

## Smart Mirror Using Raspberry PI

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**Abstract:** This paper shows a comparison and style of a sensible device – sensible Mirror. The sensible mirror mentioned here is especially for home surroundings. This paper highlights a number of the sensible mirrors from completely different firms. These sensible mirrors don't seem to be wide used because of price or high needs of hardware. The projected sensible mirror are operated by Raspberry Pi and can be connected by planet through net. The sensible mirror can consist Raspberry Pi, junction rectifier monitor, speakers, camera, electro-acoustic transducer with two-way mirror and acrylic glass. With the assistance of voice recognition api the mirror can communicate with the user through voice commands and responds them consequently. The mirror may conjointly support human gestures. The mirror can highlight some basic amenities like time, local news, weather. The mirror also will perform some advance functions like booking a ride on Uber, face recognition, etc. This mirror with computing can give a unprecedented expertise to the user.

**Keywords:** Artificial Intelligence, Raspberry Pi, Smart Mirror, Machine Learning, Home Automation

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### I. Introduction

everybody is aware of what a mirror is. it's AN object found in most people's homes. In mirrors we have a tendency to see our reflections. however what happens after you mix the concept of a mirror with technology? What potentialities ar there and the way sensible may a mirror be? These ar a number of the queries that galvanized our selection of ultimate year project, a project that aimed to develop a sensible mirror and alittle package to power it. The device was to travel on the far side a standard mirror, to own a screen within that you just would be ready to move with by victimisation voice commands, hand gestures and sensible phones or alternative devices and can be ready to perform actions of bound user commands. The sensible mirror could be a standard project among DIY enthusiasts and it always consists of a 1 -way mirror with a screen connected to that that displays a static website. but what we have a tendency to wished to attain was one thing you'll move with. The goal was to be told however a Raspberry Pi worked and new Python libraries to know the way to mix the computer code and therefore the hardware parts to form a transmission project. The distinction between Arduino and Raspberry is, with Arduino we will perform restricted tasks repeatedly. Therefore, learning from Arduino is nice selection for a starter. however with Raspberry, we have a tendency to ar ready to perform computing functions and can be ready to perform multitasking. It's sort of a tiny micro-computer with intrinsic RAM and memory to perform advanced functions. Therefore, to complete the sensible MIRROR implementation Raspberry PI is needed. remainder of the paper is organized as follows, Section I contains Introduction for the sensible mirror, Section II contains connected Work for the sensible mirror, Section III contains Methodology for the projected sensible mirror, Section IV contains Results of the comparative study and Section V concludes analysis work with future directions..

### II. Related Work

There are different kind of smart mirrors that are being proposed or available in the market. Some of them are discussed below:

**1. Microsoft Magic Mirror:** This mirror is proposed by Microsoft in 2016. This smart mirror works on Windows 10 IoT Core on Raspberry Pi 3. This is powered by Windows Hello cognitive services. This was an open source project. Its web app was made open to GitHub repository so that anyone can build its own smart mirror. The mirror shows traffic updates, weather and supports voice recognition.

**2. Ekko Smart Mirror:** This smart mirror runs on their own linux based platform on Raspberry Pi and it required an installed app on the user's smartphone. It also has sensors which could recognize the gestures of the user. Other than highlighting news, weather and time, the user can also play videos and music.

**3. Apple Mirror:** This smart mirror prototype is based on iOS 10 that mirror the iPhone display. The mirror can launch all the mobile apps desired by the user. This mirror sleeps after every 45 seconds of ideal situation. This is a touchscreen smart mirror.

**4. Nuovo Smart Mirror:** This android based smart mirror required an android application on the user's smartphone. The mirror supports music and videos playback. This mirror also supports features like weather,

maps and the social networking like Twitter, Facebook, etc. The auto sleep mode is also supported by the mirror.

**5. Perseus Smart Mirror:** This smart mirror runs on the separate platform on Raspberry Pi. This mirror doesn't require any application on the smartphone. This mirror is available in different sizes. This mirror supports music, videos and social networking.

**6. Naked 3d Fitness Tracker:** This mirror consists a huge number of sensors which reads a 3d scan of the body and checks for any formational abnormality. It also senses the area of the body which is prone to an injury. It also suggests workout plans to be fit.

### III. Methodology

We attempt to style and develop such quite art movement sensible mirror that provides a full new expertise to the user. Our projected sensible mirror consists a two-way mirror, acrylic glass, monitor (LED), Raspberry Pi, Raspberry Modules, sensors. A wood frame are ready with junction rectifier connected behind the glass with all the sensors and therefore the raspberry pi. the facility provide is connected to the raspberry pi which can power the junction rectifier monitor and therefore the sensors. Once the mirror is activated, it'll connect with the dockhand that contains all api and computer code required to run the mirror. this can need net access which can be provided by the wi-fi module (LAN may be conjointly used) on the raspberry pi. The virtual layout that may be ready victimisation hypertext markup language and CSS are displayed on the mirror once it's turned on and can show calendar, weather and news headlines. The dockhand can contain the api of Alexa (virtual voice assistant from Amazon) that may reply to the user's voice. The mirror can perform automatic face recognition which can be useful for real time image focus and out. this can be one with facilitate of OpenCV and a few java programming.

The planned model are able to perform the subsequent task:

1. Gesture Recognition
2. Voice Recognition
3. Custom designed User Interface (UI)
4. Face recognition
5. Show calendar, time and news feed
6. work as a spy camera

The future functionalities of the project are:

1. Has its own AI (Artificial Intelligence)
2. Social networking sites may be accessed by voice
3. Youtube support i.e play music and videos
4. bit screen

### IV. Result

As we've seen on top of each mirror is functioning on totally different technologies and platform. we've tried to form a wise mirror that work on the common design and perform all the essential demand functions of the user that a wise mirror will do. .

### V. Conclusion

The main goal of this project was to develop a wise mirror which may interact with the user mistreatment its own OS. The device was to seem sort of a regular mirror however would have a screen within and you'd be able to act with it mistreatment voice commands, hand gestures and smartphones. The OS would support running apps and would supply an easy API for third-party developers to form their own apps for the good Mirror. the most options the good Mirror would have would be showing basic weather and time info, having the ability to feature alarms, reminders or notes during a similar method we tend to stick post-it notes on a icebox. With the project I wished to find out a great deal regarding the Raspberry Pi because it was the primary time I used it. I additionally hoped to refresh my natural philosophy data because it had been quite your time since I did one thing with natural philosophy. Up to currently there are many folks World Health Organization have designed good Mirrors however in my opinion they lack interactivity. The project aims to alter this by holding the user act mistreatment totally different means that.

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