IoT Based Smart Appointment Alert System

B.Yuga Vamshi, M.Nikhil Sai, Md.Ali Hussain

Abstract: ***There is never an end to devices that can be made smarter with the help of adequate technology. There are lot of smart display devices but mirrors provide an interactive environment while displaying information. Internet of Things (IoT) is where an item being able to exchange information over a system without the requirement for human association to human or human to Computer. IoT is known for its favorable position that can help rearrange individuals' regular daily schedule. Subsequently, the specialist accompanies a proposed framework called Smart Mirror. This paper presents the design and development of a smart mirror using raspberry pi with additional features which provide face recognition. The contents are displayed on an LED monitor which is enclosed in a wooden frame and covered with a sheet of reflective one way mirror but we are using laptop screen as a mirror in place of a real mirror we can also use monitor as a mirror. The mirror provides basic amenities like weather of the city, time and news details. All the computing is done with the help of a raspberry pi. Using face recognition technique, we can detect the user's face and verify the user. This provides a better security technique.***

Index Terms: ***Raspberry pi, Smart Mirror.***

1. INTRODUCTION

Smart mirror[1] is a wall mounted mirror which displays weather, time, news and other areas of interests. In recent years more and more devices are connected to the internet. The internet has played an important role in connecting more and more people across the world. Devices started to become smarter a smarter, mobile phones became smart phones and most importantly internet was connected to a variety of devices and the concept came to be known as the 'Internet of Things'. Our project aims at exploring other fields where this technology can be used. It aims at including this technology in a mirror, because in general people spend a considerable amount of time in front of a mirror. We have seen clocks mounted on the wall, we have also seen displays at the airports, similarly we aim at bringing this technology to our homes. Another advantage of this device is to provide face recognition, which we have done using Open CV. This helps the user with security benefits. Smart mirror can also be useful for getting quick view of your Google feeds or accessing Gmail accounts by using face recognition. The smart mirror would help in developing smart houses by using artificial intelligence and finally finding a place in industries.

II. PROBLEM DESCRIPTION

The objective of the shrewd (smart) mirror is to give a passage to an individual to get all the data that could influence how they plan through the afternoon. For getting news updates and climate refreshes, an individual will dependably need to switch on the TV which is tedious. To dispose of these issues, the idea of brilliant mirror is presented. All the important data like climate and news can be gotten to from one area. The issue of a verified client verification procedure can likewise be adjusted by this framework. Using LCD shows and a single direction reflect, climate, time and date, news, and other valuable data programmable through the shrewd mirror application would be accessible initially.

III. LITERATURE REVIEW

Literature survey is nothing but collecting information and data which are related to our idea. These data should analyse with respect to our idea because we have to know the better approach and ways, before beginning the analysis of project, we refer several analysis papers, documents, manuals which are related to our idea of the project. This is due to the fact that effective time management is an essential factor in increasing production of day-to-day life. The best time management strategies involve being able to find time where there was no time before. Integration of technology into people's daily lives has made that time management possible. The use of products such as tablets, PCs, and smart phones have given people access to the tools needed to be productive. However, though successful technological products have been used to increase productivity, it has done its fair share to stifle it as well. 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.

A. Mr. Abhishek Pathak, Mr. Amitkumar Mishra, Mr.Rohit Sarate, Mr.Swapnil Bhavsar, Mr. Nirav Patel had purpose "smart mirror using raspberry pi" in 2018 In this paper their Design Smart Mirror using raspberry pi with features like weather forecast, News, and by authentication a person it will display the day plan's of that person they advanced using android app updating the information of daily plan's and it will show the reminders in that app[2].

B. Mr. Kanchan.S.Gorde had purpose " Raspberry Pi Powered Magic Mirror".The Smart Mirror implemented as a personalised digital device equipped with peripherals such as Raspberry PI, microphone, speakers, LED Monitor covered with a sheet of reflective one way mirror

C. provides one of the most basic common amenities such as weather of the city, latest updates of news and headlines and local time corresponding to the location. Using speech processing techniques the Smart Mirror therefore interacts with the user through verbal commands,

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functions and listens to the user's question and responds them adequately[3].

D. Prof. V. E. Pawar, Pooja Sisal, NeelamSatpute had purpose "Smart Mirror Using Raspberry Pi" The mirror provides common information most people check their smartphones or tablets for, such as weather, news, Twitter and schedules. This allows the users to read, think, and plan their day while getting ready in the morning or night[4].

E. Sun Yong, Geng Liqing, Dan ke had purpose "Design of Smart Mirror Based on Raspberry Pi" By using speech and voice recognizes the voice then perform the actions by using speech synthesis filters the voice and controls by using micro controller[5].

While executing a sharp mirror, the primary request which arrives is "What is the need of a Smart Mirror?" In the continuous years development has transformed into a fundamental part in regular day to day existences. Development has been intertwined in various electronic devices. Regardless, the expectation of organizing a 'Sharp Mirror' is to secure advancement a customary family mirror and making it splendid. This obtained another importance of a wise mirror: "a sharp mirror is a mirror with additional features and limits, with the purpose of displaying capacities for human coordinated effort".

There was reliably a need of organizing a device which would help in making courses of action for multi day's activities by doing other nuclear family works out. A mirror is one such spot where we visit normally and along these lines can get principal nuances, for instance, time, each day news and events, etc

Savvy reflect turns around the improvement of Internet of Things (IoT). IoT is an arrangement of physical devices, having electronic or programming limits related together to exchange data. The rule purpose of IoT is to make a virtual method to interface all of the devices related with it. It gives a strategy for correspondence among people and things and between the things itself.

Home automated smart reflect is another space which has IoT applications. Notwithstanding the way that usages of IoT are unique, anyway this investigation paper helps in using IoT for making life less difficult. The mirror can demonstrate date and time, news revives, atmosphere conditions, plan throughout the afternoon, refreshes, traffic conditions, etc. With the help of IoT, a mirror can be climbed to execute as projects. We can pick up permission to news or even watch Youtube chronicles. The machine required for enrolling is a raspberry pi which does not require considerable space.

IV. PROPOSED SYSTEM AND BLOCK DIAGRAM

The proposed smart mirror represents a natural interface that facilitates access to personalized services. This is an attempt to contribute to this design of a smart mirror like interface as well as the smart environment in which the interface is used for interaction in the following, we briefly comment on some related research in this direction.

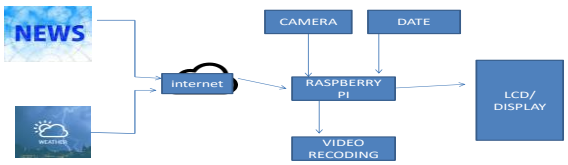

Figure 1. Block Diagram of Smart Mirror

In this framework we utilizing the python language to build up the smart mirrort code is dump into the raspberry pi and when control is on the raspberry pi is interface with wifi and out workstation is associated with same wifi at that point by utilizing propelled ip scanner we examine the ip address of the raspberry pi and now we open the VNC Viewer and in that product we type the filtered ip address of raspberry pi by utilizing advance ip scanner and we open the raspberry pi in this framework we right off the bat store the Faces that who we need to remember we take that face by utilizing the webcam which is associated the raspberry pi. By utilizing LPBH(Local Binary Pattern) face perceive calculation we taken the more example of that client to recognize all the more precisely and we prepared the framework when we add any face to the database. Presently when any individual come behind this screen or mirror the LPBH calculation ends up dynamic and checks with the countenances in database if any face is coordinates in the database demonstrating their day plan's and furthermore News, Weather and date are dependably shows on the mirror. And furthermore notwithstanding that when any individual comes behind the mirror video recording will done and stores in the database[7].

4.1.1 Raspberry pi

A Raspberry Pi is a Master card estimated PC initially intended for instruction, roused by the 1981 BBC Micro. Maker Eben Upton's objective was to make an ease gadget that would improve programming abilities and equipment understanding at the pre-college level. In any case, on account of its little size and available value, it was immediately received by tinkerers, producers, and hardware aficionados for ventures that require in excess of a fundamental microcontroller[6].

Figure 2. Raspberry pi

4.1.2 Webcam

A webcam in this task is utilized to perceive client's face and show tweets. Any sort of webcam is good with Raspberry Pi. In this undertaking the webcam utilized is Logitech C270 HD Webcam[8].

Figure 3. Webcam

4.1.3 Mirror

A unique mirror known as a two way mirror or perception reflect is utilized in this task. A two mirror is exceptional when contrasted with a customary family reflect. Dissimilar to a family unit reflect, the two way reflect isn't painted with a murky shading on the back, rather its left immaculate. This gives the property of the mirror being intelligent one side and straightforward/translucent from the other. Thus the two way reflect goes about as mirror insofar as there is no light send from the back of mirror.

4.2 SOFTWARE AND TOOLS

4.2.1 OpenCV

OpenCV (Open Source Computer Vision Library) is an open source PC vision and machine learning programming library. This product is for the most part utilized for picture preparing and video investigation. With the assistance of this programming the PC forms and at last comprehends pictures and recordings.

4.2.2 Raspbian OS

Raspbian is a free working framework enhanced for the Raspberry Pi equipment. Raspbian accompanies more than 35,000 bundles, pre-characterized capacities which helps in simple establishment on a Raspberry Pi PC.

4.2.3 Python

Python is a simple to adapt, ground-breaking programming language. It has proficient abnormal state information structures and a straightforward yet viable way to deal with item situated programming. Python's exquisite linguistic structure makes it a perfect language for scripting and quick application advancement in numerous zones on generally stages.

2. FACE RECOGNITION

Face acknowledgment[6] is finished with the assistance of OpenCV. It is a free machine learning programming library which is accessible free of expense for scholastic just as business purposes. In this way when we manage constant picture handling, Open CV programming improves as a choice.

It is a ground-breaking library of picture of picture handling apparatuses. This examination centers around the plan and execution of a minimal effort savvy reflect utilizing Raspberry Pi and Open CV. The webcam catches constant pictures and perceives client's face to shows client's tweets through Twitter account.

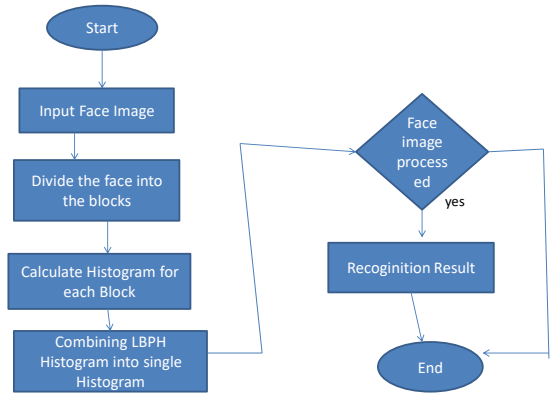

Figure 4. Flowchart of Face Recognition

3. Improvements in Existing System

In face recognition algorithm we taken the more samples ie 20 compared to normal algorithm more are taken taken in the algorithm.so that leads to the classification accuracy (CA) of the recognition of face is more accurate. CA is reduced to 60%(threshold value matching of image with existing DB).

$$CA = \frac{no\ of\ correctly\ \ classify}{no\ of\ samples} * 100\% \quad [10]$$

Video recording is an additional feature which is new feature to smart mirror.

4. RESULT AND DISCUSSION

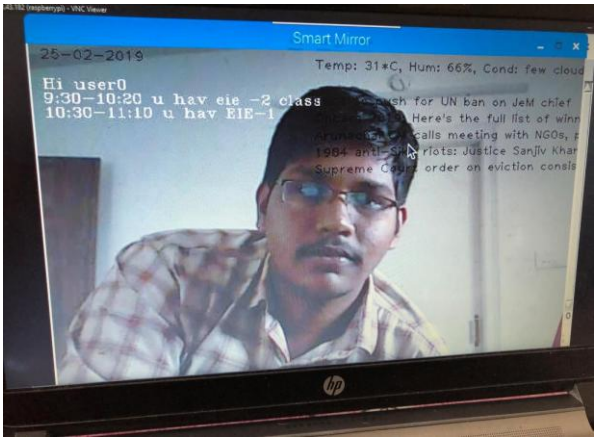

Figure 5. Output of Smart Mirror

The yield of the Smart Mirror has a dark yield screen which shows climate, news and time. The upper right corner of the screen shows time which is available in the Raspberry Pi. It makes utilize the timetable for showing the day and date alongside time. The upper left corner of the screen shows climate conditions. The climate API which is utilized in this venture is accessible on 'forecast.io'. Climate condition refresh changes each hour and is shown on the screen if there is an adjustment in temperature else the temperature stays unaltered. The climate symbol on the screen is shown with the assistance of the different png pictures which is spared in a envelope in Raspberry Pi.

The climate yield makes utilization of a module called 'Tkinter'. Tkinter gives window for yield and we can change window measure as indicated by yield. Also at the same time automatically video has recoded in the database by using normal general commands of the raspberry pi.

V. CONCLUSION AND FUTURE WORK

With the help of this literature survey we go for structuring a Smart mirror that gives an encompassing situation among clients and the web. It will help the clients in their day by day exercises. The smart mirror can likewise be actualized in different mechanical and home applications. Henceforth IoT ends up being an essential innovation for making family unit apparatuses smart. The facial acknowledgment innovation utilized in the smart mirror turns out to be a vital methods for security. Smart mirrors can be associated with home apparatuses and advanced mobile phones. The mirrors can distinguish face and give access to customized administrations. The mirror can likewise be executed to perceive feelings. With the assistance of developing innovations, brilliant mirrors can be progressed to contact screen modes. The mirrors can be better improved to be conveyed in excellence parlours, cloth shops, lodgings, and so on with better progressions in innovation, mirrors can be utilized in numerous different fields, ultimately we design and executed the smart appointment system by using smart mirror.

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