SMART MIRROR IMPLEMENTATION

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Abstract: Internet of Things provides the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. Smart mirror is one of the most important applications of IoT. This mirror provides common information most people check their smart phones or tablets. This allows the users to think their plan for the day while getting ready in the morning or night. Raspberry Pi4 controlled mirror application software designed and developed by means of software to display the data like news, see a traffic report, weather forecast for the day, and your day's schedule. We are utilizing our voice services to make our gadget intelligent. As the world get developed day by the day technology get improved as a result of this Smart Mirror can proved the best alternative for the Normal mirror .it will replace our mirror with the Smart Mirror which will help the consumers to live a easy and comfortable life without any hurdles. We have proposed the system in such way that the feels comfortable while using the system and anyone can use the system easily. Smart Mirror is the mirror which is a combination of the 2-way mirror, Display, Raspberry pi, PIR sensor, Microphone, Speaker etc., project generally help the people to use the Mirror in Smart way for the better life. We have used the Alexa for the voice Service. Python and Javascript (Node.js) programming tools are used for programming of the Project. We have connected to the two mirrors with the display and connect it with the raspberry pi kit which is further connected with the PIR sensors and microphone and speaker.as Bluetooth module is already present in the raspberry pi kit sso there is no need to connect the one. It is very convenient to access the media and other information with the help of the Smart mirror. As the internet of things (IOT) allows devices to communicate in different and important places at the same time. Smart Mirror is the one of the important Application of the internet of things (IOT). The project generally works on the reduce the need of the user to make time to check the PC or the Tablet and mobile phone while morning and the night routine for the information they need.

Keywords: SMART MIRROR, ARTIFICIAL INTELLIGENCE, RASPBERRY PI

I. INTRODUCTION

We are implementing a raspberry pi based Smart mirror. A Smart Mirror allows convenient access to media and information that people might be interested in on a daily basis. The mirror will display relevant information to the user and allow users to get some basic daily information at a glance. This will save users time in their routine which will as a result relieve stress and help people get out on their routine in the time. The smart mirror will display information users may access in the morning via TV, smart phone and other technologies in a way that is readily available as soon as they walk in front of mirror. Smart devices have an operating system in them. In our gadget we are using a one-way mirror, Raspberry Pi 4, a microphone and a speaker for voice service. Whenever the Smart mirror is turned ON it will display various information such as time, date, weather and news feed automatically. We are using APIs to get information like weather and news. Our gadget shows relevant information, you can search in web browser, you can search for any location for directions, it can show calendar, it can be used as TV. So, there is no need to keep calendar, TV in your room, you can see it on mirror. In future you can use smart mirror for trying cloths virtually, it can also work with smart home for displaying information.

II. COMPARATIVE ANALYSIS

There are products in the market that attempt to be your attractive hub of information. The Amazon and Google present themselves as a small speaker that can relay information through sound. You can request news, music and weather, fulfilling your need to obtain media content.[1]

Not all data is suitable for conveyance by voice it lacks visual interaction. Both designs lack ability to convey information visually. Asking for the morning traffic can give you a time estimation, but it barely comes close to a
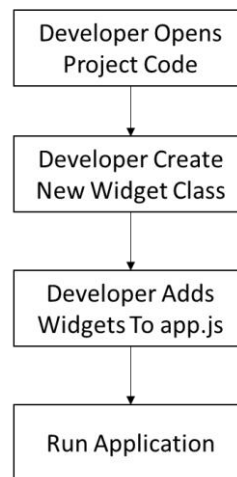
detailed map with your route information. Having the news read to you is convenient, but many prefer reading the news at their own pace visually.[2]
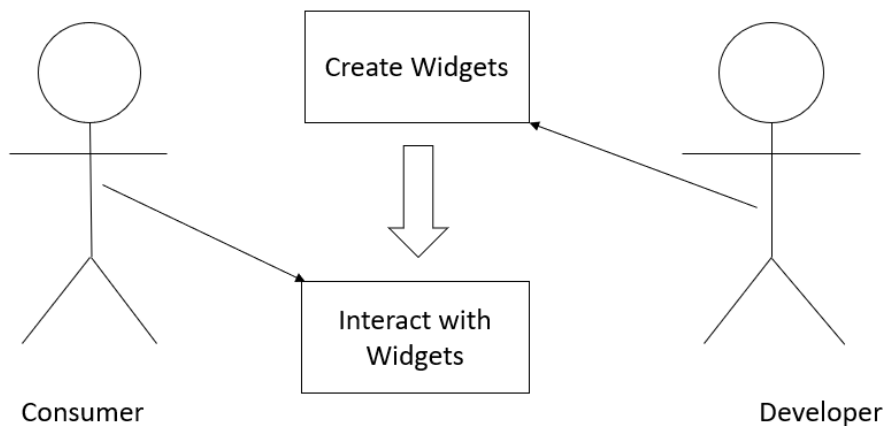
III. UML-DIAGRAMS

- Activity Diagram:
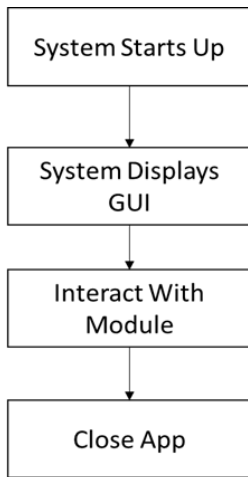
Activity Diagram For Consumer

Activity Diagram For Developer

- Use Case Diagram:

Consumer

Developer

The main actors of our system are the consumer, who plans to interact with widgets, and the developer, who plans to create new widgets.

- Data Flow Diagram:

Following Data Flow Diagram shows us the visual representation of the information flows within a system. It depicts the right amount of the system requirement graphically.
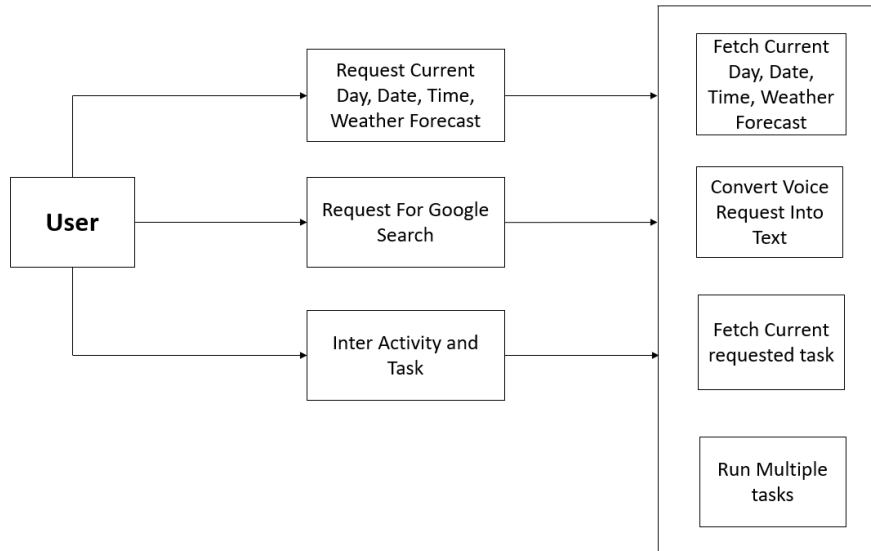
IV. PROPOSED SYSTEM

1. We are implementing a Smart mirror using raspberry pi which will act as interactive screen and reflective surface at the same time. We can also search for different activities in web browser.

2. We are using our own voice assistance to achieve different activities and you can change the voice keywords as you want.

3. User can just search anything without typing anything on the screen by only voice command they can switch the tab or search the required application\

4. We have used PIR sensors for motion detection, once it detects the motion it will switch on the system it will display the time, date news and weather information on the screen of the mirror.

- State Diagram:
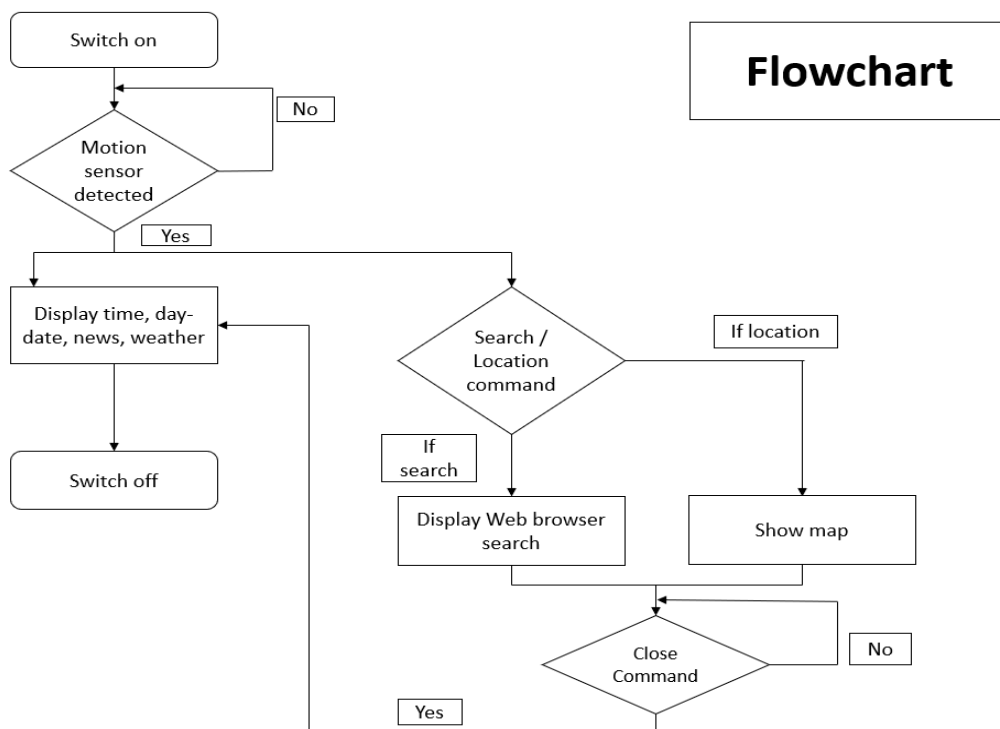
V. ALGORITHMS:

- Smart Mirror Interaction:
1. Switch on the power supply of Raspberry pi and Monitor.
2. PIR sensor will detect person is in front of mirror.
3. If person is detected smart mirror GUI will be displayed. Current date, time, weather condition, news headlines will be shown.
4. You can give voice command for interacting with browser and can close browser with 'close' command.
5. If you click on link you redirected toward a web browser. Link can be for Gmail, calendar.
6. After your interaction with smart mirror, you can turn off power supply.

- Voice assistance:
1. After PIR sensor detection smart mirror will start. Smart mirror GUI screen will show relevant information.
2. Give voice input like 'alexa search' (news, google, Gmail, etc). You can open the web page like YouTube, Netflix, calendar directly by giving command 'alexa open youtube'.
3. Preferenced browser will open with given URL using web browser module in python.
4. Interaction with web pages.
5. You can close browser by command 'alexa close'.
6. Display will again show us Smart mirror GUI screen.

VI. APPLICATIONS

1. Digital Clock: This module shows the current time. The information will be updated real time. It displays24-hour clock or 12-hour clock as per user need. The time zone for our clock is Asia/Kolkata.
2. News Headlines: Smart mirror also has capability to show the rss feeds that is headlines of any current affairs that is running currently and shows important news.
3. Current Weather: The current weather, the sunset or sunrise time, the temperature in degree Celsius and F°. Including location. The location feed for the weather information is India. The weather information is obtained from Open Weather Map. It is an online service that provides weather data, including current weather data and forecasts.
4. Music player: We can play our own playlist on smart mirror.
5. Web search: By using voice command you can search on web browser. We are providing link on smart mirror GUI for various applications like Gmail.
6. Using pir sensor we are automating our Smart mirror

VII. HARDWARE COMPONENT USED

1) 2-way mirror:
2-way mirror which is also known as two-way glass is glass which is reflecting from one side and clear from another side it will look like a mirror for those who look it from front but appear as glass window for those of opposite side.

2) Display:
Display is used to display the User interface HDMI to VGA cable is used to connect display to the raspberry pi as monitor is smaller than that of the mirror, we use the black tape to cover the remaining part of mirror.

3) Raspberry Pi:
Raspberry pi is the single board computer on which various modules are present. Using a Raspberry Pi is an easy way to make a smart mirror, as they're open-source and very versatile.

4) Microphone:
In order to use the voice control features of your smart-mirror, you will also need a USB microphone.

5) Speaker:
To give output for the applications like YouTube and Voice assistant we need speaker.
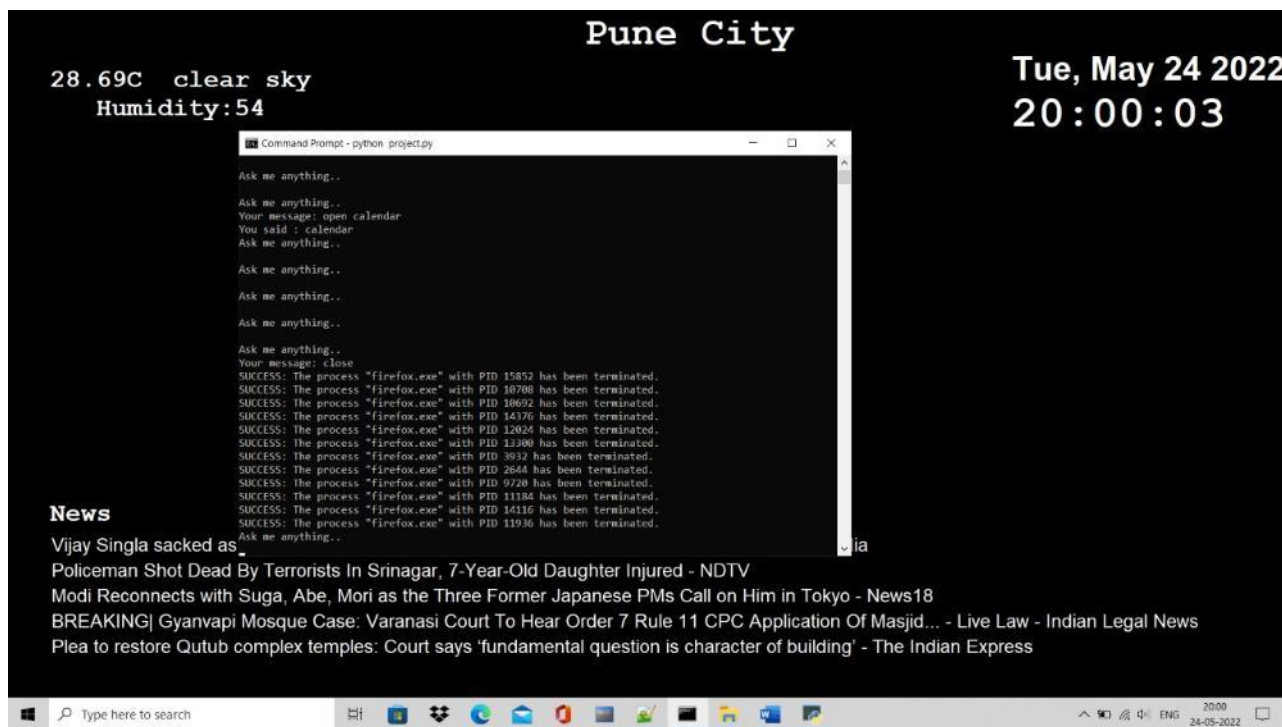
6) PIR sensor:

Passive Infrared Motion Detection sensor, for on/off of Smart mirror. Using jumper wire and breadboard we are connecting pir sensor to raspberry pi.

VIII. OUTPUT
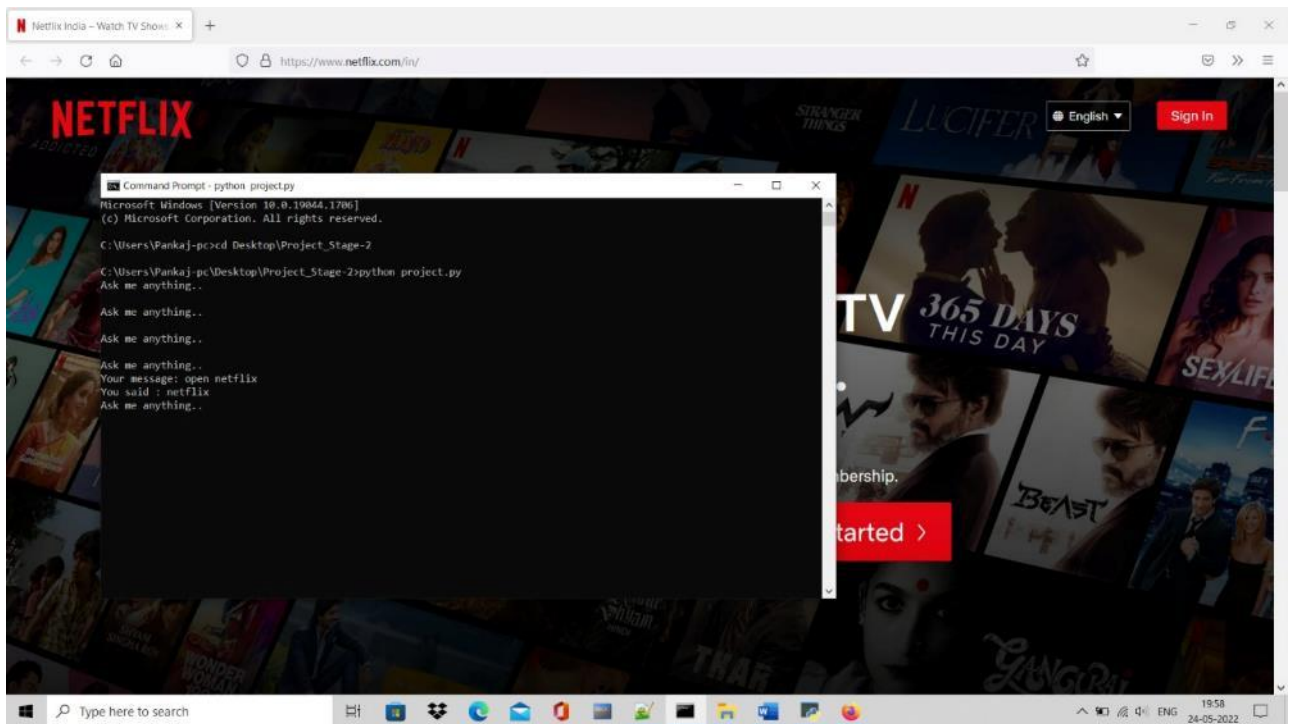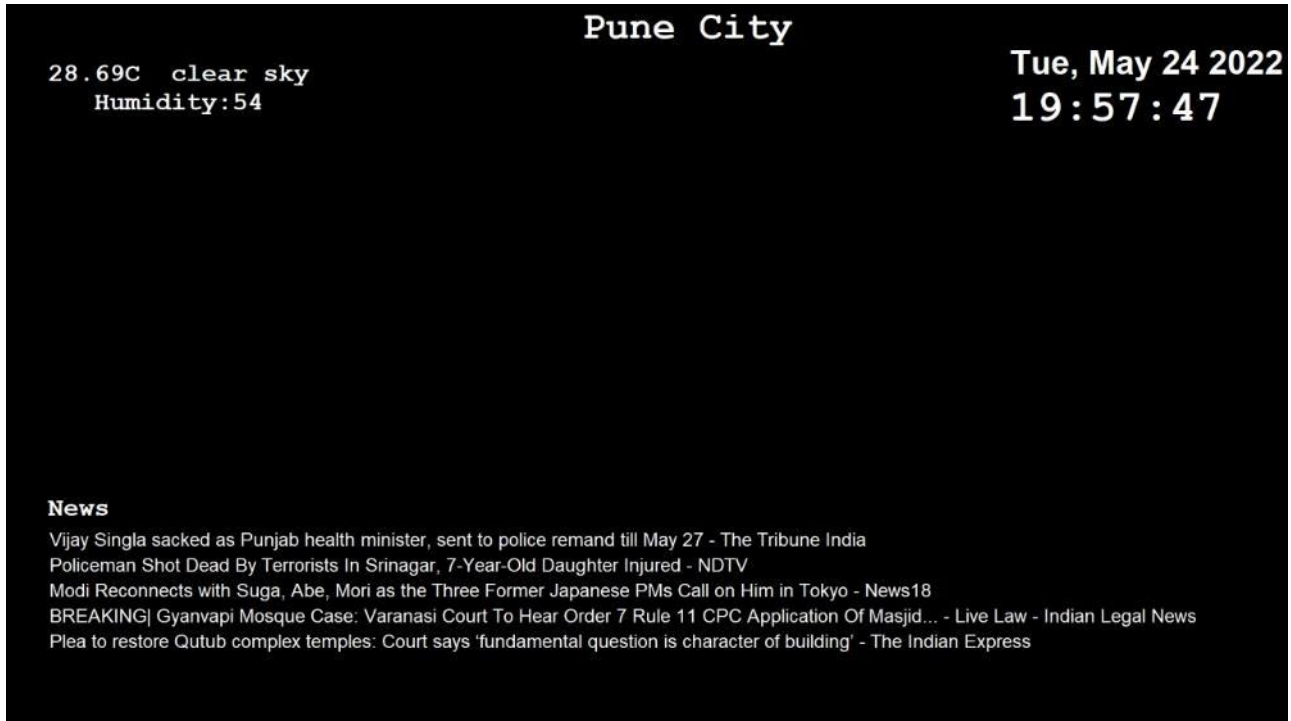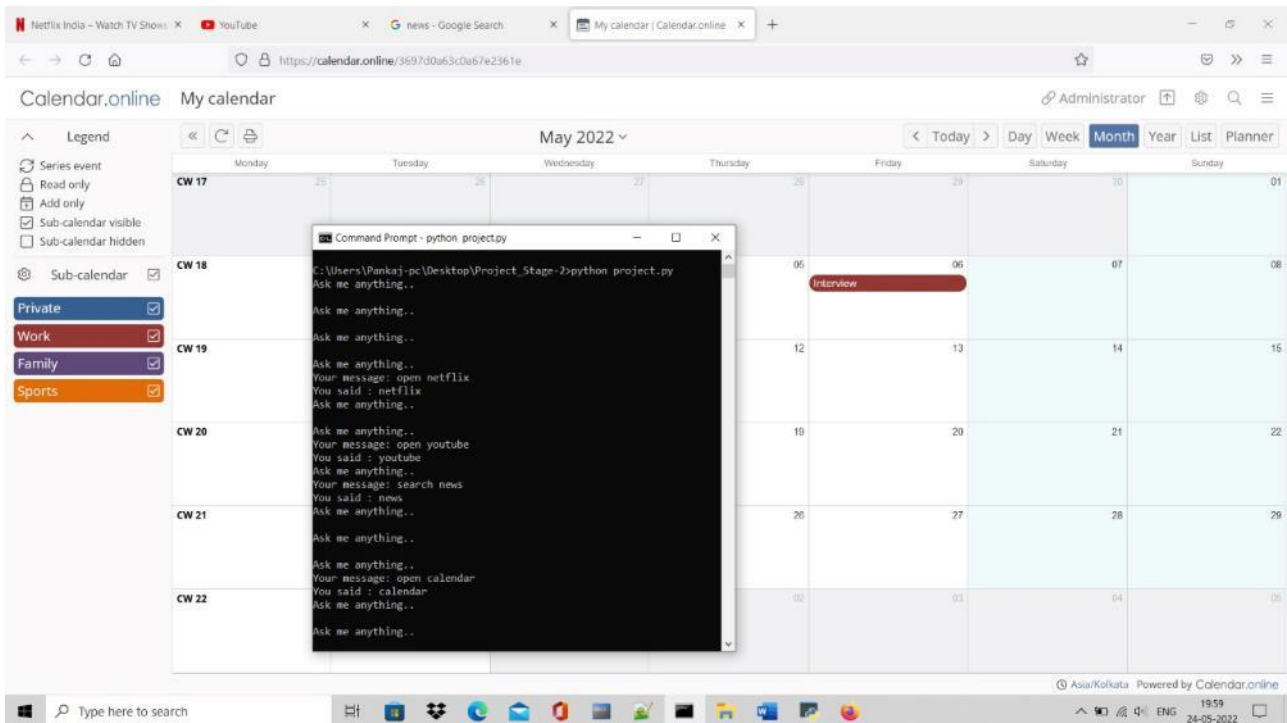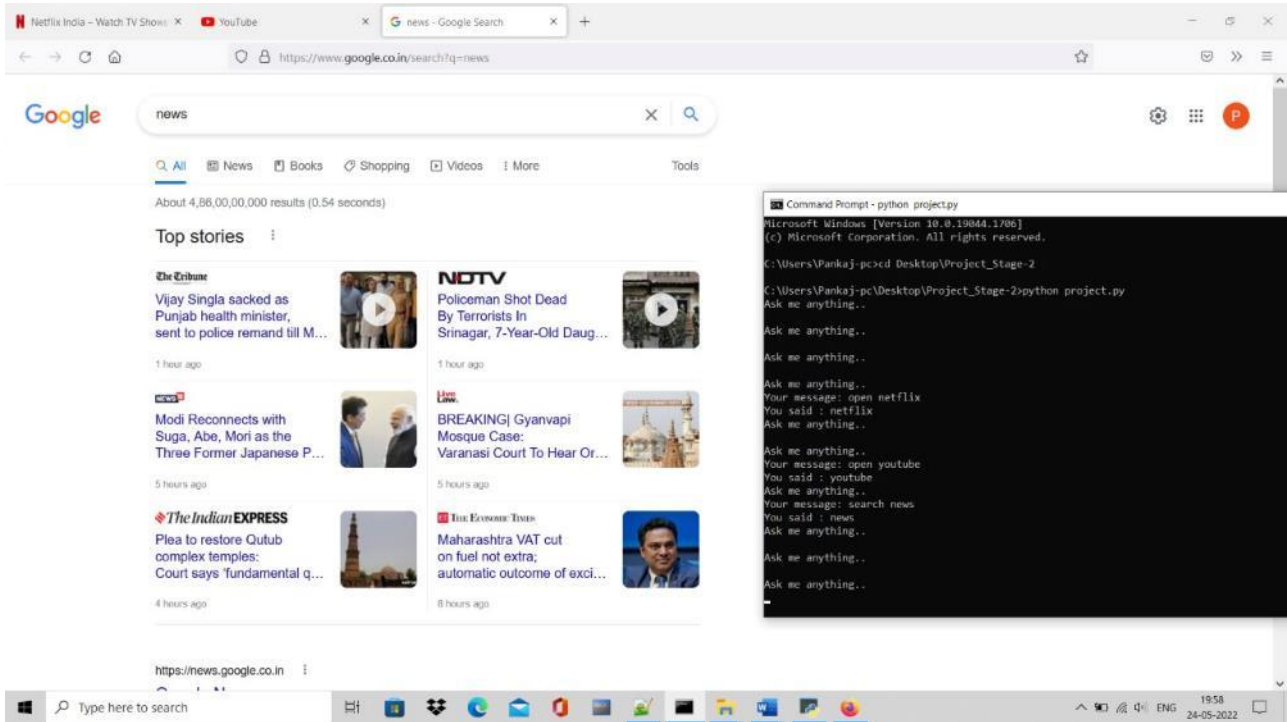
IX. FUTURE SCOPE

In real world nothing is perfect and complete and there always we can improve or change it for making the better version of the product. everything needs to be updated and upgrade according to the change in the current technology. apart from up gradation there can be many other features as well which could add up to the proficiency and ability of our smart mirror there are many future scopes for this mirror and hopefully it will emerge into the biggest benefit in the field of artificial intelligence. In future one can use the mirror virtual trial of clothes or glasses using the smart which Will be the one step towards the digitalization. Since we are using mirror in college environment, we can use it for the purpose of the barcode scanning or id scanning. And like this there are many more similar purposes in field like home, college, companies etc.

X. CONCLUSION

This paper gives an information about the Smart Mirror using IOT after studying various researches done by multiple researchers in this field. We have given a brief idea about how our system is going to work. The smart mirror which acts as a smart home control platform is a futuristic system that provides users with an easy-to-use mirror interface, allowing users access to customizable services in a highly interactive manner, while performing other tasks simultaneously. Our goal is to create a mirror that would serve both developers and general consumers as a personal assistant. The Main aim of our system is to make the application which is user friendly and can we easily understandable and easy to use by the user.it can be the step towards the digitization.

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