Smart Mirror

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ABSTRACT:

The modern world is full of brand new devices and techie gadgets to make life easier for human. The plan of making an all-in-one gadget always seems pretty attractive. A gadget that could speak with it's the user that interacts with it. We have devices to check and provide the weather readings on a daily, weekly basis. The device which recognize us with our facial features. There are devices that play music on request. The idea of Smart Mirror is just an idea to collaborate a daily use normal thing like a mirror and give it a special power using some smart code to make it perform all the above-mentioned features. The project is divided into a few modules for easier comprehension and completion.

Wooden Frames:

Two layers of wooden frames are required as a means to hold the mirror part. It is the wooden part which actually protects the mirror from any sort of breakage. It also serves as holder for the camera used to detect faces.

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Camera:

The camera takes in the images of the user to process it and compare with the already existing image for facial recognition.

Acrylic Mirror Sheet:

The acrylic mirror sheet used in the smart mirror should be reflective enough to show images of the people using it as a mirror. The Sheet being very flimsy must be handled carefully.
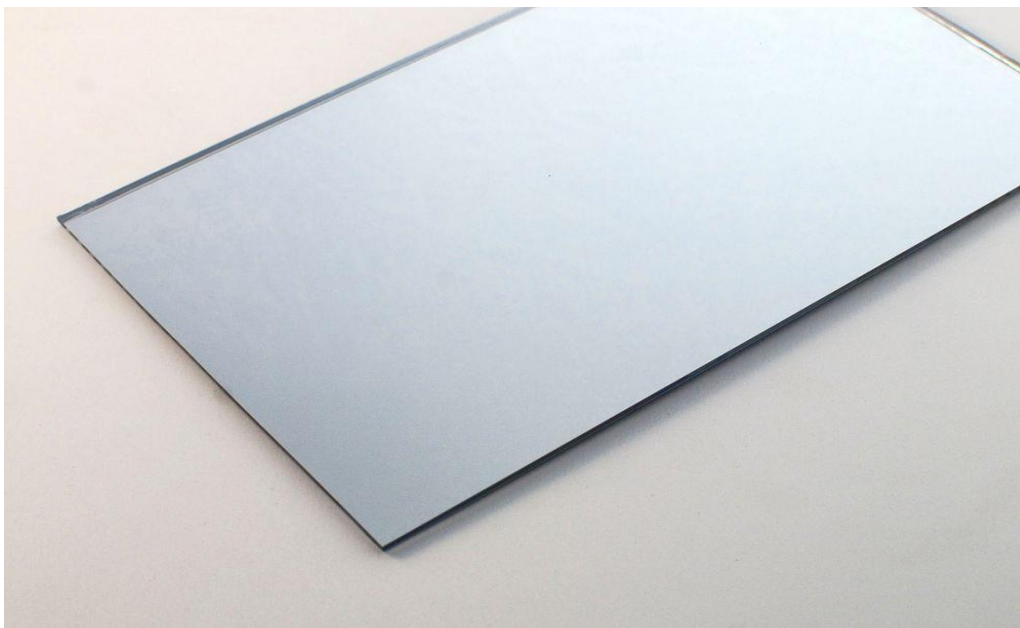
LCD Monitor:

The LCD Monitor is actually the most important part of the smart mirror. It actually remains hidden from the user's perspective. The wooden frames sandwich it between them. Thus, it remains hidden.

Raspberry Pi:

The Raspberry Pi is the actual brain of the smart mirror. All the code related stuff is programmed into the raspberry pi, which is connected to the LCD Monitor through the HDMI port. The raspberry pi also remains within the wooden frame.

These are all the physical components of the Smart Mirror.

Software:

The ability to recognize the facial features of the user is programmed into the smart mirror using LBPH (Local Binary Patterns Histogram) algorithm. It breaks down the image into pixels and compares it with the already existing image to authenticate the user.

The ability to listen the speech of the user and interpret them from voice to text is done using NLP (Natural Language Processing). Sonus is a speech to text software which is available in the online

library making the device able to interpret the user's input by means of grabbing the keyword from the user's speech.

The weather, time related information are gathered from a weather API available for free in the internet.

In this paper, we have taken a lot of references   from Github and Youtube videos.