. Simple objects can become sensible in IoT. To fulfill this dream there are some needs of IoT that are: Dynamic Resource Demand, Real Time desires, Exponential Growth of Demands, Convenience of Application, Information Protection, and Users Privacy, Economical Power Management, Access to an Open and inter Operable System and execution of Application close to user. These necessities are managed by the corporation of various technologies like: radio frequency Identification (RFID), Internet Protocol , Bar code, WiFi,NFC, Wireless detector network and AI. [6]



Fig 1: Application of Iot.

The major part of automation which supports to IoT is that the Raspberry Pi. The Raspberry Pi collects information from sensors or takes in speech or gesture commands and interprets them to manage household devices like fan, light, heater, door, and opening and shutting of curtains. For example, if there's no presence of a automatically turned off for that specific room.

Artificial intelligence is often described as a machine analyzing its surroundings and having the flexibility to spot a best case-plan to attain a desired goal. With the introduction of sensible devices (i.e. smart phones, etc.), a new kind of

interaction has shaped. Now, there's a deeper interaction between humans and machines apart from simply flipping a switch, a behavioral component to be understood and developed. smart devices create this otherwise monumental breakthrough, appear ordinary. The reason on the behind is these devices are such a very important part of our lives these days in the form of smart phones and smart assistance; thus, the interaction with AI feels additional natural in routine.[9]

2. LITERATURE SURVEY

When home automation was initially introduced within the 1970s, it had failed to improve the life-style of its users because of many reasons. Firstly, it had been challenging to work out the economic advantages of home automation technologies. Secondly, the consequences of putting in smart home technology must justify their prices. Home automation technologies are needed to be price effective, user friendly, simple to use and versatile with numerous network infrastructure and appliances. An intelligent personal assistant is capable of organizing and maintaining data and additionally managing emails, files and calendar events. Some personal assistants have the power to supply data based on voice inputs or commands.[4]

Amazon Echo that was introduced in 2015 is a hands-free speaker to manage with voice commands. The Echo connects to the Alexa Voice Service to perform numerous tasks like play music and instantly offer information like news, weather and sports scores. It had been determined that personal assistants like Amazon Echo didn't give the user with a sense of control because it typically remained unresponsive once given voice commands that aren't valid and these personal assistant devices are costly.[5]

3. WORK ANALYSIS

3.1 Problem Definition:-

The aim of this work is to assist users to operate home appliances with speech or gesture commands that offer the visually impaired persons a better sense of management. The work conjointly aims at building an inexpensive personal assistant that is achieved with the help of Raspberry Pi that used Google's Speech Recognition application interface(API) to convert spoken text, picked up using a mike to transcription .The work helps in consumers' access to a hands-free personal assistant that uses speech or gesture commands to act with appliances within house at 1/3rd the price of devices just like the Amazon Echo.

3.2 Objective:-

- Understanding the dynamics of each part of the system
- Determination of required project hardware components
- Implement smart control of residential lighting
- A smart alarm system synced to email

Internet of things (IoT) is a idea and a prime example that takes under consideration the prevalent presence of variety of objects which can interact with one another with unique addressing schemes and thru wired and wireless connections to achieve a common goal. The analysis and development to form a smart world are enormous wherever

the convergence of the digital, real and therefore the virtual concepts to implement smart environments that make transport, cities, homes and energy areas more intelligent.[7].

The Raspberry Pi is a series of little single-board computers developed in the united kingdom by the Raspberry Pi Foundation to push the teaching of basic computer science in colleges and in developing countries. The initial model became much more famous than anticipated, selling outside of its target market for uses like artificial intelligence. Peripherals (including keyboards, mice and cases) are not enclosed with the Raspberry Pi. Some accessories however are enclosed in several official and unofficial bundles.[3]



Fig 2: Speech To Text Process

The Raspberry Pi personal assistant will have scope for more improvement. Some areas of improvement for the Raspberry Pi(RasPi) Personal Assistant are: rising the quality of voice recognition .The Echo employs a special setup for Far-field Voice Recognition that allows the user to talk from any direction likewise as from large distances from the Echo. The RasPi personal assistant employs an easy webcam for speech recording. because of architecture limitations, the distance and direction of users' speech is limited.[8]

4. CONCLUSION

Internet of things improves the human life by incorporating the internet and things along. The automated systems for physically imparted people will help to make their life comfortable & reduce challenges they face daily. Use of Raspberry-Pi can help to develop such systems in efficient manner with less cost. During this review paper, we've mentioned totally different applications associated with IoT domain: however these applications contribute to society This paper also will facilitate the analysers and practitioners to grasp potential research challenges of IoT which will become research trends for future.

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