Smart Mirror Using Raspberry PI

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ABSTRACT

Intelligent mirrors, which continue the works today and will take its place in the future technology, provide both mirror and computer aided information services to its users. Thanks to the microcontroller cards onboard, these systems, which can connect to the internet and take data from the internet, can show this information on the places located on the mirror. In the scope of the study, the developed intelligent mirror system includes the weather information, time and location information, current event information, user information, and camera image taken from web services using Raspberry Pi 3 microcontroller card. Some equipment can be controlled by voice commands via the microphone on the smart mirror.

Index Term— Smart Mirror, Raspberry pi, IOT, Makers

1. INTRODUCTION

Internet of Things (IoT) is 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 ecosystems i.e. Android and Arduino. Ultimately a digital color controller is to be developed with the help of these.

2. OBJECTIVE

The objective of this project is to make a mirror which does the smart things like it shows weather, date and time, News etc. All these smart features are to be done using raspberry pi. Due to use of smart mirror time can be saved.

3. PROBLEM STATEMENT

The major problem is with existing mirror is it shows only any object kept in front of that or face of
human. People wastes their lot of time standing in front of time then after of they read news so all this is time consuming. So we are developing a project which overcomes to time wastage

4. BREIF DESCRIPTION OF PROJECT

The entire system can be subdivided into 3 major sections namely

- The Raspberry pi
- LED Monitor
- Acrylic Mirror

These are described briefly as follows

4.1. The Raspberry Pi

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 port for connecting a Raspberry Pi camera DSI (display serial interface) display port for connecting a Raspberry Pi touchscreen display Micro SD port for loading your operating system and storing data Upgraded switched Micro USB power source up to 2.5A.

4.2 LED Monitor

An LED display is a flat panel display, which uses an array of light-emitting diodes as pixels for a video display.

Their brightness allows them to be used outdoors where they are visible in the sun store signs and billboards, and in recent years they have also become commonly used in destination signs on public transport vehicles, as well as variable-message signs on Highways.

Fig 1: LED Monitor

5. HARDWARE REQUIREMENT

1.Raspberry Pi 3

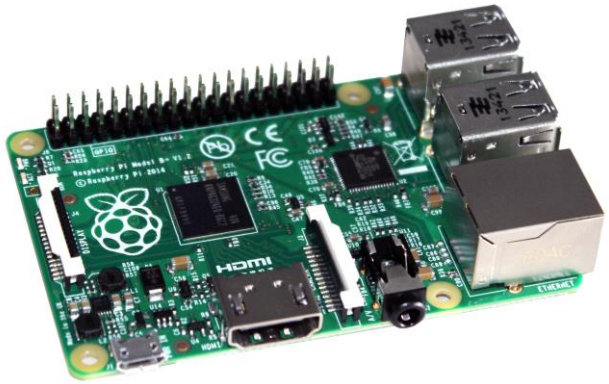

Fig 2: Raspberry Pi3

The Raspberry Pi 3 is a credit-card sized computer capable of doing just about anything a desktop PC does.

From web surfing and word processing, to playing Minecraft or acting as a media player, the Raspberry Pi's capabilities are extensive. With plenty of graphics processing power, the Raspberry Pi 3 is capable of streaming BluRay-quality video.

If you're looking to incorporate the Pi into your next embedded design, the 0.1" spaced 40-pin GPIO header gives you access to 27 GPIO, UART, I2C, SPI as well as both 3.3V and 5V power sources.

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6. SOFTWARE REQUIREMENTS

1.SD Formator

SD Formatter is designed specifically for SD/SDHC/SDXC memory cards. The utility differs from operating system format utilities that are meant to format a variety of storage media SD Formatter works with a number of Windows and Mac operating systems. It can be used with the following devices Secure Digital slot on computer – Important for SDXC card users: contact your computer manufacturer to confirm the SD slot on your computer is compatible with SDXC cards and for availability of the SDXC driver.

USB Secure Digital memory card reader PC Card, Card Bus or Express Card SD adapter

2.Ehcher

Etcher is a software which is used to burn the OS image to make it compatible to install into storage disk, here we installed raspbian.

3. Raspbian

Raspbian is the main and basic software for RPi devices, officially supported by the Raspberry Pi Foundation. In fact, it is an operating system, based on Debian and optimized for Raspberry Pi hardware.

Fig.3: Raspbian

It comes with lots of pre-installed pieces of software appropriate for most of ARM users and developers. And in this blog post, I am going to look through almost all possible operating systems, as well as the Raspberry Pi images, compare and review major types of other software you can use for your complicated Raspberry Pi Projects. But the main operating system, ready-to-use and optimized to the needs of the most developers and makers is Raspbian. So, first thing firstly, let's dig deeper this type of OS for RPi.

7. 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

Output**:**

Fig 5: Output of Smart Mirror

8. RESULT

The following images show the required output we can see that it is displaying Time and Date, Weather conditions, status, News and Indian Upcoming Holydays.

Fig.4: Result

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