

Interactive Mirror with Voice Assistant

Shlok Amana¹, Pushkar Awate², Nikita Wanare³, Ketan Chaware⁴

^{1,2,3,4}UG Student, Dept. of IT Engineering, Zeal College of Engineering and Research, Pune, India.

Abstract - The term Internet of Things (IoT) is related with the connection of physical devices through Internet. The 'thing' in IoT could be whatever can gather and move the information over an organization with no human's help. The gadgets are implanted with innovation so they can be controlled and checked distantly. IoT fundamentally seemed to ease human exertion and make the gadget to play out the undertaking by gathering data from general climate. Smart mirror is also developed to reduce human effort. Mirror is something fundamental that is accessible at everybody's home, exploiting the innovation we inserted in it to make it shrewd and of more use. Now-a-days we get all the updates of our smart phone which we go through timely, but during morning rush hours it becomes a great haste to complete all morning routines. Smart mirror reduces this hurry by providing you with the basic information you need to check in the morning such today's date, time according to your location, weather updates, news feed and today's schedule by your own voice.

Key Words: Interactive mirror, Raspberry pi, Voice Alexa Voice Service, Internet of Things, Motion Sensor, LCD Display Temperature Sensor.

1. INTRODUCTION

INTERNET OF THINGS or known as IOT is an ecosystem that connects various physical components together that are accessible through the internet. The 'thing' in IoT could be in reference to the automobiles with their built in sensors or the ultimate challenge the Humans with a monitor. A single line explanation would be any object that has been specified an IP address which has the ability to collect and transfer data across any or specified network without human intervention. The ability of the system to interact with the external environment or the internal states is due to its embedded technology that also plays a key role in decision making. The combination of IoT and Android is employed in this system. It is followed with architecture of the proposed mirror. Conclusion and future scope of the mirror are also discussed in the paper.

2. OBJECTIVE

The goal wherein is to build up a mirror that hurts exercises like showing climate, time, date and news and so forth accordingly getting the client far from tedious exercises. All of the above-mentioned tasks are to be performed with the help of the Raspberry pi 3b.

3. PROBLEM STATEMENT

The objective of the smart mirror is to give a passageway to an individual to get all the data that could impact how they plan the day. For getting news updates and weather updates, a person will always have to switch on the television which is time consuming. To get rid of these problems, the concept of smart mirror is introduced. All the necessary information like weather and news can be accessed from one location. The problem of a secured user authentication technique can also be corrected by this system. Through the use of LCD displays and a one way mirror, weather, time and date, news, and other useful information programmable would be available at a glance.

4. BRIEF DESCRIPTION

The entire system can be precisely divided into five major sections being:

The Raspberry-pi,
The LED monitor,
Mirror,
Alexa,
And Ethernet Cable

Brief description of this components is given below:

4.1 RASPBERRY PI 3B

Quad Core 1.2GHz Broadcom BCM2837 64bit CPU 1GB RAM BCM43438 wireless LAN and Bluetooth Low Energy (BLE) on board 40-pin extended GPIO (General purpose I/O), 4 USB, 2 ports 4 Pole stereo output and composite video port (analog video transmission) Full size HDMI (High Definition Multimedia Interface) CSI (camera serial interface) camera serial interface) display port for connecting a Raspberry Pi 3B Micro SD

port for loading your operating system and storing data Upgraded switched Micro USB power source up to 2.5A.



Fig 1: Raspberry pi 3b

This credit card sized Raspberry Pi 3b is capable of doing a lot of things and anything when compared with desktop PC.

4.2 MIRROR

A special 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. Unlike a household mirror, the two way mirror is not painted with an opaque color on the back, instead its left untouched. This gives the property of the mirror being reflective one side and transparent/translucent from the other. Hence the two way mirror acts as mirror as long as there is no light send from the back of mirror.

4.3. LED SCREEN

LED (Ligh Emitting Diode) monitors are flat panel display which uses array of light emitting diodes in the form of pixels for video display. There allowed to be used in the outsource because of the brightness where the can be visible to the sun store signs and billboards.

4.4 ALEXA

Alexa is a virtual digital assistant developed by Amazon for its Amazon Echo and Echo Dot line of computing devices. Alexa’s capabilities mimic those of other intelligent assistants such as Apple Siri, Microsoft Cortona, Google Assistant and Samsung Bixby. Alexa responds to voice control by returning information on products music, news, weather, sports and more. The backend engine for Amazon’s Alexa running on Amazon Web Services in the cloud, enabling Alexa to learn an individual or family’s preferences and expand its

functionality over time. Alexa is only designed to send short query and request information following being triggered, but it always listening in the background for its trigger word.

4.5 ETHERNET LAN CABLE

The ethernet port comes with 300 Mbit/s which is much faster than earlier version with 100 Mbit/s speed. It isknow as gigabit ethernet based on USB 2.0 interface.



Fig 2: Ethernet Cable

5. BLOCK DIAGRAM

The proposed system is to design an interactive futuristic smart mirror with artificial intelligence using Raspberry Pi. In the proposed system, the ability of the system to provide details of the same, incorporates the theory of artificial intelligence. Interactive computing, with wirelessly connected embedded devices that are being used in various day- to-day activities. Based on this technology, many devices/products are now emerging and with this intelligence it is providing comfortable, secure and convenient personal services everywhere.

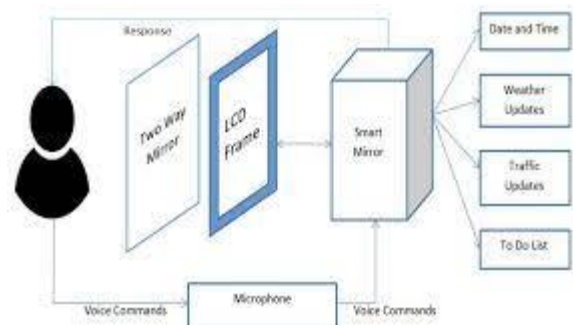


Fig 3: Block Diagram

6. STAND-BY MODE

Using PIR sensor we can configure and detect the nearby motion according to which the mirror would automatically get turned on or off. By this way, we can save electricity or reduce the power consumption.

7. METHODOLOGY

The Smart mirror system mainly consist of three parts a two-way mirror, LCD monitor and Raspberry pi. The two-way mirror is the mirror which is reflective on one side and transparent on the other side. There will be a motion sensor to detect the motion any sort of motion that will automatically switch on the system. The LCD monitor is used for displaying different widgets on the mirror. The LCD monitor will be connected to the Raspberry pi. The raspberry pi will be used for programming of different widgets. The Smart mirror will be switched on using a voice command such as "Hello Mirror!" or any other keyword. The Smart mirror will also give voice as well as text response like greeting the user or give some compliment as response, for which the system will use system compatible microphone and speaker. The process will be firstly programming will be done for displaying images which will be displayed on LCD monitor and user will be able to see those widgets on the mirror when the Smart mirror is switched on using the keyword. The Smart mirror will also display some personal basic information only by recognizing the user's voice.

7.1 IMPLEMENTATION:

STEP 1: Turn on the supply of both raspberry and LED Monitor.

STEP 2: Turn any Hotspot and connect it with raspberry Pi

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

STEP 4: After the proper connection, open terminal and type
-nps start.

STEP 5: The smart mirror is displayed on the mirror through the LED Monitor.

It displays the Date, news, Weather, Schedules in your calendar.

Through Alexa we can even open browser and play all the videos and songs and read the document.

The scrolling down or up of the browser page can also be done by using certain commands to our Alexa.

7.2 RESULT:



8. CONCLUSION AND FUTURE WORK

With the help of this literature survey we aim at designing a smart mirror that provides an ambient environment between Users and the internet. It will help the users in their daily activities. The smart mirror can also be implemented in various industrial and home applications. Consequently IoT demonstrates out to be a significant innovation for making home devices smart. The facial recognition technology used in the smart mirror proves out to be an important means of security. Smart mirrors can be connected to home appliances and smart Phones. The mirrors can detect face and provide access to personalized services. The mirror can also be implemented to recognize emotions. With the help of emerging technologies, smart mirrors can be advanced to touch screen modes. The mirrors can be better enhanced to be deployed in beauty parlors, cloth shops, hotels, etc. With better advancements in technology, mirrors can be used in many other fields.

REFERENCES

- [1] Mohammed Ghazal, Tara al Hadithy, Yyasmina al Khalil, Muhammad Akmal and Hassan Hajjdiab, "a Mobile-programmable smart mirror for ambient IoT environments", in 5th international conference on future internet of things and cloud workshops, 2017.
- [2] Muhammed Mu'izzudeen, Yusri Shahreen Kasim, Rohayanti Hassan, Zubaile Abdullah Husni Ruslai,

Kamaruzzaman Jahidin, Mohammad Syafwan Arshad, "Smart Mirror for Smart Life", in IEEE Conference publication, 2017.

[3] Ivette Cristina Araujo Garcia, Eduardo Rodrigo Linares Salmon, Rosario Villalta Riega, Alfredo Barrientos Padilla, "Implementation and Customization of a Smart Mirror through a Facial Recognition Authentication and a

Personalized News Recommendation Algorithm", in 13th International Conference on Signal-Image Technology & Internet-Based Systems (SITIS), 2017.

[4] Oihane Gomez-Carmona, Diego Casado-Mansilla, "SmiWork: An Interactive Smart Mirror Platform or Workplace Health Promotion", 2017.

[5] Ramya .S , Saranya. S , Yuvamalini. M, "The Smart Mirror", in International Journal of Advanced Research, Ideas and Innovations in Technology, 2018.