



IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 4, April 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.488

 9940 572 462

 6381 907 438

 ijircce@gmail.com

 www.ijircce.com



Smart Mirror – Innovation for smart life

Harshit Sanjay Parkar, Mahesh Suresh Katkar, Harish Motekar

Student, Dept. of I.T., Shah & Anchor Kutchhi Engineering College, Mumbai, Maharashtra, India

Assistant Professor, Dept. of I.T., Shah & Anchor Kutchhi Engineering College, Mumbai, Maharashtra, India

ABSTRACT: This paper describe the implementation, construction, working of Smart Mirror using Raspberry Pi. A smart mirror is a system that functions as mirror with additionally capability of displaying Weather details, News, Date & Time, and Calendar. The Smart mirror implemented as a personalized device with peripheral such as Raspberry Pi, LCD monitor, and PIR sensor. This kind of mirror can programmed to work as AI and control home appliances with the voice input or touch screen.

KEYWORDS: Smart Mirror, Raspberry PI, Artificial Intelligence, Weather, Time, News, Calendar.

I. INTRODUCTION

In this world full of technology time management is has been effective. Multitasking along with technology helps us to maintain efficient scheduled. Recent technology is making progress and development to automate things around us. Internet of Things (IoT) does this for us. It's an ecosystem of connected physical objects that are accessible through the internet. The 'thing' in IoT could be a person with a heart monitor or an automobile with built-in-sensors, i.e. objects that have been assigned an IP address and have the ability to collect and transfer data over a network without manual assistance or intervention. The embedded technology in the objects helps them to interact with internal states or the external environment, which in turn affects the decisions taken. This concept of IoT has been used here along with two different things i.e. Raspberry Pi and Arduino. Ultimately a smart mirror is to be developed with the help of these.

II. RELATED WORK

In [1] authors explainsthe term Internet of Things(IoT) is related with the connection of physical devices through Internet. The 'thing' in IoT could beanything that has the ability to collect and transfer the data over a network without any human's assistance. The devices areembedded with technology so that they can be controlled and monitored remotely. IoT is a larger part of home automation whichcontrols almost all the devices used for domestic purpose remotely through internet.IoT basically emerged to ease human effort and make the device to perform the task by collecting information from surroundingenvironment. An example of IoT would be an alarm clock which wakes you 15 minutes late than the prior set time because itmapped the arrival time of train which would be delayed by 15 minutes. Another example of an IoT based home automation couldbe house walls that change its color according to a person's mood. Smart mirror is also developed to reduce human effort. Mirror is abasic thing that is available at everyone's home, taking advantage of this technology is embedded in it to make it smart and of moreuse. Now-a-days we get all the updates on our smart phone which we go through timely, but during morning rush hours it becomes agreat haste to complete all morning routines. Smart mirror reduces this haste by providing you with the basic information you needto check in the morning such today's date, time according to your location, weather updates, news feed and today's schedule only byface recognition. In [2] author explains that the world around us is constantly changing. With theadvancement of science and technology, we are movingtowards a more automated way of life. We have smartcities, smartphones, smart cars, and more. This fast way oflife requires the development of Home Automationprojects. Home Automation systems are mainly createdusing intelligent IoT devices. IoT is an integrated systemof communicating devices in which each device is capableof carrying out tasks by themselves. IoT is aninterconnection of Wireless Sensor Network (WSN)devices which includes embedded devices with wirelesssensors.Using IoT for home automation has many real-worldapplications, for example, we can build a smart homewhich will automatically close or open the windows basedon the weather conditions outside. This paper presents theimplementation of a smart mirror using IoT. A smartmirror is one that is capable of displaying the date, time,weather and traffic conditions on it reflecting surface.These features will be scraped from the Internet andimplemented using the raspberry pi board. The Pi board isprogrammed using Linux OS. We use the mean stackmethod to create the display page and JavaScript is usedboth at the client and server side.After time δt it calls the optimization function to select the path and send RREP. Optimization

function uses the individual node's battery energy; if node is having low energy level then optimization function will not use that node.

III. PROPOSED SYSTEM

Proposed system and block diagram for the smart mirror is shown in figure 1. The aim of designing this model is to create interactive interface which can be used in home environment and commercial space. The Raspberry Pi 3 b+ is connected to monitor via HDMI cable and is powered up with 5V/2A DC supply.

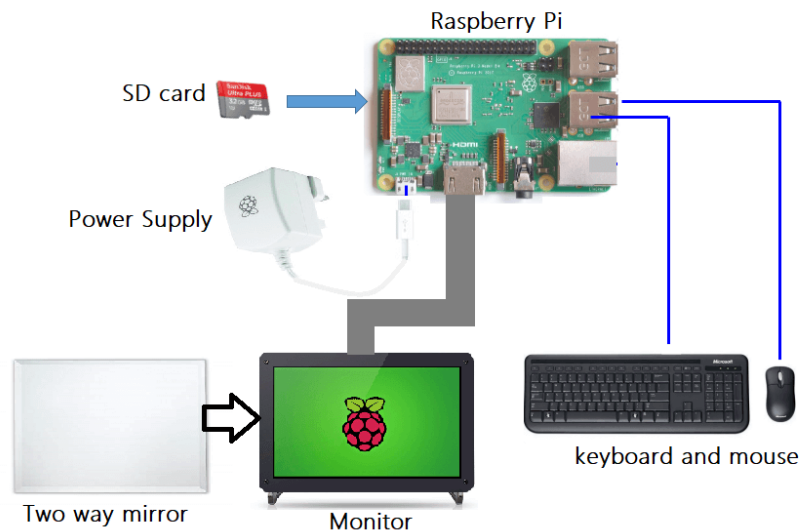


Fig.1.Smart Mirror circuit diagram

Our system is broadly classified into 3 categories according to the scope involved in it: Design, Programming, and Fabrication.

A. Design Considerations:

- The 1st and time most important aspect was to decide the dimension of the mirror. So the 17" Samsung monitor is used to display the GUI of the mirror.
- Microcontroller Type:- Raspberry Pi 3 B+ model is used which has the following feature Quad core 64- bit processor clocked at 1.4GHz, 1GB LPDDR2 SRAM, Dual-band 2.4GHz and 5GHz wireless LAN, Bluetooth 4.2 / BLE, Higher speed Ethernet up to 300Mbps, Power-over-Ethernet capability (via a separate PoE HAT).
- Display Element: - These consist of the visual application that is used for display. The element displayed are Date & Time, Weather, Calendar, and News.

B. Programming:

- Python language is used to fetch the data and display the updated news and weather.

C. Fabrication:

- The final step was the fabrication phase was to install the suite of electronics that power the mirror. Then monitor is mounted by laying it against the glass.
- Two-way Glass is needed to be install in front of smart mirror.

IV. COMPONENT

1. LCD Monitor: - A 17 inch Samsung Monitor in fig 2



Fig.2.LCD monitor used in project.

2. Two-way mirror: - A two way mirror, additionally known as a one way mirror, is reflective from one aspect and obvious from the other. Two way mirrors are best for observation, privacy, infinity mirrors, and optical illusions. It is manufactured by baking the mirror coating on grey tinted glass. This consequences in a notably durable, waterproof coating that's effortlessly cleaned and can withstand scratches.
3. Alexa: - Alexa is a virtual digital assistant developed through Amazon for its Amazon Echo and Echo Dot line of computing devices. Alexa's abilities mimic these of otherwise assistants such as Apple Siri, Microsoft Cortana, Google Assistant and Samsung Bixby. Alexa responds to voice manage by way of returning statistics on merchandise (on Amazon of course), music, news, weather, sports activities and more. The back-end engine for Amazon's Alexa runs on Amazon Web Services in the cloud, enabling Alexa to learn an individual or family's preferences and increase its performance over time. In addition to the Echo products, Alexa is additionally supported with the aid of Amazon's Fire HD tablet and Fire TV set-top field products. A few choose third-party merchandise have commenced to support Alexa as well, consisting of the Nucleus Intercom, Ford SYNC automobile infotainment systems and Invoxia's Triby speaker and message gadget.



Fig.3.ALEXA API used in project.

4. PIR Sensor: - The term PIR is the quick structure of the Passive Infra-Red. The term "passive" indicates that the sensor does no longer actively take section in the process, which means, it does not emit the referred IR indicators itself, instead passively detects the infrared radiations coming from the human physique in the surrounding area. The detected radiations are transformed into an electrical charge, which is proportional to the detected degree of the radiation. Then this cost is in addition extended by a built in FET and fed to the output pin of the system which becomes applicable to an external circuit for similarly triggering and amplification of the alarm stages. The PIR sensor vary is up to 10 meters at an angle of +15o or -15o.



Fig.4. PIR Sensor.

5. USB Microphone: - USB Microphones are transportable and pass platform so if you buy one you be capable to use it on your PC, Mac, iPad, and laptop with minimum fuss. What is a USB microphone? It is the most fee high quality option for getting a first rate recording onto your computer, tablet or smartphone. It is actually a microphone which contains all the wiring crucial to sincerely join to a USB port and start recording. And often a USB mic will additionally have a headphone out, so as well as recording, you can hear immediately to the sound through headphones.



Fig.5. USB Microphone for commanding Alexa.

6. Raspberry pi 3 b+:- Raspberry Pi 3 acts as the main control center for this proposed model. The Raspberry Pi is equipped with a micro SD card which can be loaded with operating systems like Raspbian. After the OS is running the Magic Mirror code will can be implemented on it to run the application. The Monitor will be getting input from RPi using HDMI cable. It is running new version of magic mirror 2 and also is directly connected with the upcoming trend of amazon Alexa. We have connected Alexa for making magic mirror to do some extra interactive and also easy for implementing AI features in mirror which makes it extra special.

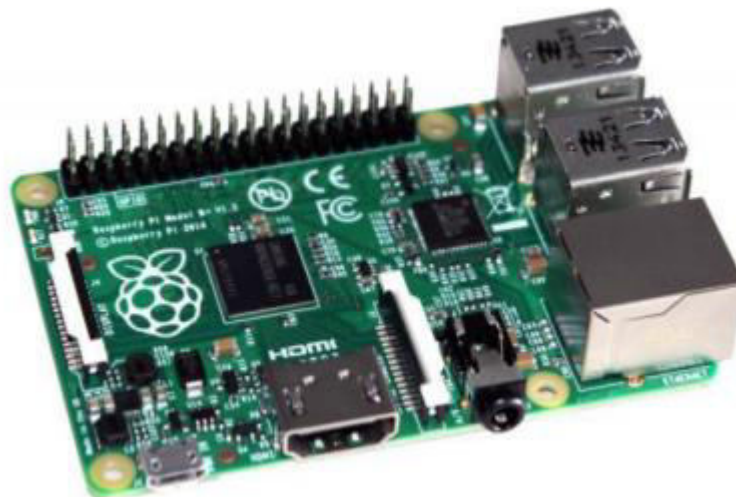


Fig.6. Raspberry pi 3 b+

V. SIMULATION RESULTS

The following figure show the output of that is displaying Time and Date, News, Weather, Status, Indian Upcoming Holidays. On start after giving power supply to mirror the raspberry Pi loads the OS and runs the UI of the mirror. It may take a while to load the UI of the weather and other internet based widgets to display the information completely depending upon the speed of internet. On fully loading the information required the mirror now shows the notification from different sites as per the user. The events are loaded from calendar according to the Indian upcoming holiday and

the latest news from the specified region. Alexa is added to give command to mirror through a USB Mic. PIR sensor is used to detect weather the user is there or not ,if the user is in front of mirror its will remain on after the user leave, the mirror will automatically turn off.



Fig.7. Output of the project

VI. DISCUSSION AND FUTURE WORK

The results and their discussion that the research team achieved from the research project. The important implications of the research findings, regardless of the statistical significance of this research are discussed below. Further, Identifying the defect and limitation of this project can be useful for future researchers in order to continue their research. The purpose of this project was to develop a Smart Mirror which is fully functional monitoring system. The main objective of the project was to build a smart mirror which displays all the required information so to save the time. The use of the mirror could happen in any geographical area and the system is user friendly. The future work on this project can be adding the widgets such as email, traffics updates and Social sites notification etc. for the security purpose the iris detection can be used along with the thumb scanner to access the personal and private data. AI can be used as an extra feature for recommending user the best path to reach the destination according to the traffic condition, or suggesting the clothes and accessories according to the weather condition.

VII. CONCLUSION AND FUTURE WORK

This paper proposes an interactive mirror that ease the user's task by displaying widgets such as date and time, weather updates,news feed and schedule according to the user.The proposed system is an interactive mirror that ease the user to be in touch with the news using voice command whichsaves the user time and energy.

REFERENCES

1. Smart MirrorKhurdAishwarya .S, Shweta .S. Kakade , Prof. R. M. Dalvi, 2UG Student, Department of Computer Engg, MMCOE, Karvenagar, Pune, India.Department of Computer Engg, Faculty of Technical education, MMCOE, Karvenagar, Pune, India.
2. Home Automated Smart Mirror as an Internet ofThings (IoT) Implementation - Survey PaperJane Jose¹, Raghav Chakravarthy², Jait Jacob³, Mir Masood Ali⁴, Sonia Maria D'souza⁵Student, Dept. of CSE, Cambridge Institute of Technology, Bangalore, India^{1, 2, 3, 4}Assistant Professor, Dept. of CSE, Cambridge Institute of Technology, Bangalore, India
3. Jinhong Yang, Hyojin Park, Yongrok Kim, Jun Kyun Choi, IoTGadget Control on Wireless AP at Home, The 11th Annual IEEEConsumer Communications and Networking Conference



4. Takeshi Yashiro, Shinsuke Kobayashi, Noboru Koshizuka, and KenSakamura, An Internet of Things (IoT) Architecture for EmbeddedAppliances, IEEE R10-HTC2013
5. Padmini Gaur, Mohit P. Tahiliani, Operating Systems for IoTDevices: A Critical Survey, 2015 IEEE Region 10 Symposium
6. John Greenough, THE US SMART HOME MARKET REPORT:Adoption forecasts, top products, and the cost and fragmentationproblems that could hinder growth, Business Insider, Sept. 24, 2015
7. Mohammed Ghazal, Tara al Hadithy,Yasmina 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.
8. Muhammed Mu'izzudeen, YusriShahreenKasim, Rohayanti Hassan, Zubaile Abdullah HusniRuslai, KamaruzzamanJahidin, Mohammad Syafwan Arshad," Smart Mirror for Smart Life", in IEEE Conference publication, 2017.



INNO  SPACE
SJIF Scientific Journal Impact Factor

Impact Factor:
7.488

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details