

Smart Mirror

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Abstract - The smart mirror's design, construction, and operation are described in this paper. Every morning, we start our day by looking in the mirror at least once before leaving our houses. We may interact with it to see how we look and what our attire or appearance might be like. One of the applications that we can utilize with the Raspberry Pie is Smart Mirror or Magic Mirror. A computer screen built into a mirror appears to be quite futuristic. The Raspberry Pie remains in the background scenes, controlling the data on the mirror. You may check numerous notifications from social media sites, as well as news, weather predictions, and other objects while staring in the mirror. We may design this mirror to act as artificial intelligence, allowing us to operate household appliances using voice commands or the touch screen display. The Raspberry Pie is linked to a display through HDMI and includes built-in Wi-Fi and Bluetooth interfaces, allowing us to reflect music and movies with a simple swipe.

Key Words -

Intelligent mirror, Digital Board, Magic mirror, Display, Home Automation, Raspberry Pi, Virtual Dressing system, Date, and Time.

1. INTRODUCTION -

Smart mirrors were supposed to be right out of a science fiction film. They might be part of an optimistic picture of the future in which displays and data are everywhere, ready to feed you whatever information you require at your leisure. The mirror seems to be a regular mirror until someone stands in front of it, at which point the scene changes. The mirror will have a user-friendly interface and may also be an interactive UI for its users to access their social media sites, messenger, or news feed, among other objects. It features widgets that show the current weather conditions, the time, events, and the most recent news headlines. Based on its properties, the Smart Mirror would help in the creation of smart homes with embedded artificial intelligence, as well as finding applications in other types of sectors. With a mirror, switching out home appliances is a breeze. Using this approach, a clever manner of having trials with your fashion sense makes objects fairly easy at malls. The presence of such

an interactive mirror would only enhance the beauty of the home. The raspberry pi is written in Python and connects to a display with an integrated speaker to give an onscreen interface as well as voice help. Alternatively, we may utilize the Raspbian operating system to interface with or operate this machine.

2. LITERATURE SURVEY -

During the investigation, some of the systems had some form of problem in the earlier models. Our suggested approach addresses some of the key difficulties, such as the ability to update alerts anywhere on the network and improve readability. A digital notice board was created in the form of a login page where the user may log in as an admin or staff by entering his or her user-id and password. A new user can create an account by clicking the Create an Account button. If a user forgets his password, there is a lost password option that allows him to restore his password. After signing in, the user can post whatever notification he wishes to the notice board. We can also add the image to the notice. We may also include a picture with the notice. We can change the font size and color of the message. Another board included a feature that allowed the user to retrieve the information they desired by using a voice command. Users can view the notice in the ambient reflector. The root user is in charge of keeping the file system's vital information up to date. According to a research report answers to the issue statement, one must approach the display to read the messages, which may result in crowding of the iris in an area. To avoid this, the proposed system attempts to design and implement a voice alert notice or a notice announcement system that might be effective for reducing crowds and supporting physically challenged iris.

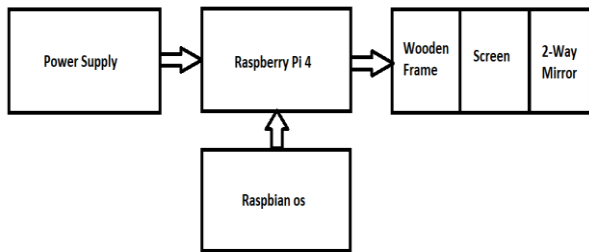
3. METHODOLOGY -

The raspberry pi board, which contains an ARM Cortex A53 CPU, is used as the main controlling hardware unit in the proposed system. Because the board requires an operating system, we will utilize the RASPBIAN operating system, which is based on the Windows operating system. The system must function to display notices; hence, a Monitor Screen is linked behind a 2-way mirror for display output.

The whole development will be on Windows-based OS and on the python language, which is extensively supported and utilized by the researchers in the raspberry pi board. Our project phases are or may be roughly classified into four categories based on the extent of work involved in each design, raspberry pi programming, display programming and implementation.

- A 2-lane MIPI CSI camera port is also there.
- It contains a 4-pole stereo audio port as well as a composite video port.
- Micro-SD card slot for loading operating system and data storage.
- It also has a 5V DC via USB-C connector (minimum 3A).
- It also has a 5V DC via GPIO header (minimum 3A).
- PoE (Power over Ethernet) is enabled.
- The temperature ranges between 0°C to 50°C.

4.2 MONITOR:



A computer monitor is an output device that displays information in the form of graphics or text. A monitor is often made up of several components, including a visual display, electronics, housing, and a power source. This will allow us to utilize it as an output device for our project as a display.

4. COMPONENTS –

4.1 Raspberry Pi:



The Raspberry Pi 3 Model B improves on its predecessors by including a new, faster CPU on board to boost its performance. It also has WIFI and BLE capabilities to improve usefulness, as well as the potential to charge more powerful devices via USB ports.

4.3 WOODEN FRAME:



The frame is used to hold the screen and the mirror together and to keep the mirror and frame in place without allowing them to move from their set position.

- It has a Broadcom BCM2711 quad-core Cortex-A72 (ARM v8) 64-bit SoC with a 1.5GHz clock speed.
- 1GB, 2GB, 4GB or 8GB LPDDR4-3200 SDRAM.
- 2.4 GHz and 5.0 GHz, Bluetooth 5.0, BLE
- Gigabit Ethernet
- It has 2 USB 3.0 ports and 2 USB 2.0 ports.
- The Raspberry Pi standard has a 40-pin GPIO header.
- 2 × micro-HDMI ports (up to 4kp60 supported)
- A 2-lane MIPI DSI display port is also there.

4.4 2 - WAY MIRROR:



Then we had to put it in our actual mirror. Because of the overlapping trim noted above, it was a simple installation, comprising us carefully fitting the glass into the frame itself and fastening it with two wooden blocks placed behind the mirror itself. The glass is now wedged between these blocks in the back and the overlapping trim in front.

4.5 HDMI – CABLE:



The High-Definition Multimedia Interface (HDMI) is a proprietary audio/video interface used to transmit uncompressed video data and compressed or uncompressed digital audio data from an HDMI device, such as a display controller, to a compatible computer monitor, video projector, digital television, or digital audio device, among other objects. HDMI is only a digital replacement for analog video standards.

5. CONTENT ON OUTPUT DISPLAY:

5.1 Notice: This module provides a random message about any upcoming academic activity at the college. The notification attribute has four arrays: 'morning,' 'afternoon,' 'evening,' and 'anytime.'

5.2 Newsfeed: This module aids in the presentation of news headlines based on a very simple syndication feed. Scrolling through news headlines is time-based, but it may also be controlled by delivering a news feed to the module for a certain notice. As a source, an array of feed URLs is utilized. For headlines, the feed's URL is utilized.

5.3 Update: Notification: This will display a message whenever a new version of the Magic Mirror application is available.

5.4 Clock: The current date and time are displayed in this module. The information will be updated or reloaded, in real-time. It displays the time in 24-hour format. We may utilize the Asia/Kolkata time zone to represent the time zone of Asia.

5.5 Current Weather: This module displays the current weather, the sunset or dawn time, the temperature with

wind speed, and a symbol displaying the current circumstances. Mumbai, Maharashtra, India is the location feed for weather information. The weather information comes from Open Weather Map. It is an internet service that delivers weather data, such as current conditions and forecasts.

5.6 Weather Forecast: This module displays the weather forecast for the next week, as well as the current weather conditions, such as the minimum and maximum temperatures. This module's URL is the same as that of the current weather module.

5.7 Weekly Schedule: It displays the timetable for today from a weekly recurring schedule of a timetable for a specific class.

5.8 Slide Changer: We use this extension to change the slide at a specific time interval and in the correct order.

5.9 Alarm: First, an array is created in which all of the alarms are treated as objects. These have properties such as time, 24-hour format, days, and so on. A sound is assigned to the alarm, and if no sound is assigned, the alarm will sound with the default alarm sound.

6. CONCLUSION –

Finally, the application is the new technology for smart living. We created a futuristic Digi-board that can show crucial announcements, updates, weather, date, time, and so on, as well as serve as a mirror for students and teachers. The display is given by a flat LED display monitor, which displays all of the required information that is relevant to the user. We designed an intelligent Digi-board with future educational developments in mind. It is a novel application for developing a smart interacting system. In this interactive system, the system is dependable and simple to use; we have been concentrating on an interactive system for schools and colleges. There are numerous advantages to using this Digi-board. The use of a digital board has the potential to improve the user experience of accessing and interacting with information. It saves time and improves information accessibility. The advantage of this Digi-board is that it may help with a variety of everyday activities that will aid the learning process.

7. FUTURE SCOPE –

By presenting large images or announcements on several displays for advertising reasons. This may be accomplished by dividing the primary picture or poster into numerous parts/images, allocating each image to a screen, and merging

those sets of displays to broadcast the display information, which can also be managed remotely. Broadcasting information in locations such as highways, subways, buses and bus stations, trains and train stations, shopping malls, city squares, hospitals, conference halls, and colleges and schools for displaying academic/non-academic notices to students and all institutional information to visitors. Similarly, this technology may be utilized in factories or industries to show notices or important information to personnel.

8. REFERENCE -

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