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## SMART MIRROR

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### Jyoti Gupta

Student, ABES Institute of Technology  
Ghaziabad, India

### Divyanshu Srivastava

Student, ABES Institute of Technology  
Ghaziabad, India

### Riya Sharma

Student, ABES Institute of Technology  
Ghaziabad, India

### Mr. Aviral Malay

Assistant Professor, ABES Institute of  
Technology Ghaziabad, India

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**Abstract**– Living in 21<sup>st</sup> century where everything is getting smarter whether it be a person or devices, people become more dependent on smart devices as they have to beat or you can say stand in the society. As a result newspaper got replace by many news apps on smart devices, advertisement poster replaced by led TV and there are many more changes. The concept of Smart Mirror bring a technology to reduce your daily time routine which is a perfect ambient for smart home as well as in advertising and commercial sector while also act as a conventional mirror.

**Keyword** –SSH, smart mirror, VNC viewer, raspberry pi, raspicast.

## I. INTRODUCTION

With the advancement of technology people have chosen smart devices, and indulging of raspberry in smart home project cover many areas due to their specification and low cost. Adding a new member to the smart home smart mirror gain attention.

There are some devices which came in market with the same intention for instance LG OLED TV. Smart Mirror is a two-way mirror with an electronic display behind the glass. The smart mirror has the necessary applications and features needed for time efficiency focused device. First, there is the easy on and off. The mirror automatically recognizes that there is a user present and turns on the screen hidden behind the two-way mirror. This device would be useful for busy individuals that want to multitask and stay informed while on the go and also in commercial sector like in big SHOWROOMS and also in public transport utilities like RAILWAY STATIONS, AIRPORTS. The display can show the viewer different kinds of information in the form of widgets, such as upcoming schedule of the day, self-customized calendar combine with google calendar, and one can cast media content also on the mirror. And we know that places like

airports and railways station where the most advertising company would like to invest and information like live status of trains and airplanes which completely vanish the tradition of 7 segment display system. And in commercial sector where shops can use this device where they display their model and information etc. The user can interact with it using voice commands. The Smart Mirror consists of various functionalities like real time data and information updates, voice commands using Raspberry Pi, LCD monitor.

The paper is organized in a manner such that: next section give the brief detail or background which give the functionality of the project and then component which give the complete discussion of all hardware and software languages used in this device, discussion of flow diagram or complete process is presented in architecture & flow diagram some conclusion with market analysis and future scope or remark and given in the last section.

## II. IMPLEMENTATION & SYSTEM ARCHITECTURE

### A. Raspberry Pi3:

The main component of the smart mirror which is used to display items and microphone interface. It is a one board type of computer which runs through the python and many programming languages on installed Raspbian pi operating system. By the help of programming we use this device to displays weather forecast, news headline, google calendar collaborated with Hindu calendar, date & time, wind speed-direction, caste media online or from any storage device etc. and this whole function is done by extracting the information from the internet. And to achieve all these functions, the raspberry pi3 module is connected with the internet via inbuilt Wi-Fi module in raspberry pi3. It also

used to take the input from the microphone through which we can give the commands.

**B. Two-way Mirror:**

we can also call it a one-way mirror which is transparent from the one side and reflective from the other side. This is ideal for the smart mirror to show the display partially as well as act as the simple mirror in which the person can see his image.

**C. LCD Monitor:**

The LCD monitor is place behind the two-way mirror which is used to display the information.

**D. Microphone:**

This is used to take the input and proceed the commands through the raspberry pi3 module. With the help of microphone, the user can give the commands to use the functions of the smart mirror which will be proceed by the raspberry pi3 module to give the output to the user. The microphone is connected to the raspberry pi3 module by the USB (Universal Serial Cable).

**E. Speaker:**

The speaker is used to provide the audio output by connecting the raspberry pi3 module using aux cable or by using inbuilt Bluetooth feature in Raspberry Pi.

**F. PIR (Passive Infrared) Sensor:**

The work of it's in the smart mirror is that when then person come in front of the mirror then the smart mirror get started and display all the things on the screen and when there is no one in front of the mirror then it act as the simple mirror.

**G. Raspicast:**

It is an application which is available on google play store which can be used to caste media on raspberry pi without using the browser, this can useful in commercial sector for advertisement.

CSS stands for Cascading Style Sheets. It is a style sheet language which describes the document presentation written in mark-up language like HTML.

**B. .NET:**

The framework which is used to provide guidelines based on programming that is used by the developers to develop a wide range of applications through which you easily can access your gadgets.

**C. JavaScript:**

It is a high-level object-oriented programming language. In the other words this language is a programming language of HTML and the web.

**D. Node JS:**

It is a scripting language which is used with a power of UNIX network. It is an open source language.

## IV. MODULES

**A. Remote Control Module:**

It give the user accessibility to change the configuration like the intensity or brightness of the display, power on-off, or they can hide the specific modules and get the desire information according to their need.

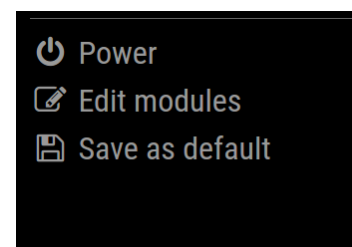


Fig 2: Features of Remote

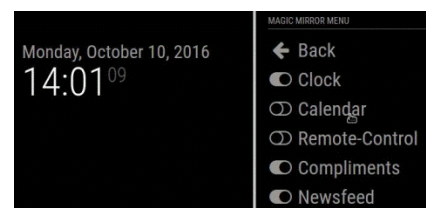


Fig 3: Features for editing configuration



Fig 1: Flow diagram of Raspicast

## III. LANGUAGES USED

**A. CSS:**

**B. Calendar Module:**

In this module google calendar is collaborated with the normal calendar means you can add event or reminder in your any google device it sync with the mirror and show your event in display.

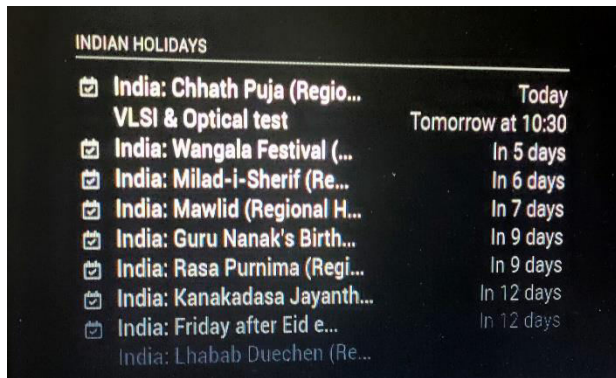


Fig 4: Google calendar remainder shows

#### C. Weather Module:

In this module you can forecast the weather with wind speed, sun rise sun set time and temperature.

#### D. Schedule Module:

This module help to show the fixed schedule like weekly time-table or daily morning routine.

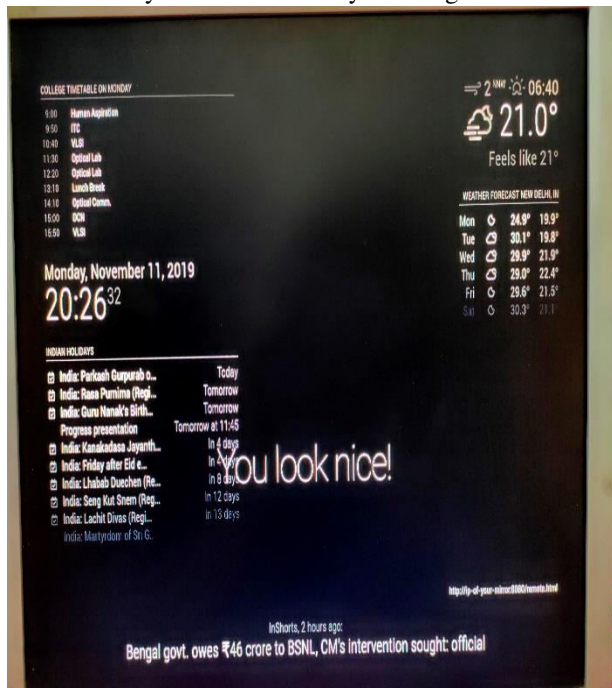


Fig 5: Display of Mirror

#### E. Compliment Module:

According to psychologist getting compliments activates the same part of our brain as getting a lottery, it doesn't matter who give you the compliment weather a human being or a smart device.

#### F. News Module:

Having everyone busy schedule no one have enough time to get updated with the surroundings or society.

#### G. VNC viewer :

The main motive behind the Smart Mirror to make individual less device independent whether it be smart device or external then VNC viewer play an important role to give the command to raspberry pi, so that user easily can change network and solve issues if there any with the help of manual or simple instruction.

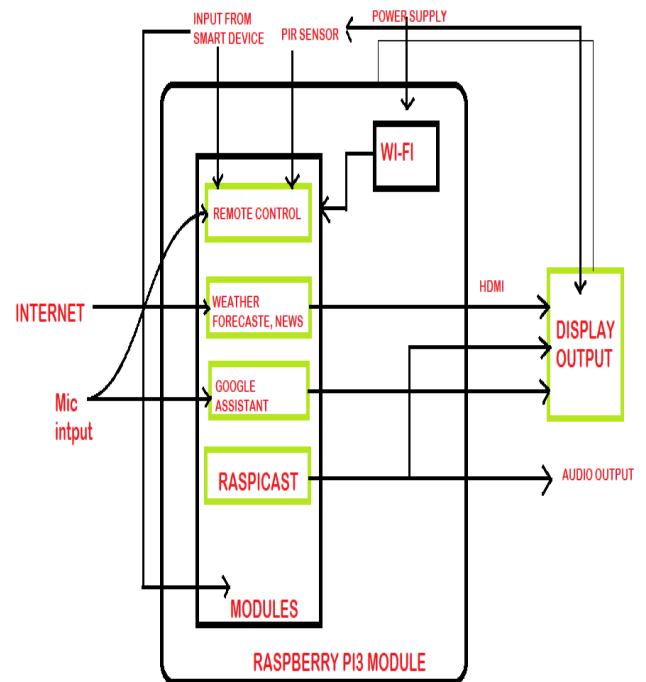


Fig 6: Architecture of smart Mirror

## V. CONCLUSION & FUTURE SCOPE

Through this paper a smart device known as Smart Mirror which is easy in use, interactive and can help in many commercial sector like advertising and the user can control the device by mobile phone or laptop.

Considering security issue only the user can access the remote, it can be movable easy to handle without compromising security.

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