SMART MIRROR USING ARTIFICIAL INTELLIGENCE AND IOT

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Abstract: In past some decades we have seen the uses of the mirror the people traditionally use the mirror for their normal purpose like just seeing their face into the mirror but as technology get improved day by day the mirror got new purpose and can be improved as Smart Mirror. Smart mirrors are the future mirrors. It is a part of connected world where it displays news, temperature, weather and more information while looking and grooming ourselves in front of mirror every morning. Our System includes raspberry Pi model with IoT based circuit and a speech recognition device and we use specialized glass frame for encasing the system. This paper describes the design and working of the mirror build using given devices which is also known as the Smart Mirror. The features of these mirrors have been limited. Goal is to know about a Smart Mirror device that people could interact with and also to further develop the technology so that it would let you install and develop your own applications for it.

Keywords: Smart Mirror, Home Automation, Artificial Intelligence, Raspberry pi.

I. INTRODUCTION

Nowadays new technology has been developed with the ability to connect devices with each other intelligently which is called the Internet of Things (IoT). They're futuristic mirrors that imagines a world where screens and data are everywhere, ready to feed you information you need at the time you required it and your smart phone is not with you. Basically, the mirror is looks like normal mirror but when someone stand in front of it and give it a voice commands of whatever the person want from it like normal question about weather or about the news it will show the data accordingly. The mirror provides a functional, user friendly and interactive GUI to its user for accessing their social sites, applications etc. It has modules that displays the current whether conditions, Time, Events, Latest news headlines. The Smart Mirror would help in developing smart home technology with embedded artificial intelligence. A smart mirror is a two-way mirror with an electronic display behind the glass. The display can show the viewer different kinds of information like weather, time, date, and news updates. Using this product individuals can multitask and stay informed while on the go. In our project we have built a smart mirror. A smart mirror tends to display useful information such as time, date, weather, news as well as maps and some other pragmatic details. We have achieved this through a two-way mirror panel, a display, a raspberry pi and a desktop application to display the information on the screen. We have written the code for this application. This commodity hopefully, will be of commercial use as well as be an adequately complex project for my major in computer science. Person cannot take their smart phone to their bathrooms or toilet as the chances of damage get increases so smart mirror can be the best option for replacing it.

II. EXISTING SYSTEM

First to build the smart mirror and raspberry pi for this purpose was Michael Teeuw**.** In 2014 first smart mirror blog was posted and it gained lot of attention. Michael Teeuw's smart mirror was built on raspberry pi 2 and it displayed date, time and weather from various modules linked in real time websites.[1]
Ryan Nelwan in 2016 developed a smart mirror much similar to the one developed by Michael teeuw. A new feature added to mirror was the touch feature. It serves mostly as a source of entertainment system in which user can use the touch controls to run different programs, but it did not have artificial intelligence.[2]
Hannah Mittelstaedt made a home mirror that used a smart phone as the display screen. Home Mirror is a kind of smart mirror that is easier to build than other mirrors as it requires just two main components, any android mobile phone or a tablet and a mirror.[3]
U. Chaitanya, designed a smart mirror that activates using camera and voice to displays basic information. Using voice assistant mirror also activates Google services like search engine, notifications & Google calendar according to the commands given by the user.[4]
The Memory Mirror developed by Everyday Computing Lab acts as an assistant to the elderly people by showing the status of drug usage over a 24 hours period of time on the mirror. The mirror keeps track of all the drugs removed from

the medicine cabinet and records it in a history log and mirror can display the details of previous usage and to warn about possible lost or misplaced items.[5]

III. 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]

IV. INITIAL RESEARCH

Smart Mirror using IoT supported Voice command divided 3 main divisions:

1.   Design: Design is the one of the important parts of the project without design we cannot predict the output of the proposed system. The most important part of the designing is that selection of the size of the mirror as well as the display we have used the monitor

2.   Microcontroller Programming: Programming is required to train and run any digital source or digital devices. As our motive is to display the information on a mirror, we have to code program and for that we have chosen microcontroller program language, and we went with raspberry Pi than choosing any other microcontroller for its popularity and efficient functionality.

3.   Display Programming signal: This Show the user interface and language we used to design the   functional and more worth adding day's weather forecast weekly and daily and also shows the city of which we want to check the weather forecast.
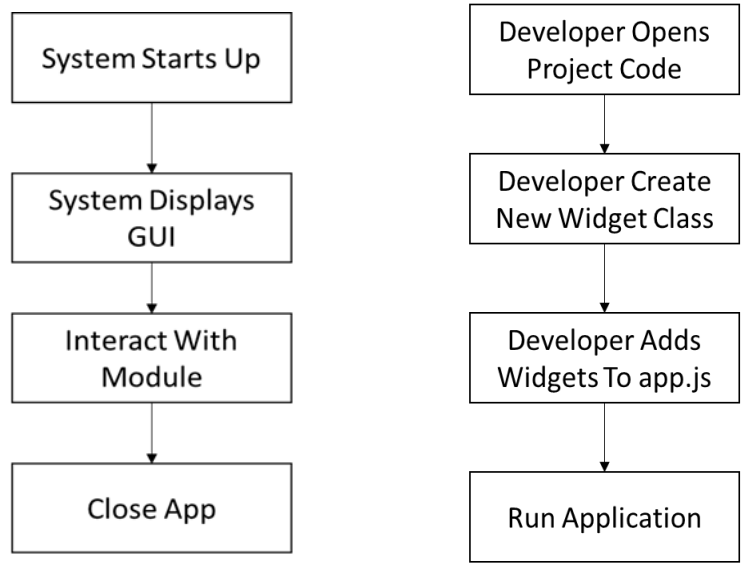
Activity Diagram For Consumer   Activity Diagram For Developer

Activity Diagram

V. APPLICATIONS

1. Clock: This module shows the current date and time. The information will be updated real time. It displays time in 24-hour or 12 hr. time format as per user need. The time zone used for displaying time is Asia/Kolkata.
2. Newsfeed: System also has capability to show the news feeds that is headlines of any current affairs that is running currently and shows important news and messages for daily life.

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. Weekly Schedule: our system will help the user to plan the weekly schedule for the user and help user to do work accordingly to that by informing them regarding to their schedule which will also get displayed on the screen.
5. Music player: User can access the music player by giving command to the mirror and can play the song according to the users need and choice.
6. Other applications: user can also add their favourite application according to their need on their screen like YouTube, Facebook, Messenger etc.

VI. 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 voice commands and Google assistant we need speaker.

VII. 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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