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MAGIC MIRROR

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Abstract

In mirrors we see our reflections. But what happens when you combine the idea of a mirror with technology? The device was to go beyond an ordinary mirror, to have a Screen inside that you would be able to interact with by using voice commands, hand gestures and smart phones or other devices. It is one-way mirror with a screen attached to it that displays a static web page. The main features of the Magic Mirror would have would be showing basic weather and time information, being able to add alarms, reminders or notes in a similar way we stick post it notes on a fridge. We would also be able to play music in some way and see pictures through Instagram. Magic Mirror, is a mirror device built with a wooden frame, a flat screen TV, a Raspberry Pi 2 and software running on a web browser.

Keywords: Gestures, Futuristic, Raspberry Pi 2, DHT 11, Ultrasonic.

I. Introduction

The use of technology has become another task on everyone's daily to-do list. Technology should mold to our schedule, not the other way around. In the finite time of the day, technology needs to be designed to work within our schedule and not be an extra piece to it. With the introduction of System on Chip (SOC) such as the Raspberry Pi the notion of creating smart devices is a relatively new craze that has taken over hobbyist communities. That is where the magic mirror idea originated.

A magic mirror is a mirror with smart capabilities much like how cell phones have become smart. That is it is a display that looks and acts like a mirror, but has the capability of displaying multimedia data through the mirror glass is as if the mirror was a screen on its own accord .The major appeal of a magic mirror is that its physical design embeds a computational device in an ordinary piece of furniture that can integrate seamlessly into a home or working environment.

II. System architecture

A. Hardware

For the hardware it requires a computer monitor, Raspberry Pi 2. Everything was put together in a wooden frame. It generally requires following things:

- A computer screen
- A Raspberry Pi with casing along with a micro USB power cord
- A SD-card (8GB)
- Wooden frame

1.Two way mirror:

A one-way mirror, sometimes called two-way mirror, is a mirror that is partially reflective and partially transparent.

2. Raspberry Pi 2:

The Raspberry Pi is a single board computer developed by the Raspberry Pi foundation in the UK.

3. Frame and Support:

The frame is made of wood and it provides the support for the mirror and all the other components.

B. Software

All the software runs on the Raspberry Pi 2 and there are many operating systems to choose from. We chose to use Raspbian which is the official Linux distribution from the Raspberry Pi .

III. System Design

A. Description of Components

1. Ultrasonic Sensor: An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It sends out a sound wave at a specific frequency and wait for that sound wave to bounce back. By recording the elapsed time between the sound wave being generated and the sound wave bouncing back, it calculate the distance between sensor and the object.

2. Monitor: A computer monitor is an output device which displays information in pictorial form. A monitor usually comprises the display device, circuitry, casing, and power supply.

3. *DHT 11:* DHT11 digital temperature and humidity sensor is a composite Sensor contains a calibrated digital signal output of the temperature and humidity. Application of a dedicated digital modules collection technology and the temperature and humidity sensing technology.

IV. Implementation

We followed typical magic mirror building instructions to implement our prototype. A pane of glass with a mirror film on one side is encased in a frame and placed on top of a monitor. The mirror acts in a similar way that a two way mirror works. When there is nothing displayed on the monitor (i.e., the monitor is black), users can see their own reflection in the mirror. We made a modification to the typical magic mirror design by adding a small 3.5-inch touch screen on top of our Raspberry Pi. This modification was made to demonstrate the capability of Smart Reflect to access external hardware interfaces—a task that is currently not possible with other similar smart micro platforms that use a web browser as the display method.

When you look into the mirror, your mirror comes alive and gives you the day's news , time , date and weather. This magic mirror aims to reduce and possibly eliminate the need for the user to make time in routine to check their PC, tablet, or Smartphone for the information they need.

A. Current Features

- Displays forecast and animated weather icon.
- Displays Date and Time.
- Displaying current feeds
- Detect body temperature
- Display suggestions according to body temperature and of weather

V. Result

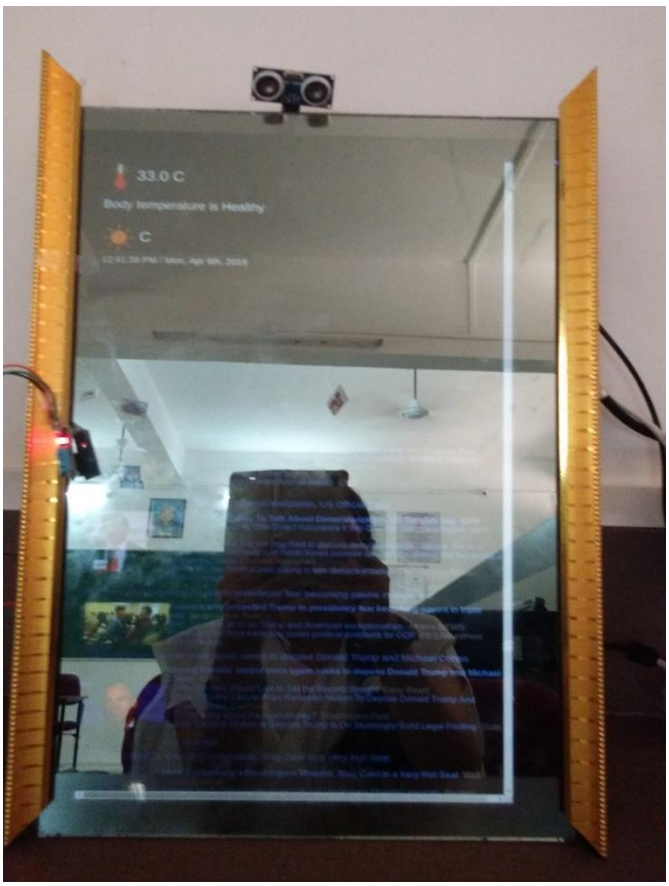

Fig. 1 Magic Mirror

The above Image is the output image displaying the body and weather temperature, date and time on top left side along with the user's reflection. And bottom part shows us the latest news. The output will be shown only when the user is present in front of the mirror or when the ultrasonic sensor detect some object.

VI. Conclusion

Magic mirrors have great potential to enhance user experience of accessing and interacting with information. Not only do they allow users to see relevant information effortlessly, they can also be integrated into a larger system, such as a home automation system. It is quite common for magic mirror platforms to use web browsers as the primary display method, as web browsers offer built-in support for various media formats. However, such platforms are usually limited by the sandboxed environment that is created by web browsers.

To alleviate this problem, we developed a software platform for magic mirrors that offers the following benefits. First, our platform is designed to be lightweight. It runs on a tiny computer, such as the Raspberry Pi. Second, it is modular and extensible. Users can implement their own plug-in saying any programming languages and integrate them to their smart mirror systems easily. Third, the server component in our platform enables a continuous, real-time connection and remote draw calls. With this type of server configuration, native applications can be made with the capability of utilizing external, non-native hardware in the sandboxed environment of a web browser, while still utilizing the scriptable and multimedia rendering abilities that a browser provides.

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