

# IMPLEMENTATION OF HOME AUTOMATION USING SMART MIRROR

Maheshwar Reddy A<sup>1</sup>, Ilyas Abdulahi Jimale<sup>2</sup>

<sup>1</sup>Student, Dept. of Electronics and Communication Engineering, Lovely Professional University, Phagwara

<sup>2</sup>Student, Dept. of Electronics and Communication Engineering, Lovely Professional University, Phagwara

\*\*\*

**Abstract** - Basically, by using the adequate technology smart devices plays very important role in present generation. Instead of this smart device, mirrors play very important role in the interactive environments. When mirrors display information then it is known as "Magic Mirrors". In this paper design and development of smart mirrors is implemented using raspberry pi. This smart mirror consists of additional features which improves the system performance. By using this system, we can control the fan and light operations. It will turn ON and OFF the fan and turns ON and OFF the light based on the given command it performs. From LCD display the contents are displayed which consists of sheet with a reflective mirror. The entire operation is controlled by the raspberry pi 3 module. Hence, from this it can observe that it gives effective results compared to others.

**Key Words:** Smart Mirror, Smart Devices, LCD (Liquid Crystal Display), Raspberry Pi 3 module.

## 1.INTRODUCTION

Step by step, the world is moving towards mechanization. We much of the time hear from development business visionaries, futurists and some news sources that computerization will incite an impressive future. All the while, there is a basic number of astute individuals, officials and essayists depicting Judgment day circumstances for our mechanized future. Various contraptions are being envisioned which uses blended media correspondence, AI and IOT.

Consistently we take a gander at the mirror to check how we are looking or how our clothing is while preparing. By this we are mentally associating with the mirror. In this way, the possibility of a mirror which can reacts to your orders can energize anybody. Our day-by-day schedule incorporates understanding paper, getting stock updates, climate refreshes, and so forth This mirror is one stage towards the improvement of savvy homes.

Smart mirrors are the reflections of things to come. It has gadgets for showing the current climate conditions, time, occasions, most recent news features. Essentially, the mirror seems as though a typical mirror yet when somebody remain before it turns into an inventive result of innovation. The Raspberry Pi is customized and associates with a screen with inbuilt speaker to give an onscreen interface and voice help too.

A typical methodology for building a Smart Mirror is to utilize an excellent one-way glass, a LCD screen, a casing to hold the glass and monitor [1]. Regardless of whether it is through the TV or web, individuals should be educated and in contact with the current issues occurring all throughout the planet. We take a gander at the mirror day by day and web with it mentally to discover what we look like and how our clothing is [2].

The intuitive Mirror is created from a mirror with legitimate installed insight for offering highlights like climate of city, most recent updates of information and features and neighborhood time relating to area. The numerous advantages of utilizing a keen mirror are that it makes life simpler as we need to see telephones each an ideal opportunity to check, time, climate, area and so on.

As we all know the internet has no limits. Smart mirror has never been given the importance; they are not considered as an alternative to an ordinary mirror. The main reason for this is the ease of use of a smart mirror. The mirror which we are developing solves all the complications of using a smart mirror [3]. The mirror will start by just switching on the switch and giving a wake-up command. The mirror will be capable of performing all the tasks which will make the mirror more efficient.

We are utilizing python programming at the back end as Raspberry pi works just on python. Python is a huge level, comprehensively valuable programming language. It was made by Guido van Rossum and first conveyed in 1991. Python has an arrangement hypothesis that underlines code importance, strikingly using tremendous whitespace. It gives constructs that engage clear programming on alternate points of view. For worker to gadget network, we are utilizing IOT stage. IOT offers some significant boundaries for correspondence to be set up between gadgets which are gadget vault [4], information ingestion, message directing, stockpiling and stream, examination. These boundaries give ease for business knowledge, order control, administrator and the executives and better client experience in everyday work [5].

In this world everybody needs an agreeable life. Present day man has imagined different extraordinary advances for his motivation. In this day and age, individuals need to remain associated and they are able to access the data without any problem.

Regardless of whether it is through TV or web, individuals should be educated what's more, stayed in contact with the current issues occurring all throughout the planet. The Internet of

The motivation behind reflect in our everyday lives is to notice and collaborate with ourselves. The keen reflect is an advancement exertion to expand the reflect with appropriate data for offering better highlights that give customized information like date, news, territorial time comparing to the area, furthermore, climate.

## 2. LITERATURE SURVEY

The proposed Smart Mirror represents a natural interface that provides a platform to access general information and real time data updates. This project is aimed at contributing to design and implementation of Smart Mirror like interface as well as home environment where user can interact with the mirror interface. Here are some research and projects about smart mirror discussed about their related work in similar direction.

The Magic Mirror will inspect the customer and it will recommend most sensible dress and other in the current style decisions in the initial segment of the day while getting ready.

Chidambaram Sethukkarasi et al. (2016) caused an information to mirror that recognizes customers subject to facial affirmation, see sentiments, records prosperity limits and moreover gives articles of clothing advice with proper tone. Their paper doesn't head all around on any of its subjects, yet rather endeavor to join the contemplations under the possibility of an understanding reflect.

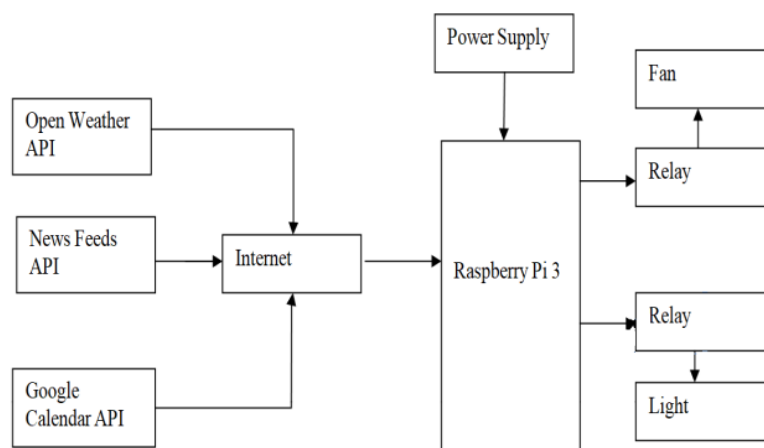
James Law Cyber surface (2011) built up a monetarily sold keen mirror. The thing contains a 32"LCD-show covered by two way reflect. The show can show environment figures, move web, TV and various contraptions. The Smart Mirror has a huge load of information techniques like distant controller, PDA application and on screen virtual reassure.

M. M. Yusri et al. made "Sharp Mirror structure" which licenses to the customers to get to data successfully like time, date, traffic, territory map and moreover control home machines. Sonus advancement is talk to message library that add quickly VUI (Voice User Interface) to some other hardware projects in like manner programming projects.

## 3. PROPOSED SYSTEM

The proposed framework is to plan an intuitive cutting edge smart mirror utilizing Raspberry Pi. In the proposed system, the limit of the structure to see and give nuances of the same, joins the speculation of man-made mental aptitude. Intelligent processing, with remotely associated inserted gadgets that are being utilized in different everyday exercises. In light of this innovation, numerous gadgets/items are currently arising and with this insight it is giving agreeable, secure and advantageous individual administrations all over.

The task targets making a keen framework for clients where it utilizes the Raspberry Pi like a cerebrum and show client's feeds and reassure. The Raspberry pi will be connected to the local WIFI and gets connected to the internet. Once the system gets connected to the internet the display turns into smart mirror mode and displays the calendar and time with the weather details of a particular location. The user can switch to other location to know about the weather details of that region. And also, this system has the device controlling application just by touching the screen.



**Fig 1-** Proposed System

The Smart Mirror utilizes equipment segments and programming applications to show data and control access:

### 3.1 RaspberryPi

The Raspberry Pi 3 Model B is the most dependable model of the third-age Raspberry Pi. It replaced the Raspberry Pi 2 Model B in February 2016. See similarly the Raspberry Pi 3 Model B+, the latest thing in the Raspberry Pi 3 domain. It is incorporated with a Quad Core 1.2GHz Broadcom BCM2837 64bit CPU, 1GB RAM, BCM43438 far off LAN and Bluetooth Low Energy (BLE) on board, 100 Base Ethernet, 40-pin widened GPIO, 4 USB 2 ports, 4 Pole sound framework yield and composite video port, Full size HDMI, CSI camera port for interfacing a Raspberry Pi camera, DSI show port for partner a Raspberry Pi contact screen show, Micro SD port for stacking your functioning system and taking care of data, Upgraded traded Micro USB power source up to 2.5A.

### 3.2 Mirror

A phenomenal mirror implied as a two-way mirror or insight reflect is used during this endeavor. A two mirror is remarkable when diverged from a standard family reflect. Not in any way like a family mirror, the 2 way reflect isn't painted with a dark tone on the back, rather its left faultless. This gives the property of the mirror being clever one side and direct/clear from the backwards. Subsequently the 2 way reflect goes about as mirror as long as there's no light send from the rear of mirror.

### 3.3 RaspbianOS

Raspbian is an Operating framework. This is utilized for the interface of Raspberry PI equipment sheets. It is having large number of packages around 35000. Which are very helpful to complete any task and raspbian is a Linux based Operating system.

### 3.4 Python

Python is a powerful programming language for the development of any application or tool or multimedia products. It is a open source language which is having large number of modules and packages. This language supports hardware systems like Raspberry PI or ESP32 boards or beagle bone series.

## 4. RESULTS

The yield of the Smart Mirror includes a dark yield screen which showcases climate, news and time. the most elevated right corner of the screen shows time which is available inside the Raspberry Pi. It makes utilize the schedule for showing the day and date close by time. The upper left corner of the screen shows climate.

The climate API which is utilized during this undertaking is out there on 'forecast.io'. climate update changes each hour and is shown on the screen if there's an adjustment of temperature else the temperature stays unaltered. The climate symbol on the screen is shown with the help of the changed png pictures which is saved during an organizer in Raspberry Pi.

## 5. CONCLUSION

In this paper design and development of smart mirrors is implemented using raspberry pi. This smart mirror consists of additional features which improves the system performance. By using this system, we can control the fan and light operations. It will turn ON and OFF the fan and turns ON and OFF the light based on the given command it performs. From LCD display the contents are displayed which consists of sheet with a reflective mirror. The entire operation is controlled by the raspberry pi 3 module. Hence, from this it can observe that it gives effective results compared to others.

## REFERENCES

- [1] PiyushMaheshwari, ManinderJeetKaur, SarthakAnand, "Smart Mirror: A Reflective Interface to Maximize Productivity", International Journal of Computer Applications (0975 – 8887), Year: May-2017.
- [2] Govinda K., Saravanaguru R.A.K, "Review on IOT Technologies", International Journal of Applied Engineering Research ISSN 0973-4562 Volume 11, Number 4 (2016) pp 2848-2853, Year:2016.

- [3] Jane Jose, RaghavChakravarthy, Jait Jacob, Mir MasoodAli, Sonia Maria D'souza, "Home Automated Smart Mirror as an Internet of Things (IoT) Implementation", International Journal of Advanced Research Trends in Engineering and Technology, Year: February2017.
- [4] ShervinEmami, ValentinPetrutSuciu, "Facial Recognition using OpenCV", Journal of Mobile, Embedded and Distributed Systems, vol. IV, no. 1,2012.
- [5] Suthagar S, AugustinaShaglinPonmalar, Benita, Banupriya, Beulah, "Smart Surveillance Camera Using Raspberry Pi and Open CV", International Journal of Electrical, Electronics and Data Communication, Year: April2016.
- [6] D. Gold, D. Sollinger and Indratmo, "Smart Reflect": A modular smart mirror application platform," 2016 IEEE 7th Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), Vancouver, BC, 2016, pp. 1-7. doi: 10.1109/IEMCON.2016.7746277
- [7] PiyushMaheshwari "Smart Mirror": A Reflective Interface to Maximize Productivity" International Journal of Computer Applications (0975 -8887) Volume 166 -No.9, ay 2017.
- [8] IoT based Smart Mirror using Raspberry pi, International Journal for Engineering Research and Technology (IJRET), ISSN 2278-0181, NCESC-2018 Conference Proceedings, Special Issue-2018.
- [9] Divyashree K J, Dr. P.A. Vijaya, NitinAwasthi "Design and Implementation of Smart Mirror" As A Personal Assistant Using Raspberry Pi"
- [10] Smart Mirror for Smart Lifestyle, IJARIE-ISSN(O)- 2395-4396, Vol-4 Issue-2 2018.