

WITTY MIRROR ORGANIZER

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Abstract-

The Internet of Things (IoT) describes the network of physical objects that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet. These devices range from ordinary household objects to sophisticated industrial tools. People need to be connected and they are willing to access the information easily.

Future mirrors are considered to be smart mirrors. It is a part of the connected world where it facilitates viewing news, temperature, weather and more information while looking and grooming ourselves in front of a mirror every morning. Hence in our proposed system, these kinds of mirrors allow us to receive news online and display it on the mirror screen. In addition to this it also displays current temperature, time and schedule. Therefore our system includes a raspberry pi 3, based processor with a display to view information, IOT based circuitry and temperature sensor integrated together.

A smart mirror is a device that functions as a mirror with additional capability of displaying multimedia data such as text, images, and videos. This device allows users to access and interact with contextual information, such as weather data, seamlessly as part of their daily routine

This project depicts the design and development of a smart mirror that represents an elegant interface for glancing information that receives online news and displays it using the Internet of things (IoT) circuitry. The goal of the smart mirror is to increase the user's productivity by saving time. The smart mirror provides the workplace's indoor environmental conditions and general notifications.

Keywords—*Smart Mirror, Raspberry PI, Artificial Intelligence, Weather, Time, News*

I. INTRODUCTION

We humans love new technologies that support easy access of any data ranging from personal data to complete complex data. On an individual level, there will be greater integration of technology with our physical selves.

For example, we can see devices that augment hearing and vision, and that enable greater access to data through our physical selves. The display can show the viewer different kinds of information in the form of widgets, such as weather, time, date, and news updates Smart Homes. One of the best and the most practical applications of IoT, smart homes really take both, convenience and home security, to the next level.

The Project has been developed with the idea of making consumer's homes smart and to look more attractive using the latest technologies by connecting the normal mirror with the Internet through Raspberry Pi's Wi-fi connectivity.

The Internet transformed our lives by connecting us more feasible to information and other people in the virtual world via the Internet. The current situation of innovation currently is to provide more information with less interaction to get it. The device that has been designed and developed is called the "Intelligent Mirror".

Nowadays, IoT is the major concept regarding all the devices and projects. The use of the internet can be seen everywhere. It is estimated that by the year 2020, there will be up to 21 billion devices across the globe connected with 'Internet of Things' means every man can carry 7-8 IoT devices which will be continuously connected to the Internet. Our lifestyle is all connected to the Internet.

In other words, the Internet has become the essential need of human life. The growth of IoT will result in accumulation of special data which will need to be processed and analyzed.

The Internet of Things offers limitless opportunities to enhance communication between devices and data sharing but this same feature makes it highly vulnerable from the point of view of security. It is a mirror that displays information such as news, weather, calendar and other things related to our needs.

II. SYSTEM DESIGN

On start, the raspberry pi loads the Operating System and directly runs the User Interface of the mirror.

A power saving mode is additionally provided to the mirror by attaching a ultrasonic range detector sensor on the highest of the mirror.

On fully loading the knowledge required the mirror no shows notification from different social sites as per the user has logged in.

The design of Smart Mirror is to perform certain functionalities. A flat LCD Monitor is used for mimicking mirrors and interfaces to display. A two-way mirror is placed on the LCD Screen and both the mimicking function as well as the newsfeed, date, time are shown on the LCD Screen (in the monitor). The proposed Smart Mirror enables us to access the different services and information. This design of Smart Mirror is used for the user interaction with the Mirror. Some of the related applications.

A smart mirror can easily be customized to include whatever information you want. There are many people online building custom modules and code to get smart mirrors to do different things.

This Smart Mirror is designed to mimic the natural mirror interfaces. A two-way acrylic mirror used for displaying the mirror and the regular functionality of the mirror. Flat LCD monitor is used for display which is powered by Raspberry Pi. The Smart Mirror has the functionalities of the modern-day smartphone applications implemented in form of the widgets. Some applications like Google Maps (Real-time traffic displaying), and date, time widgets (displaying date and time). It collects the data from the Internet. Weather widget (displays the weather). Location services (automatically or manually). The temperature widget (displays the temperature in Fahrenheit or Celsius). The complete system is designed according to the requirement of the user. Users can get the multiple updates of the News and public headlines with the Rich Site Summary (RSS) feed widget. Along with the features explained above and much functionality are present like event reminder, timer etc.

The main functional features and modules of the Smart Mirror were simulated and tested prior to the completion of the system. Each aspect constituted a test case for simulation of the Smart Mirror. The test cases were documented in a systematic manner and each test case contained the following fields of information - A serial number, the name of the functional module to be simulated upon, the description of the simulation, the input data and conditions for the module to be simulated upon, the output of the simulations on the module based on the input data and conditions, and a results section which indicated whether the particular simulation was successful, partially successful, or unsuccessful on the module in consideration.

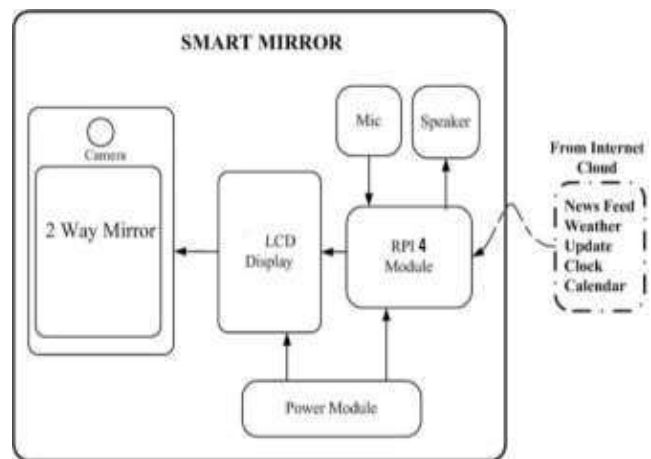
The smart mirror is composed of a Controller module, Display module, Authentication module and Speech synthesis module.

Controller module : Controller module is the brain of smart mirror which ensures normal operation of mirror parts using Raspberry pi 3.

Display module : For effective UI design One-way mirror and 15' inch lcd LG display combined with display module.

Authentication module : For face recognition uses Raspberry PI camera board.

Flow Chart:



III. THE DESIGN OF SYSTEM HARDWARE

A. Raspberry Pi 3

Raspberry Pi is a series of small single-board computers. With specs

1. CPU: Quad-core 64-bit ARM Cortex A53 clocked at 1.2 GHz.
2. GPU: 400MHz VideoCore IV multimedia.
3. Memory: 1GB LPDDR2-900 SDRAM (i.e. 900MHz USB ports: 4
4. Video outputs: HDMI, composite video (PAL and NTSC) via 3.5 mm jack.
- 5 Network: 10/100Mbps Ethernet and 802.11n Wireless LAN.

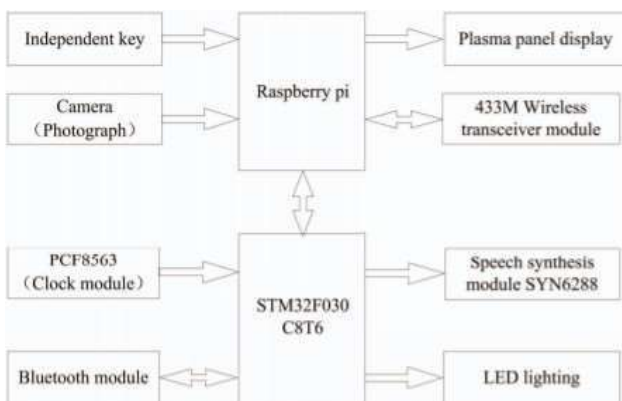


IV. THE DESIGN OF SYSTEM SOFTWARE

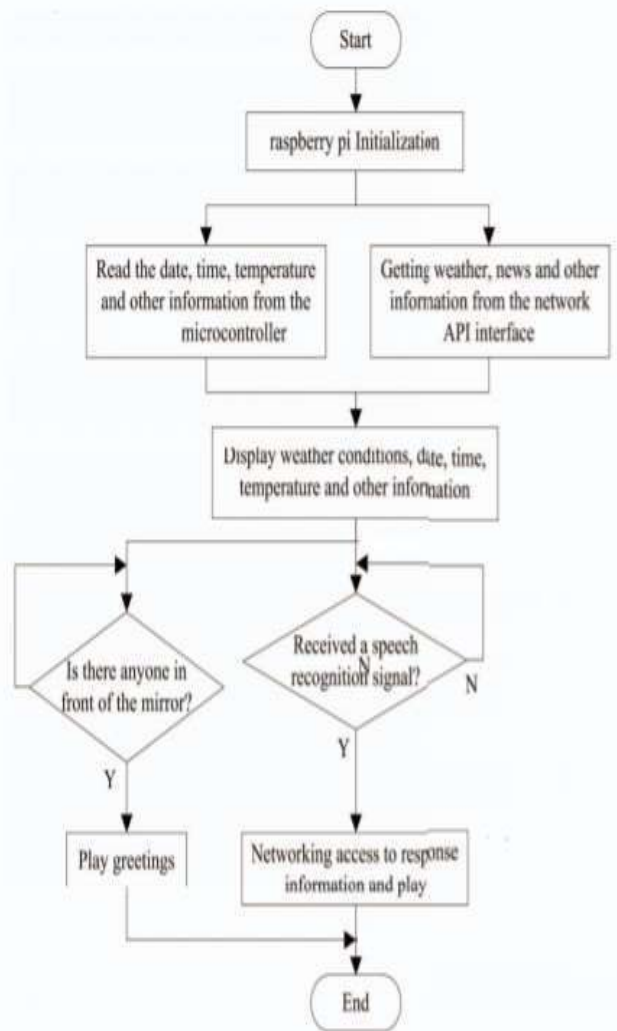
A. Raspberry pi program design:

Raspberry Pi OS is highly optimized for the Raspberry Pi line of compact single-board computers with ARM CPUs.

Raspberry pi main program is written using Python language. Python language can invoke various linux system software based on the network.



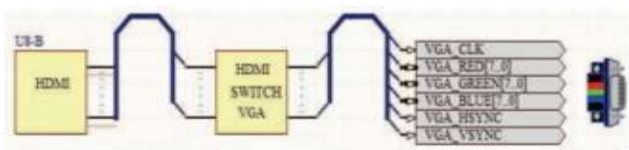
Raspberry PI main program flow.



B. Display Interface Circuit

The display function of the smart mirror is that Raspberry PI connect to 15' inch lcd LG display VGA port of display connected to HDMI to VGA transfer line

Converts Host HDMI output to VGA monitor.



C. Wireless transceiver module circuit

This module consists of Sending and Receiving module. Transmitting and Receiving module is controlled by the Raspberry PI host for WIFI call.

D. Speech Synthesis module Interface Circuit

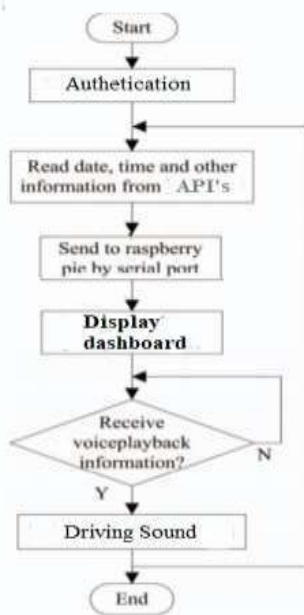
Speech synthesis module using speech synthesis chip through asynchronous serial communication mode to be related to text data synthesis received from Google API's

E. Authentication module Circuit

Facial authentication using Raspberry PI camera board sends data to the host for validation and provides access to user based profiles registered .

B. Program design:

Raspberry Pi configuration software using API's to read information like date, time, weather and news feeds displayed on display . Detect people based on authentication and greeting them. Also using Google API's voice assistance to send data to voice recognition information to user of raspberry pi through WIFI call to control speech synthesis module.



V. CONCLUSIONS

The Intelligent mirror has great potential to enhance “user experience” of accessing and interacting with information. This paper introduces a smart system which allows users to utilize a household object as an interactive interface providing customizable services. The mirror allows the user to access various notifications while on the go. Thus, saves a lot of effort for accessing the personal device like mobile, laptops for getting the updates like news, weather, etc. The mirror is eventually named as Intelligent Mirror, since it has various proposed features such as face and voice recognition features which makes it more user friendly and highly innovative.

A service-oriented architecture has been adapted for the development and deployment of the various services, where the mirror interface, the news feeds all use Web service communication mechanisms. By utilizing sensors, we can reduce the power consumption since the mirror will display information only in the presence of a human. The future prototype is ripe with potential and probably robust in terms of functionality.

VI. REFERENCES

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