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IMPLEMENTATION OF INTERACTIVE MIRROR FOR AWARE HOME USING RASPBERRY PI-3

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ABSTRACT*-Smart mirrors are the mirrors of the future. A part of the connected world where be able to see headline news, temperature, weather and more just while looking and grooming in front of mirrors. The system allows building such mirrors that allow for mirrors to receive headline news online and display on the mirror screen along with details including current temperature of the room for a futuristic and modern lifestyle. The system uses a raspberry pi based processor board along with display and IOT based circuitry and temperature sensor interfaced together. To use a precisely modelled panel to construct the outer frame. Then to use specialized glass with a back frame to encase the system. The frame cavity is now fitted with positioned mounts for the display housing to be fitted in the mirror. This is necessary to achieve the desired effect. Now we use raspberry pi to connect with internet using IOT circuit through the use of a Wi-Fi module. This allows to receive data through the IOT platform. We use IOTGecko in order to connect our system to the internet and get news feeds. The temperature interfaced on circuit is used to display temperature and display the mirror fitted display. Thus we demonstrate an IOT smart mirror with news and temperature display.*

Key Terms: - Smart mirror, Raspberry pi, IOT, IOT Gecko, Wi-Fi module)

I. INTRODUCTION

The smart mirror must offer benefits of using modern lifestyle while integrating seamlessly into the standard routines of most people. The smart mirror must be as intuitive as possible. The smart mirror would be used to merge technology and need for information into daily schedule. With the mirror in place, the user could interact and obtain the information they want during their normal morning and night routines. This smart mirror aims to reduce and possibly eliminate the need for the user to make time in their daily morning or night routine to check their PC and temperature monitor, tablet or Smartphone the information they need. The mirror will provide the information with little to no effort from the user with the goal of not being a burden that he or she must maintain for mirror. The mirror will do the thinking and interactive for the user. First, it will turn on by users command with a phrase like "hello mirror" or any other phrase which user wants to add in display. Then, it will search info for the user with the help of internet by browsing data like weather informs, hotness etc. The material would be given to the users in form of talking. No keyboards to try to keep dry and clean with for mirror. The mirror provides common information most people check their smart phones or tablets for, such as weather, headline news, Twitter and schedules. This allows for users to read, think, and plan their day while getting ready in the morning or night. The mirror has to be fun as well. It will provide music playback that can be controlled with by their voice so there is no need for a mouse or keyboard. It can be used in automobile industries and for health services to remind the preparations of the patients and also much more tenders can be deployed using this smart mirror.

II. PROBLEM STATEMENT

The major problem is with existing mirror is it shows only any object in front of that or face of human. People wastes their lot of time standing in front of time then after of they read headline news so all this is time consuming. So we are developing a project which overcomes to the time wastage.

III OBJECTIVE

A part of the connected world where we would be able to see headline news, temperature, weather and more just while looking and grooming in front of mirrors. Proposed system allows to build with such a magic mirrors that allow for mirrors to receive news online and display it on the mirror screen along with other details including current temperature of the room, date, time for a futuristic and modern lifestyle. The system uses a

raspberry pi based processor board along with display with mirror and IOT based circuitry and temperature sensor interfaced together. We use a precisely modelled panel to construct the outer frame. Then we use specialized glass with a back frame to encase the system.

IV. EXISTING SYSTEM

It uses a TV with magic mirror finish and uses a Microsoft Kinect to track movement and take in voice recognition. Also, it integrated with RFID reader to identify certain living room products. The fact it can keep track of prescriptions and use the Kinect to "virtually" put clothes on the user are very inspiring features that given more time we made love to integrate into the smart mirror. The magic mirror it also allows the ability to check email, calendars, and social media, which confirms that our smart mirror will offer features that users are expecting. The smart mirror is definitely not a true consumer product for mirror yet. There are very few truly manufactured and ready for sale smart mirrors on the market. Those that are there are very different in terms of functionality, development, design and price. It is certainly going to take a large smart home company to get behind this product and make it mainstream to the consumer. Each product did have a common feature, which was a health management such as weight. This is something we smart mirror doesn't have a direct focus on and maybe would be something to change in the design if our project were to go public.

V. PROPOSED SYSTEM

A part of the connected world where we would be able to see headline news, temperature, weather and more just while looking and grooming in front of mirrors. It allows to build such a magic mirrors that allow for mirrors to receive news online and display it on the mirror screen along with other details including current temperature of the room, date, time for a futuristic and modern lifestyle. The system uses a raspberry pi based processor board along with display our mirror and IOT based circuitry and temperature sensor interfaced together. We use a precisely modelled panel to construct the outer frame with mirror. Then we use particular glass with a back frame to encase the system.

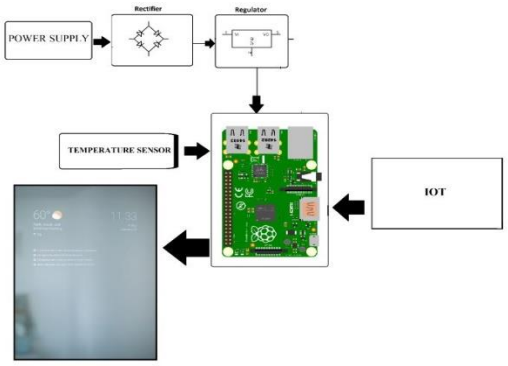

Fig 1 system architected

The frame cavity is now fitted with precisely positioned mounts for the display current temperature housing to be fitted in the mirror for interact. This is necessary to achieve the desired effect. Now we use raspberry pi to connect to internet using IOT circuit through the use of a Wi-Fi module. This allows us to receive data through the IOT platform using raspberry pi. We use IOTGecko in order to connect our system to the internet and get news feeds. The temperature interfaced on the circuit is used to display the temperature and display it on the mirror fitted display. Thus we demonstrate a futuristic IOT smart mirror with headline news and temperature display.

VI. REQUIREMENTS

• Acrylic Mirror:

A special magic mirror known as a two way mirror or observation mirror is used in this project. A two mirror is special as compared to an ordinary household mirror for interact. Unlike a household magic mirror, the two way mirror is not painted with an opaque color on the back, instead it's left untouched. This gives the property of the mirror being reflective one side and transparent/translucent from the other side. Hence the two way mirror acts as a magic mirror as long as there is no light send from the back of the mirror.

• Raspberry Pi-3:

Raspberry Pi-3is a credit-card sized computer by the Raspberry Pi foundation .The Raspberry Pi has a Broadcom BCM2837 system on a chip (SoC), which includes 4 ARM Cortex-A53 1.2 GHz cores as the processor, Video Core IV GPU and with 1 gigabyte of RAM. It does not include a built-in floppy or solid-state drive, but it uses a micro SD card for booting and persistent storage. It also includes Bluetooth 4.1 Low energy and a 2.4 Ghz 802.11n Wi-Fi .The Raspberry Pi-3 is the back bone of this project

and is used to achieve all computational necessities. The Raspberry Pi-3 computer has come out with various varieties over the years. Our project employs the use of Raspberry Pi 3 Model B. A micro SD card is used to store the operating system and all the software related code for the project.

• LED Monitor:

It's a smooth panel display, which use a array of light-emitting diodes as pixels for a video display. Their brightness allows them to be used outside where they are observable in the sun store signs and posters, and in recent years they have also become normally used in endpoint signs on public transference vehicles, as well as variable-message signs on Highways.

• Microphone

• Sensors.

• Wooden Frame.

VII.MODULE DESCRIPTION

A methodology in this context refers to the splitting of development work to distinct phases containing activities with the goal of a better planning and management. The Methodology approach used in this project is called The Evolutionary Prototyping. Prototype model is a life-cycle model that allows applications to be developed in stages so that it can be modified easily according to feedback from users. Evolutionary prototyping for focusing on gathering a correct and consistent set of requirements.The process lends particular strength, to building quality software by means of the ongoing explanation of existing the requirements and the discovery of previously missing or unknown requirements.Traditionally, iterative for re-examination of a system's requirements has not been the panacea that a practitioner sought, due to the predisposition for requirements to creep over and the difficulty in managing such requirements. **Figure 1** shows a flow chart of the system implementation in Smart Mirror. Users can give instructions to the system to view a list of commands that are available. Then, they can give commands via voice instructions provided.

VIII. SYSTEM IMPLEMENTATION

The methodology selected in completing this project. A methodology in this context refers to the splitting of development work to distinct phases containing activities with the goal of a better planning and management. The Methodology approach used in this project is called The Evolutionary Prototyping. Prototype model is a life-cycle model that allows applications to be developed in stages so that it can be modified easily according to feedback from users. Evolutionary prototyping efforts on meeting a accurate and reliable set of requirements. The process advances particular asset to construction a worth software by means of the ongoing clarification of existing requirements and the discovery of previously missing or unknown requirements. Traditionally, the iterative re-examination of a system's requirements has not beeS n the panacea that practitioners sought, due to the predisposition for requirements to creep over and the difficulty in managing such requirements. Flow chart of the system implementation in Smart Mirror. Users can give instructions to the system to view a list of commands that are available. Then, they can give commands via voice instructions provided

XI. METHODOLOGIES

The prototype we built mainly focus on natural language understanding so that the user do not need to remember any of the commands to use the mirror. The voice and speech recognition system helps us to achieve the goal of our project. Second thing we need to focus in our project is our GUI as it may be similar to many of the diy projects in the internet, we took only few icons like weather, holidays, date, time, news, compliments on the screen for now. The basic process of our prototype can be seen in the block diagram the main precaution we need to take is to check that internet connection is good because the data the user ask should be retrieved from the internet and should process the information and give it to the user. Since we are using a raspberry pi 3 it may be slow sometimes to give the information because of bad internet connection. Main advantage of this is we can built a smart mirror with our MAC or any other PC supporting Linux environment

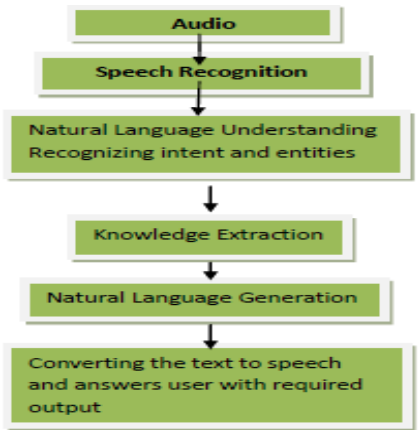

Fig-2: Block diagram of proposed algorithm

X. PERFORMING THE REQUIRED STEPS

• The occupied is based on raspberry-pi-3.

• That monitor can be an Automaton tablet or a computer screen.

• The project which collect actual world contraption data.

• Use of speech processing procedures and dialog acknowledgment.

Working

• Making the monitor: The monitor is countless and the essential recording is done.

• Making the Cabinet: The timber cabinet is organized which holds the complete mechanism inside it.

• Mounting: The mirror and the monitor are then mounted on this wooden cabinet.

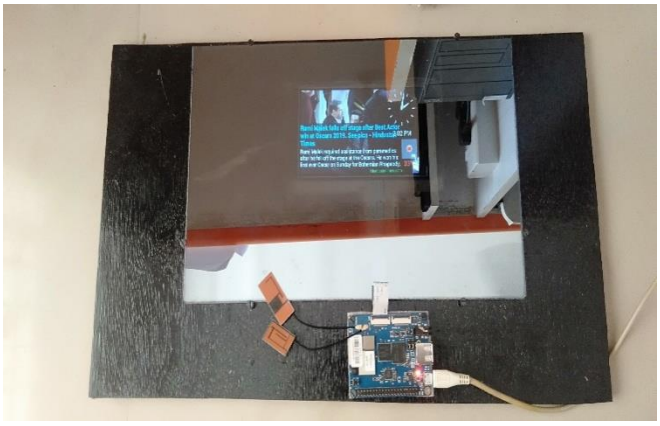

Fig3: SYSTEM OUTPUT

• Organize the Pi-3: The raspberry pi 3 is configured

• Constructing Sound

• Constructing Voice

• Constitute the smart-mirror

• Set up Smart-Mirror to Run on Boot.

• Guidelines Used to Run Smart Mirror.

XI. ALGORITHM FOR PROCESS

STEP 1: Turn on the supply of both raspberry Pi-3 and LED Screen

STEP.2 Turn any Hotspot and link it with raspberry Pi-3

STEP.3 Now to Screen the raspberry pi-3 link your device to raspberry through VNC Viewer it requires an IP address so we have to enter the correct IP address of raspberry pi-3so it will be get connected

STEP.4 Now we collect the information.

STEP. Show the details.

ADVANTAGES

Shows all the essential information which is useful for the user.

• Smooth screen is used for display.

• Two way glass is used

•The mirror is ultimately a technically augmented interaction device.

• Provide a natural interface Location based weather, time; calendar etc. can be accessed with ease.

XII. CONCLUSION

The Collaborative smart mirror is the new development in IoT .To make efforts to design an efficient system which is used for effective time management and productivity for the user. This system fundamentally works on voice commands which can help the users interact with the system easily without retention commands because it accepts the natural language used by the user. Through this the user can easily communicate with the breathing room environment around him which is the major concept of IoT. So the user don't have to check his mobile phones every time he/she need any information, he/she can just ask the system about the data needed and there to go the user will have the answer inside few min with less effort and more comfort. In future there may be much more advancement in this idea and we can see it in our smart home.

XIII. FUTURE WORK

The designed futuristic smart mirror that provides natural interaction between users and the ambient home services. The mirror display is provided by a flat led display monitor which display all the necessary information which are useful for the user. The mirror also provides a picture-in-picture sub-display to facilitate the display of services such as maps, videos via YouTube. In our upcoming work we will examine how the surrounding context of the user and the environment can be utilized in order to provide optimal service experiences in the home environment. The system can be made much more useful

to the users by adding more functionality like integrating light settings, speech processing, etc.

XIV. REFERENCES

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