

An IoT based Smart Mirror using Raspberry Pi with News and Temperature

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Abstract— Powerful and ever-growing smart mirrors will play a key role in future technology by providing users with both mirror functionality and associated smart capabilities. The impact of such new technologies will completely change people's daily lives. In recent years, everything has become smarter, including smart homes and smart cities. A smart mirror is one of the devices in which a regular mirror acts as a smart device. This mirror provides a very elegant interface for displaying information and can also be used for intrusion detection in home environments. There are different modes. That is the normal mode, in which the mirror acts as a normal mirror, and the smart mode, in which the mirror accepts external commands and displays relevant results. Smart mirrors can be built using the Raspberry Pi 3 model with touch screen capabilities and voice commands.

Keywords— Smart Mirror, Raspberry PI 3, Home Automation, IOT, LED display.

1. INTRODUCTION

The smart mirror is straight from a science fiction novel. You are part of an optimistic vision for the future, envisioning a world where screens and data are everywhere and you can provide the information you need, whenever you need it. A mirror looks like a normal mirror, but the scene changes when someone stands in front of it. Mirror provides users with a functional, easy-to-use and interactive interface for accessing social websites, messengers and more. A widget shows the current weather conditions, time, events, and the latest headlines. With its tremendous growth, the Internet of Things is expanding its application to people's living environments by making homes smart homes. Virtual dressing, a smart way to test your fashion sense, makes things easy in the mall. Having such an intelligent mirror only

enhances the beauty of the house. The Raspberry Pi is programmed using Python and connects to a monitor with built-in speakers to provide an on-screen interface and voice support. The term Internet of Things (IoT) refers to the connection of physical devices over the Internet. The "things" of the IoT can be anything that can collect data and send it over the network without human assistance. There are many advantages to using a smart mirror. You don't have to look at your cell phone every time you check the date or weather, which makes your life easier. Smart Mirror can also be upgraded to display browsers and social media sites. Adding a motion sensor to the mirror will further improve speed and ease of use. Now we can get dressed and at the same time read the news and watch YouTube videos in the same place. Recognizing the potential benefits of smart mirrors, companies such as Microsoft and Apple have developed prototype mirrors. Smart mirrors are also called "magic mirrors". This project was developed with the idea of making the house smarter to save time. The Internet has changed our lives by facilitating information in the virtual world and connections with other people. The current state of innovation is to provide more information with less interaction to get it.

2. LITERATURE REVIEW

Michael Teeuw built the smart mirror first and used the Raspberry Pi first for this purpose. His first smart mirror blog was posted in 2014 because it was a very new product that was very much in the spotlight at the time. This mirror is based on the Raspberry Pi 2 and uses a monitor as a display. It displayed the weather and time and was imported from various modules linked to real-time websites. It was just an information board that couldn't interact with the mirror. A module-

based interface is created to display weather, news, time, or daily cartoons.

The Mobile Programmable Smart Mirror for Ambient IoT Environments unveiled at the 5th International Conference on the Internet of Things and Cloud Workshops in 2017, is an interactive smart that provides simplified and customizable services for home environments. Describes the design and development of mirrors. Offer [3]. Smart Mirror also controls home appliances with little human intervention through mobile applications. To control home appliances, the mobile phone must be properly paired with the smart mirror. The publication "Smart Mirror for Smart Life", published at the IEEE Conference, also describes the monitoring and control of home devices using mirrors. Mirror systems use Sonus technology as a medium to facilitate human tasks and develop human-system interactions. The smart input to respond. Sonus is a voice-to-text library that allows you to quickly and easily add a VUI (Voice User Interface) to any hardware or software [2].

However, IoT security is not very well developed and powerful to make smart mirrors safe and secure. A face recognition algorithm is implemented in it. A smart mirror is customized with face recognition authentication and personalized news recommendations. The algorithm was published at the 13th International Signal-Image Technology Conference & 2017 Internet- based system (SITIS) includes the above development. Every day predictive model of news recommendations is implemented through a face recognition algorithm. "SmiWork: Interactive Smart mirror platform for workplace health promotions, for example, discuss multi-user smart mirror that promotes health and lifestyle[4].

3. PROPOSED IDEA

The proposed gadget and block diagram for magic replicate are proven in discern 1. The intention of designing this version is to create an interactive interface which may be easily utilized in domestic surroundings, in addition, to various offerings like weather, calendar, and traffic, information inventory updates etc. may be accessed and managed with the use of voice commands. The Raspberry Pi three is hooked upto a monitor through an HDMI cable and a webcam is hooked up to the use of an established

serial bus. Raspberry Pi has powered up the use of a 5V/2A DC supply.

4. BLOCK DIAGRAM

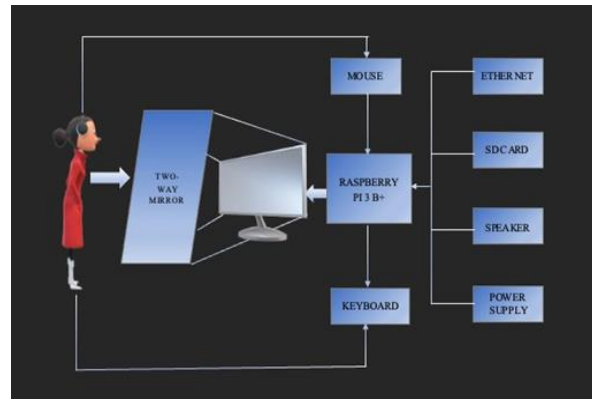


Fig 1. BLOCK DIAGRAM

Figure 1 shows the proposed system and block diagram of the magic mirror. The purpose of designing this model is to create an interactive interface that is convenient to use not only in home environments but also in home and commercial environments. We can use voice commands to access and control a variety of services such as weather, calendars, traffic, and news stock. The Raspberry Pi 3 connects to the monitor via an HDMI cable, and the webcam connects via a universal serial bus. The Raspberry Pi runs on a 5V / 2ADC power supply.

The smart mirror is a raspberry pie (low power) Minicomputer-based display when connected to the Internet. Select the required information and display it in the Existence of users. In the proposed system, the model Raspberry Pi 3 B+ with 512MB of SDRAM is used. It runs on Linux platforms and requires 700mA. A bidirectional or two-way mirror is placed on the LCD screen that works normally reflects when there is no light behind, or acts like glass, a window in which information is displayed.

Raspberry Pi 3 B+ model



Fig 2. RASPBERRY PI 3 B+ MODEL [6]

The Raspberry Pi 3 will serve as the main control center for this proposed model. Raspberry Pi is equipped with one micro-SD card that can load operating systems such as Raspbian and Windows 10 IoT Core. The operating system is running and you will see the Magic Mirror code, implemented to run the application. The monitor receives input from Raspberry Pi with an HDMI cable and inputs from RPi voice commands can be given to the RPi using a microphone.

Dual Purpose Display



Fig 3. DUAL-PURPOSE DISPLAY [7]

For dual function, we've used a bidirectional mirror for the display. It attaches at top of the monitor, employing a wooden frame to carry the whole system together. The bidirectional mirror can act as a daily reflection mirror when the monitor is off and will display data simultaneously when the monitor is on.

5.FUNCTIONALITY

Users can use it as a regular mirror because it acts as a regular reflection mirror.

A two-sided mirror that can act as both a reflective mirror and a see-through mirror is attached to the LED monitor. It provides two main functions. Mimics a regular mirror and acts as a display for real-time data updates.

Personalized Data and Information Services: Anyone using this mirror regarding traffic, stocks, news, headlines, dates, times, weather updates, and other reports on special interests. We can receive the latest information in real-time.

6.METHODOLOGY

The proposed Magic Mirror represents a natural interface that provides a platform to access information and data services in a more personalized manner. This project is aimed at contributing to the planning and implementation of a Magic Mirror-like interface also as the automated home environment where users can interact with the mirror interface.

7.FLOWCHART

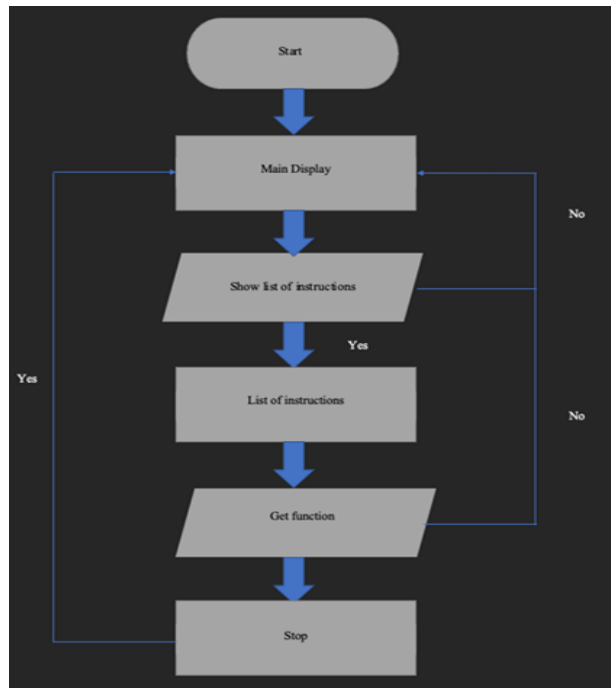


Fig 4. FLOWCHART

8.RESULTS



Fig 5. Smart Mirror UI

We designed a futuristic smart mirror to offer natural interaction between the user and the surrounding home service. Mirror display is done via flat LED, a display

monitor that shows everything you need Information that is useful to the user. Mirror too facilitates this, we provide a picture-in-picture sub-display. We can view services such as maps and videos via YouTube. We developed a working prototype to do our demo work. Overall, the prototype is easily extensible, a framework that can be used to provide more features for users. Completed and functioning now you are ready to view the smart mirror. As the previous section showed that the project was completed behind schedule, but well below budget after completing most of the goal set in the original scope statement.

9.CONCLUSION

Notifications which users can view on the mirror-like Facebook, Gmail, news etc. The mirror is further accustomed display Time, weather, date etc. The mirror also acts as a private Assistant that displays important notices and is additionally an Enquiry center. The users can interact with the mirror using Voice commands. Also, a PIR sensor is attached which turns on the screen only if the user is within the proximity range of the mirror. This reduces power wastage. Smart mirror design has the benefits of small size, simple operation, low cost, high degree of user- friendly, personalized interface and many other advantages which is suitable for several Applications like college, home, offices etc. Overall, the proposed smart mirror system incorporates various Functionalities to grant users access to personalized Information services.

10.FUTURE SCOPE

Nothing is ideal and complete and there's always room for improvement in each product. Everything needs to be updated or upgraded on a timely basis to cope with this technology. Aside from graduation, there can be many other features likewise which could add up to the proficiency and skill of our smart mirror. There are many future scopes for this paper and hopefully, it'll emerge as the biggest benefit within the field of IoT.

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