

Smart Mirror

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Abstract– by incorporating the technology in our life, we converted the normal mirror into smart mirror. The smart mirror contains features that helps human day to be organized. The main idea of the smart mirror based on communication with user by voice commands. It is compatible with google and amazon accounts. There is a website to help the user to use the smart mirror. In addition, we designed a user interface for first time using the mirror. The user interface helps the user to fill his personal information.

I. INTRODUCTION

The main idea of our smart mirror is to interact by taking voice commands, and display the features on the mirror screen. By introducing these modified features, people life will be organized. and reduced the human life pressure. The main features are improved on the mirror like time clock, which display it on mirror. Calendar, which show country, holidays on mirror and has reminder alert for upcoming personal events. Current weather and forecast weather that show weather, and give advice for best clothes to wear with respect to temperature, rain or fog density outside. News, which help the user to get the latest updated new from one or more magazine as user need.

There is additional features in the smart mirror useful for user. The first one is Spotify which play music from user's Spotify account either from playlist or for any artist you want. Water reminder feature is a helpful module to remind people for drinking water with systematic time as user need. Google fit for displaying life health from google fit application of smart watch. Prayer time feature displays the updated daily praying time and remind the prayer at each prayer time. Screencast feature used for casting (playing) the playing video on smartphone from you tube on the smart mirror.

There are three modules to make the features more helpful and easier to interact. The first module used is the voice command this module is helpful for giving mirror voice commands as in Spotify and news features for ordering them. The second module is Polly it helps our mirror for producing voices in English and Arabic. The third module is page selector module; it is important for all features for allocating them on the mirror screen and adding them in pages and turn the pages using the voice command module.

For some other features in smart mirror, we link it with a most public virtual assistant to users, which is Alexa. It used with clock, alarm, calendar and weather features.

II. FEATURES

The smart mirror contains eleven features [1], which are:

- 1. Clock**
The Clock is very important for everyone; it helps us to organize our daily life. You can know the time and date by voice as: For time say,

Alexa, what is the time?
For date say,
Alexa, what is the date?
- 2. Alarm**
You can set an alarm on the smart mirror by sound so that you will be notified at the exact time.
For alarm say,
Alexa, Set alarm at (alarm time, am or pm).
For alarm stop or snooze
Alexa... "Stop" or Alexa... "Snooze".
- 3. Calendar**
Calendar feature is responsible for country holidays and personal events. The mirror read the event at its instant time using Polly. Alexa sets event:
Alexa Command
Alexa ... Add an event
What day and time? At ...
What is the name of the event?
Ok will schedule it at Right? Right
- 4. Weather**
Weather feature display the current weather and weather forecast. Configured by apid key from open weather map and city name. Also by voice command by asking Alexa
Alexa Command:
Alexa.... What is the weather?
- 5. Weather Dependent Clothes**
Display the best clothes to wear with respect to weather outside.
- 6. News**
News is displayed on the mirror from any magazine user choose and you can ask the mirror to read three different news. The news is said in Arabic language using Polly module.
Voice commands:
Read the news
- 7. Spotify**
Spotify play music from Spotify account by voice commands
Voice commands:
Play... (Music name or artist)
Playlist... (Playlist name)
Stop
Next / Previous
Volume up/down
Set volume to ...% (0 to 100%)
- 8. Water Reminder**
Display words to remind you to drink water on the screen. Remind you by alert to drink water every 2 hours

9. *Google Fit*

Show your daily steps, Counts your daily goal (target) and Updated every 30 minutes.

10. *Prayer Times*

Display daily updated prayer times with Adzan alert. Configured by longitude and latitude that mirror located in.

11. *Screencast*

Casting the playing video on YouTube instead of smartphone.
Press on casting icon on smartphone
Select raspberry pi (smart mirror device)

III. SMART MIRROR MODULES

The smart mirror is built on four main modules that are:

1. *Page Selector*

The page selector module is a very helpful to organize the smart mirror features on the screen and easy to configure the position and visibility of any feature and to divide the features into pages and give each page specific name we have (First and Second) and control each page features.

Voice commands

For page 1:

Page “one” or Slide “one”

For page 2:

Page “two” or Slide “two”

2. *Voice Command*

Voice command module is used for giving the mirror some user's commands. This module helps two features in the smart mirror, which are Spotify and news. Voice command take voice signal from mirror's microphone and convert it into text. This text is broadcasting to all mirror features. The feature, which understand the command (text), will response with the order.

3. *Polly*

Polly module act as text to speech converter. It helps calendar and news features to response to user's commands. In news, Polly is said in Arabic language for reading the news. In calendar, it is said in English language for reading the events.

4. *Alexa*

Alexa is a virtual assistant technology developed by Amazon. Alexa supports many features in the smart mirror. It is used with clock, alarm, calendar, and weather [2].

IV. USER INTERFACE

The user interface (UI) is the point of human-computer interaction and communication in a device. This can include display screens, keyboards, a mouse and the appearance of a desktop. It is a way through it the user interacts with an application or a website. The growing dependence of many businesses on web applications and mobile applications has led many companies to place increased priority on UI in an effort to improve the user's overall experience. In our smart mirror, we will use keyboard and computer mouse as user interfaces to add his own information.

The user has input data is important to enter it in the smart mirror configuration file to display his personal information in the mirror. This makes mirror options customized by its owner. Therefore, we build user interface with mirror to make user able to enter his personal information and things he prefers like private ical format to display events, country, and location, types of news, and Spotify account and password [3].

V. WEBSITE

The main idea of having website for the smart mirror project is to aperiend for user and for product marketing. The website contains all information about smart mirror features. It contains part for voice commands used for ordering the mirror. Website contains our smart mirror video with experimenting all of its features [4].

VI. Conclusion

Our project concentrates on the home mirror and makes it smart mirror. The main purpose of the smart mirror is to use it as a hands-free product with an electronic display. When the voice enabled, the smart mirror used to view different kinds of information automatically. This information based on the list of developed and designed modules that interacts with user and acts as a personal assistant for users. The features in our smart mirror are able to make life more easily and more organized. It display the current date, time, and set the alarm you want. Can add events, show the current weather, offer Clothes depending on the weather forecast. Mirror can display the news, play music from the Spotify account of the user, and remind people for drinking water. It display google fit daily step count, display prayer time, play the video currently playing on YouTube from the phone on the smart mirror. All of the above- mentioned tasks performed with the help of the Raspberry pi 4.

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