Intelligent Mirror For Today's World

Mr.Muthal Aditya[1], Miss.Sangale Punam[2], Miss.Shinde Tejaswini[3], Miss. Songire Pranali[4]
[1, 2, 3, 4] Matoshri college of Engineering and research center, nashik.

Abstract- *This project presents the design and the development of an interactive multimedia futuristic Intelligent Mirror with artificial intelligence for the ambient home environment as well as for commercial uses in various industries. The project which would collect real world machine data and the data would be transmitted from the machine and would be managed by the Raspberry Pi. The Intelligent Mirror implemented as a personalised digital device equipped with peripherals such as Raspberry PI, microphone, speaker ,mike, LED Monitor covered with a sheet of reflective one way mirror provides one of the most basic common amenities such as weather of the city, latest updates of news headlines, and local time corresponding to the location. Using speech processing techniques the Intelligent Mirror therefore interacts with the user through verbal commands, functions and listens to the user's question and responds them adequately.*

Keywords- Intelligent Mirror, Raspberry PI, Artificial Intelligence, Weather, Time, News.

I. INTRODUCTION

Everyone knows what a mirror is. It is an object found in most people's homes. In mirrors we see our reflections. But what happens when you combine the idea of a mirror with technology? What possibilities are there and how smart could a mirror be?

The device was to go beyond an ordinary mirror, to have a screen inside that you would be able to interact with by using voice commands, Smartphone and other technology. is a very broad area and I like every aspect of it so it was difficult to choose a specific area and I had many ideas. However, aIntelligent Mirror is a great combination of many things we have studied: web technologies, electronics, UI design, etc.

The device was to look like a regular mirror but would have a screen inside and you would be able to interact with it using voice commands, and Smartphone. The main features the Intelligent Mirror would have would be showing basic weather and time information, being able to add alarms, reminders or notes in a similar way we stick post-it notes on a fridge. We would also be able to play music in some way .The project has a very broad scope covering some current popular topics in the IT sector such as the Internet of Things, Maker culture and home automation.

we proposed and developed a futuristic Intelligent Mirror using off-the-shelf technologies that provide personalized data feeds, camera feeds, and other services in addition to controlling the smart appliances in the household. The mirror can be used as a traditional mirror that essentially provides a sense of natural interaction with the surrounding environment. Second, we provide an easily extendable framework for integrating smart appliances and services with the mirror interface in order to automate the home environment.The project which would collect real world machine data and the data would be transmitted from the machine and would be managed by the Raspberry Pi.

Along with the development of technology, various information can be found easily and the emergence of the concept of Intelligent Mirror Smart Home has become increasingly widespread. The Intelligent Mirror system which is based on the concept of Internet of Things (IoT) is developed specifically to allow users to manage and control house appliances through voice recognition.

II. PROBLEM STATEMENT

The goal of the Intelligent Mirror is to provide an access pointfor a person to receive all the information that could affect how they planfor the day. For getting news updates and weather updates, a person will always have to switch on the television which is time consuming. To get rid of these problems, the concept ofIntelligent Mirror is introduced.Allthe necessary information like weather and news can be accessed from one location. The problem of a secureduser authentication technique can also be corrected by thissystem. Through the use of Monitordisplays and aoneway mirror, weather, time and date, news.

III. HARDWARE REQUIREMENTS

- Raspberry pi
- LED Monitor
- Acrylic Mirror

a) Raspberry Pi

Quad Core 1.2GHz Broadcom BCM2837 64bit CPU 1GB RAM BCM43438 wireless LAN and Bluetooth Low Energy (BLE) on board 40-pin extended GPIO (General purpose I/O) 4 USB 2 ports 4 Pole stereo output and

composite video port (analog video transmission) Full size HDMI (High Definition Multimedia Interface) CSI (camera serial interface) camera serial interface) display port for connecting a Raspberry Pi touchscreen display Micro SD port for loading your operating system and storing data Upgraded switched Micro USB power source up to 2.5A.

b) LED Monitor

An LED display is a flat panel display, which uses an array of light-emitting diodes as pixels for a video display.

Their brightness allows them to be used outdoors where they are visible in the sun store signs and billboards, and in recent years they have also become commonly used in destination signs on public transport vehicles, as well as variable-message signs on Highways.

c) Acrylic Mirror

It's really magic mirror as it has reflective surface at one side and also its transparent for light with good intensity.

d)Camera

Used for security purpose and face recognition.

e)Microphone

Used for voice input to the Intelligent Mirror.

IV. SOFTWARE REQUIREMENTS

1.SDFormator

SD Formatter is designed specifically for SD/SDHC/SDXC memory cards. The utility differs from operating system format utilities that are meant to format a variety of storage media SD Formatter works with a number of Windows and Mac operating systems. It can be used with the following devices Secure Digital slot on computer – Important for SDXC card users: contact your computer manufacturer to confirm the SD slot on your computer is compatible with SDXC cards and for availability of the SDXC driver.

USB Secure Digital memory card reader PC Card, Card Bus or Express Card SD adapter

2.Ehcher

Etcher is a software which is used to burn the OS image to make it compatible to install into storage disk, here we installed raspbian.

3.RaspbianOS

V. BLOCK DIAGRAM

The user stand infront of intelligent mirror then view is on of mirror. after the raspberry pi3 fetch the data from cloud and data transfer to the mirror. The phase involves the physical parameters which includes weather,date,time. Through the Raspberry pi3 fetch the data from cloud Database.

The processing phase takes place in the cloud. The cloud consists of a Web Server, a database

where the sensed data is maintained and a decision logic which takes decisions based on the sensed data. web cam capture the images of person and authenticate the person. mike and speaker used for the voice recognition**.**The proposed system is to design an interactive futuristic Intelligent Mirror with artificial intelligence using Raspberry Pi.

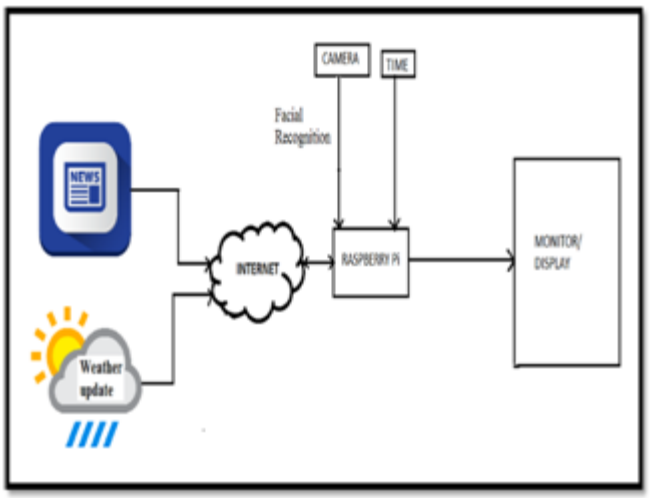

Figure 1. Block Diagram of Smart Mirror

In the proposed system, the ability of the system to recognize face and provide details of the same, incorporates the theory of artificial intelligence.Interactive computing, with wirelessly connected embedded devices that are being used in various day–to–dayactivities. Based on this technology, many devices/products are now emerging and with thisintelligence it is providing comfortable, secure and convenient personal services everywhere. The project aimcreating a smart

systemfor users where it detects face using OpenCV. The mirror will recognize user's face and it will be processed using Raspberry Pi and display user's feeds.User's image will be stored in database.

VI. SYSTEM ARCHITECTURE

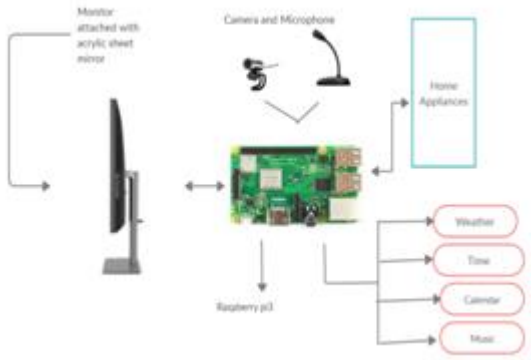

Fig 2. System Architecture

VII. SYSTEM ANALYSIS

The proposed Intelligent Mirror implementation takes advantageof the advances in the field of system on chip (SOC) based boards using a Raspberry Pi version 3. Raspberry Pi is a low cost single board minicomputer that encloses many of the main components of a complete computer, being capable of running the Linux operative system at a low-power consumption level.its open hardware vision and its potential, Raspberry Pi is more up-to-date than ever for the design of smart devices, and its supporting community of contributors is one of the main reasons for this growing popularity. It is an open source initiative for creating customised Intelligent Mirrors specially designed for the Raspberry Pi board.The main feature of the Intelligent Mirror platform is its modularity which simplifies the built of personal solutions allowing creators to incorporate new functionalities through programming independent modules to be integrated in the project core. This core is based on Electron, a framework for the creation of web or desktop applications using JavaScript, HTML and CSS that runs through Node.js.Using the provided tools several modules have been de-signed and programmed to fit in the desired concept of health promotion in workplace, focusing specifically on office environments.This concept involves: firstly, a multiuser system to allow every worker to have access to their personal services and track their daily activity while displaying general information. Secondly, a Bluetooth service to synchronise with the workers' activity tracking wearable devices and measure their physical activity. Thirdly, an interactive voice-controlled interface leveraged on the surface of the mirror, providing interactive capabilities.

VIII. OPERATIONS PERFORMED BY INTELLIGENT MIRROR

1) Natural Mirror Interface:

Its works as a plane reflective mirror and can be used as the one to do our daily work in front of. This is because of the high concentration of aluminum content on one side of the Acrylic mirror.

2) Real Time Data Display System:

It is used to display the current date, time, weather updates, current news feed, scheduled reminders and can also keep in track of your daily activities.

3) Personal Assistant:

It updates one's personal messages, emails, social media notifications, meetings and appointments, to do list and also stores down private information provided by the user. It basically identifies the user using face

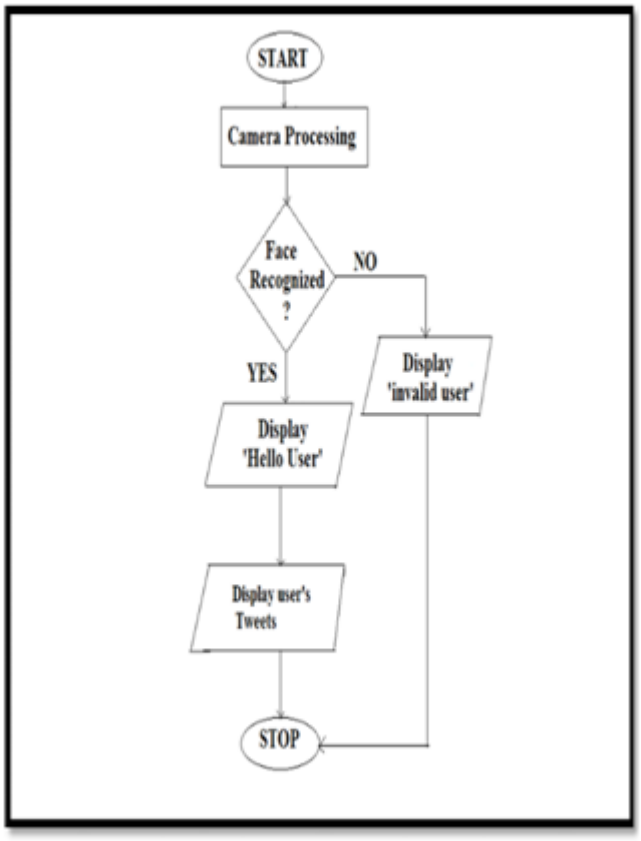

Figure 3. Flowchart of Face Recognition

recognition technology to provide the personal information to the particular user.

4) AI Voice Controlled Interaction:

It can interact with the user and can provide all the necessary information to the user by accessing the information through internet. It also includes inbuilt voice commands for daily interactions.

5) Smart TV:

It can access and stream media from various platforms such as Youtube.

7) Security System:

It can have an access to security cameras and display it to the user.

XI. CONCLUSION

The Intelligent Mirror can also be implemented in various industrial and home applications. Hence IoT proves out to be an important technology for making household appliances smart. The facial recognition technology used in the Intelligent Mirror proves out to be an important means of security. Intelligent Mirrors can be connected to home appliances and smart phones. The mirrors can detect face and provide access to personalized services. The mirror can also be implemented to recognize emotions. With the help of emerging technologies, Intelligent Mirrors can be advanced to touch screen modes. The mirrors can be better enhanced to be deployed in beauty parlors, cloth shops, hotels, etc. with better advancements in technology, mirrors can be used in many other fields.

REFERENCES

[1] PiyushMaheshwari, ManinderJeetKaur, SarthakAnand, “Intelligent Mirror: A Reflective Interface to Maximize Productivity”, International Journal of Computer Applications (0975 –8887), Year: May-2017.
[2] Govinda K., Saravanaguru R.A.K, “Review on IOT Technologies”, International Journal of Applied Engineering Research ISSN 0973-4562 Volume 11, Number 4 (2016) pp 2848-2853, Year: 2016.
[3] Jane Jose, RaghavChakravarthy, Jait Jacob, Mir Masood Ali, Sonia Maria D’souza, “Home Automated Intelligent Mirror as an Internet of Things (IoT) Implementation”, International Journal of Advanced Research Trends in Engineering and Technology, Year: February 2017.
[4] ShervinEmami, ValentinPetrutSuciu, “Facial Recognition using OpenCV”, Journal of Mobile, Embedded and Distributed Systems, vol.
April 2016.