

Smart Mirror

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Abstract : A smart mirror combines the uses of a traditional mirror with a digital aspect to bring up-to-date information to the user directly on the mirror surface. For the most part this information is simple like time, weather, calendar, and news; however there are almost endless possibilities to what can be programmed on a smart mirror. Smart mirrors are not commercially available right now so many members of the DIY community have taken on the challenge of building their own. There are four main components of a smart mirror: the frame, two-way mirror, computer screen, and a computer.

Keywords– Internet of Things, Smart Mirror, Raspberry Pi

I. 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.

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.

II. Literature Survey

The Smart Mirror Represents A Natural Interface That Facilities Access To Personalized Services. This Is An Attempt To Contribute To This Design Of A Smart Mirror Like Interface As Well As The Smart Environment In Which The Interface Is Used For Interaction On The Following. Phillips Homelab Is A Testbed For Creating Perspective And Context-Aware A Home Environments Intelligent Personal Care Environment Uses An Interactive Mirror In The Bathrooms To Provide Personalized. [1] Another project named Magic Mirror as carried out by students of NUS, They created a magic mirror which can recommend you appropriate clothing in the morning while you get ready. The Magic mirror model will scan the user and then based on the particular occasion or event it will recommend most suitable attire and other styling options. The events can be retrieved from user’s social media account or can be added to the calendar manually. [2] Implementation of a Magic Mirror-like interface as well as the automated home environment where user can interact with the mirror interface, we briefly comment on some related work and research in similar direction. Smart Reflect [3] is a similar work carried out by the students of MacEwan University. Another example is of an Interactive Mirror [4] which can installed in room or washroom to get personalized services depending on the end user. Children can customize it view cartoons, adults can get live news feeds and updates on weather, traffic etc

III. Problem Statement

The major problem with existing mirrors is that they only show any object kept in front of them or the face of a human. People waste a lot of time standing in front of them, then after they read the news, so all this is time-consuming. So we are developing a project which overcomes time wastage.

IV. Components Used

IV.I. HARDWARE REQUIREMENT

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 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.



Fig.1.Raspberry Pi

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.2.LED Display

IV.II.SOFTWARE REQUIREMENT

SD Formatter

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.

Etcher

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.

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 OS

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.

V. Block Diagram

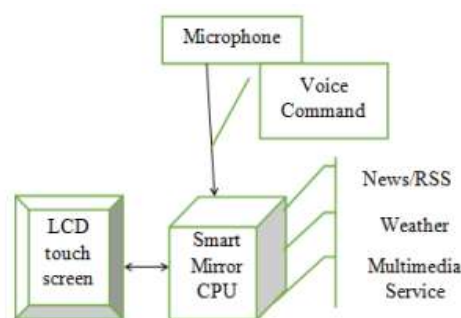


Fig 1 Circuit Diagram

Fig.4.Block Diagram

VI. Working

The proposed mirror is designed to perform, several functionalities that can be summarized as follows:

- Mimic a natural mirror interface:
- A flat monitor is used for the mirror display. A one way mirror is used to provide real time display of what is located in front of the Smart Mirror using Raspberry Pi thereby mimicking the function of a regular mirror.
- Personalized Information services: Users will be able to obtain minute updates of latest news and public headlines, weather reports as well as get reports of our interests.
- Customized management of profiles: Users can create their own profiles and store them in the system. According to this profile, customized services are provided to the user.

VII. Proposed Framework

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

VIII. 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.5.Result

IX. Applications

Smart Mirror displays real time weather updates, any changes in the surrounding will be shown. It will also predict weather.

To do list or task to be done can be entered and can be updated freely, an Alarm will notify in order to complete the mentioned task. It will also compliment and provide motivational quotes.

X. Conclusion

Thus smart mirror provides a plethora of dynamic services which could be modified as per ones requirements. It makes our lives easy as we work on our complex activities and use our cognitive abilities efficiently.

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