Smart Mirror

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COMSATS UNIVERSITY ISLAMABAD,

ATTOCK CAMPUS – PAKISTAN

SESSION 2018-2022

Smart Mirror

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DEPARTMENT OF COMPUTER SCIENCES

COMSATS UNIVERSITY ISLAMABAD,

ATTOCK CAMPUS – PAKISTAN

SESSION 2018-2022

UNDERTAKEN

We certify that this is my/our own work. The work has not, in whole or in part, been presented elsewhere for assessment. Where material has been used from other sources it has been properly acknowledged. If this statement is untrue, we acknowledge that we will have committed an assessment offence and shall be liable to punishable action under the plagiarism rules of HEC.

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FINAL APPROVAL

Certified that we have read this project report submitted by Mrs. (Hala Ali,Laraib Un Nisa) and it is, in our judgment, of sufficient standard to warrant its acceptance by Department of Computer Science, University of Wah, Wah Cantt, for the (BS/MSc degree) in Computer Science.

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   (Supervisor Name)

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   (Chairperson Name)

4. Dean/Director _____

   (Dean/Director Name

DEDICATION

Every challenging work needs self-effects as well as guidance of elders especially those who were very close to our hearts.

We dedicate all of our efforts to beloved

ALLAH (s.w.t)

The creator, a source of inspiration, wisdom, knowledge and understanding for us.

Prophet Muhammad (PBUH)

A great Teacher, mentor and inspiration for us in each and every field of life.

Father and mother

Whose affection, love, kindness, and prays make us able to get such success and honor in the life.

Teachers

For always believing in us, inspiring us, and encouraging us to reach higher in order to achieve our goals.

Acknowledgements

In the name of Allah, the most caring and the most compassionate. We would like to thank our relatives and friends who kept backing us up in all the times.

We would also like to thank Sir Jamal Ahmed for his guidance to work hard. We have found him very obliging while discussing the amendment issues in this essay work. His censorious comments on our work have made us think of new ideas and techniques in the fields of amendment and software simulation. We have found him very helpful in the discussion related to our project.

We are very thankful to the Allah Almighty who provides all the assets of every kind to us, so that we make their proper use for the advantage of mankind. May he keep providing us with all the assets, and the advice to keep helping the humanity. I am grateful to the God Almighty who gives all the resources of every kind to us, so that we make their proper use for the benefit of mankind. May Allah swt keep providing us with all the resources, and the guidance so that we keep helping the humanity with our work. Ameen.

PROJECT BRIEF

PROJECT NAME	SMART MIRROR
ORGANIZATION NAME	NILL
OBJECTIVE	The aim of the smart mirror is to provide an easy way to information service
UNDERTAKEN BY	HALA ALI (SP18-BCS-023) LARAIB UN NISA (SP18-BCS-008)
SUPERVISED BY	MUHAMMAD JAMAL Lecturer Computer Science CUI , Attock Campus
STARTED ON	1st March, 2021
COMPLETED ON	/* END DATE */
COMPUTER USED	ACER,HP
SOURCE LANGUAGE	JAVA
OPERATING SYSTEM	Window 10
TOOLS USED	Android Studio, Firebase, Hardware

Abstract:

Each day our day starts by watching ourselves in any event once in reflect prior to leaving our homes. We collaborate with it mentally to discover what we look like and how our clothing is. Brilliant Mirror or Magic Mirror is one of the uses of Raspberry Pi. A PC screen inserted in reflect looks exceptionally modern. The Raspberry Pi stays at back scenes and controls the information showed on reflect. While taking a gander at reflect you can view at different warnings from social locales too news, climate figure and more things. Our item, the Smart Mirror, looks to fill the requirement for an adaptable, detached presentation of data in the home, to have ordinary data from the opportunity to arrangement updates. This project consist of hardware which presents the design and the development of an interactive multimedia futuristic Smart Mirror for the ambient home environment as well as for commercial uses in various industries. The project which would gather true machine information and the information would be communicated from the machine and would be overseen by the Raspberry.

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Chapter 1

Introduction

1.1 Introduction:

In today's society, data is accessible to us initially through our telephones, our workstations, our work areas, and then some. Be that as it may, an additional degree of cooperation is needed to get to the data. As technology develops, innovation ought to become further constantly away from the conventional style of cooperation with gadgets. Previously, data was transferred through paper, at that point through PCs, and in today's day and age, through our telephones and numerous different mediums. Technology ought to turn out to be more coordinated into our lives – more consistent and more imperceptible. We desire to stretch the limits further, into what's to come. We propose another basic method of interfacing with your morning paper.

We present our thought, the Smart Mirror, data initially. Our framework plans to convey our data rapidly and serenely, with another cutting edge stylish. While current apparatuses require contribution through modules, for example, consoles or contact screen, we desire to follow a model that can work simply.

Keeping in view the importance of mirrors in our daily life, we thought of constructing a smart mirror that would be of great help in the near future. It's a two faced mirror that would be monitored through mobile phones and it will display important happenings. Through an ordinary thing like mirror we can convey information that would be great. We are developing this device that can function both as a mirror and an interactive display displaying multimedia content such as time, date, weather and news simultaneously.

We try to convey our data during our morning schedule and for the duration of the day, when taking out your telephone isn't generally conceivable. This will take into

Account a bigger crowd base, as the normal buyer these days desires to achieve errands with insignificant dynamic connection with their received innovation. This thought has numerous future applications, like combination with new virtual or enlarged reality gadgets, or improving on buyer individual media sources.

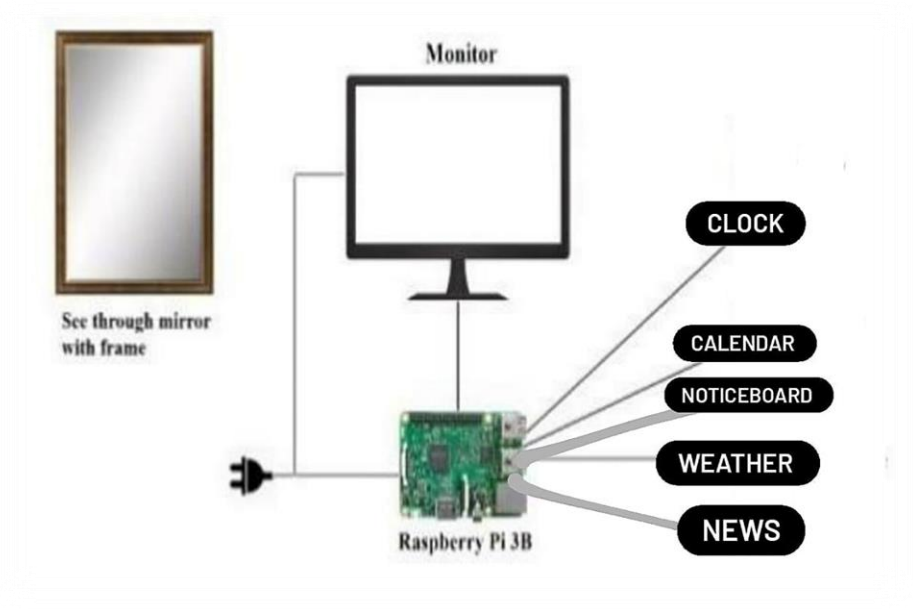

Figure 1.1: Working Principle

https://www.ijcaonline.org/archives/volume180/number16/kafi-2018-ijca-916359.pdf

Figure 1.1 shows the complete working principle of hardware. Introduction and timeliness are two of the most esteemed characteristics in current society. Be that as it may, it tends to be hard to adequately get ready for the afternoon while remaining learned about current issues and still keep up a convenient timetable. In the morning, it is basic to get ready for the day before a mirror, which is frequently a moderate measure. Furthermore, factors, for example, the current climate conditions can impact how an individual plans for the afternoon. Finding an effective method to check all the variables that can influence how an individual plans for the afternoon

While additionally not antagonistically influencing the undertakings that are acted before a mirror can be a test. The objective of our undertaking was to make an item that will give brisk and simple admittance to the time, news, and climate while at the same time permitting an individual to experience their morning schedule. Our item should upgrade profitability while giving a practical and pleasant client experience.

1.2 Project Background

The primary objective of this project was to build up a shrewd mirror gadget just as a working framework to run on comparative gadgets. The gadget was to appear as through a customary mirror yet would have a screen inside and you would have the option to collaborate with it utilizing voice orders, hand signals also, cell phones. The working framework would uphold running applications and would give a basic API to third-party engineers to make their own applications for the Smart Mirror. The fundamental highlights keen the Mirror would have shown fundamental climate and time data, having the option to add alerts, updates.

The programming should have been intended to be measured and responsive to fit diverse equipment. With the undertaking we needed to get familiar with a great deal about the Raspberry Pi as it was the first occasion when we utilized it. Up to now there have been numerous individuals who have constructed Smart Mirrors however as we would like to think they need to be more efficient. The undertaking intends to change this by allowing the client to collaborate utilizing unique Implies. It will be one of the principal Smart Mirrors you can cooperate with and furthermore one of the first to allow you to introduce applications.

1.3 Internet of Things

The Internet of Things is an idea characterized as an organization of associated actual items. It's frequently seen as the following stage for the web. As of late it has acquired a ton of ubiquity foreseeing that later on most regular articles will be associated with one another and will actually want to cooperate sagaciously. The Smart Mirror will in the long run become one of these associated objects in our families and looking at this logically having the option to speak with other objects the possibilities become endless.

Figure 1.2 Futuristic Smart Mirror

https://www.researchgate.net/figure/Smart-Mirror-displaying-temperature-date-time-and-news-feed-The-output-of-the-Smart_fig1_328433558

Figure 1.2 shows Futuristic Smart Mirror, it is the capacity to show helpful data without expecting to open applications or do anything. You just gander at your shrewd mirror and the data is there. For instance, envision the mirror in your restroom is a keen mirror.

1.4 Motivation and Scope

At present, smart mirrors appear to have gotten an immense portion of the extravagance markets in view of the significant expense of the gadget. As per a review, it tends to be assessed that this gadget is catching the eye of numerous individuals who may be keen on getting one for their own home later on. As indicated by experts, each house will have a keen mirror at some point or another, in light of the fact that the expense of a typical mirror will before long be near a

savvy reflect in the following scarcely any years. Also, subsequently, everybody will favor having an innovative mirror as opposed to having a typical mirror at a similar cost. This figure shows our motivation towards this project.

1.5 Features

Following are the features of Smart Mirror:

- Clock:

  The clock is one of the less intricate pieces of this errand and we need it to be as flexible as could sensibly be normal. The customer will have the choice to pick the territory of the clock to arrange their necessities and needs.

- Weather:

  The atmosphere application will show basic atmosphere information including the temperature at your current region close by the high, low, and probability of precipitation

- Calendar:

  The timetable will be completed as a once-over of events for the current day. An instance of this can be found in the Day viewpoint on Google Calendar. The events on the timetable will be revived hourly to ensure the customer is reliably excellent on their events.

- News:

  To outfit the customer with two or three news events, an essential news source will be appeared to give three highlights from world news. In the wake of examining extraordinary unmistakable news channel APIs, we have decided to use CNN's World News RSS channel.

- Noticeboard:

  The mirror can be utilized for showing different scholarly notification in the school. The item is connected with the android gadget of the head so he can change the notification and data as and when needed to be shown. These notification are shown by different time allotments.

1.6 Goals and Objectives:

- As innovation progresses, we keep on discovering an ever increasing number of employments for it that would already be incomprehensible.
- Initially, innovation was principally helpful for performing assignments people battle with, yet today it is utilized in even the most ordinary assignments trying to streamline our lives.
- With the mechanical upheaval, we have had the option to spare time in various manners; be that as it may, as media utilization has expanded, we additionally lose time.
- One way innovation has been actualized to spare time is by incorporating PCs into various components in our home, in this way making "Brilliant Home" gadgets. The "Brilliant Mirror" venture depends on this idea.

- One of the prime targets of the mirror is to be as easy to understand as could reasonably be expected and to give various choices and adaptability to various clients.

1.7 Tools and Technologies:

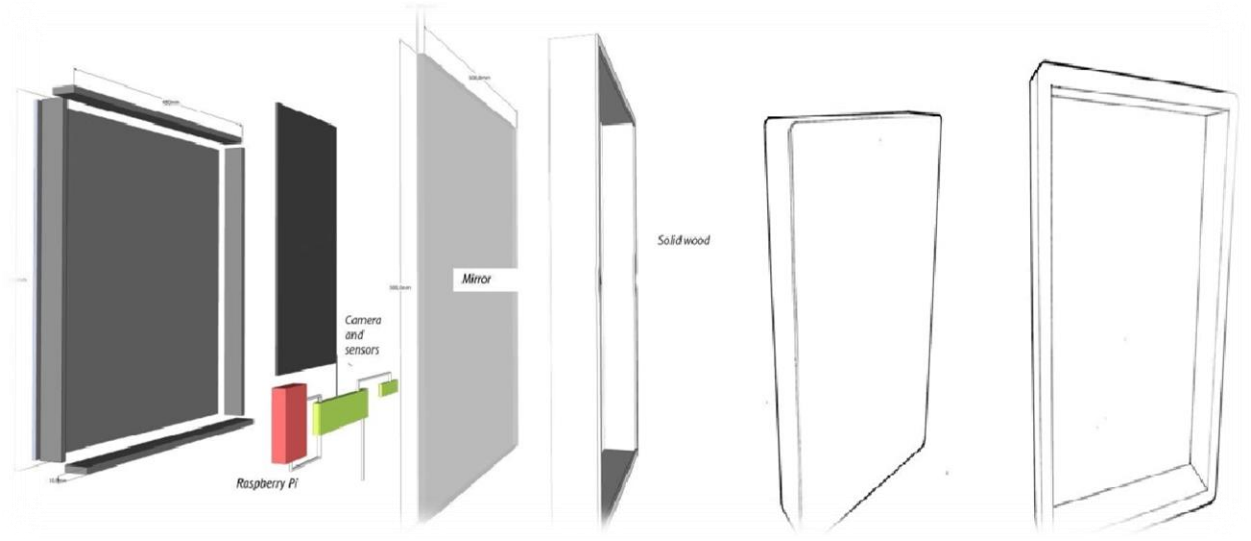

Figure 1.3: Hardware Components of Smart Mirror using Raspberry Pi

https://www.semanticscholar.org/paper/Smart-Mirror-Design-Powered-by-Raspberry-PI-Mohamed-Wahab/6599a50121f4cfb085b7f8155365724caf5dfab2

Figure 1.3 shows the tools and technologies that will be used building this Magic Mirror, list of those tools are mentioned as below

Smart Mirror consists of following tools and technologies

- A Raspberry Pi 3.
- A screen / monitor.
- A two-way glass reflect.
- A mouse.
- A Frame.
- A keyboard.

- A Micro SD card.
- USB-C.
- HDMI Micro

Chapter 2

Literature Review

2.1 Literature Survey

In 2003, Phillip uncovered their Mirror TV that was constructed utilizing the very rules that of brilliant mirrors. Their item was a typical TV that was put behind a two-way reflect so the TV would show up as a reflect when turned on and as TV when turned on. They likewise had a choice to have the mirror be bigger than the TV. A use model introduced by Phillips was to have the kids watch kid's shows while brushing their teeth simultaneously. This mirror is more in accordance with the keen mirror we've come to know today. The motivation behind this paper is to explore possible utilization of shrewd mirror in home climate also, to encourage the client's regular day to day existence. The keen reflect takes voice orders as contribution to give reaction also, Sonus is a discourse to message library that can rapidly what's more, effectively add VUI (Voice User Interface) to any equipment or programming.

2.2 Related Work:

Work According to examine, there are various different and entrancing approaches to building a smart mirror. A part of the plans are available on the market while others are basically models or Do-It-Yourself (DIY) adventures made by enthusiasts for their own use.

1.The Cyber texture Mirror [1], made by James Law, shows basic information, for instance, date, time, and atmosphere. It moreover allows casual network integration, so the customer moves toward their social records regardless, when in bathroom. The mirror can be controlled either by the inaccessible controller or the adaptable application.

2. M. M. Yusri et al. was developer who created Smart Mirror system which enables the users to get access to the related information and also control all the lights of the house. It also enables to trace the related info like date, weather and warning traffic.

2.3 Features list and Existing Application

Table 1 Features list and Existing Application

Parameters	Paper1: Fatima Ok	Paper2:Murat Can	Paper3:HakanUcgun	Paper4: UgurYugec
Technology	Raspberry pi3	Raspberry pi2	Pineapple Pi	Raspberry pi3
Language	Python	Java	Python	GoLang
	Weather, News, Date, Time, Temperature	Weather, news, In built apps	Weather, News, Reminder	Weather, News, Inbuilt alarm, date time
Personal Assistant	Yes	Yes	No	No

Table 1 is showing the literature review on Smart Mirrors, names of developers and engineers with their related work. All of above Magic Mirrors were different with their features.

Table 2 Taxonomy Chart

	LIVE STREAMING	ALERT GENERATION	NET CONNECTIO REQUIRED	MUSIC PLAYER	SECURITY CONSIDERATION
SMARTMIRROR	NO	NO	YES	YES	NO
SMARTMIRROR WITH ASSISTANCE	NO	NO	YES	YES	YES
SMARTMIRROR VIRTUAL ASSISTANCE	YES	YES	YES	YES	NO

Table 2 shows Taxonomy Chart that is related to the literature review of the previous tool i.e. Smart Mirror that are made by different developers & engineers, all of them were different in features, as shown here some Smart Mirrors exists with Assistance, live streaming or some with music and so on. Literature survey is mentioned in above table.

How our smart mirror is different from others?

Perhaps, our smart mirror is not quite the same as others, in this way we have included the new valuable element i.e. Noticeboard. Noticeboard is the unique thing that we will introduce in our tool. Through this we are reducing Human Resource to Machine Resource. We can use it in the schools, universities and colleges. Theupside of this element is this that we can see significant dates, data, happenings and notification without burning through any time. As old advancements requires transformation of delicate duplicate notices to printed copy to see yet through this component we can without much of a stretch experience the notifications of

noticeboard all the more efficiently on a big screen .

Figure 2: Raspbian Magic Mirror

https://line.17qq.com/articles/uwsuwwrrx.html

Figure 2 shows Raspbian Magic Mirror that is built using the latest technology Rapberry Pi. Raspberry Pi is a progression of little single-board PCs created in the United Kingdom by the Raspberry Pi Foundation in relationship with Broadcom.

Chapter 3

Problem Definition

3.1 The Smart Mirror

The entire thought behind a Smart mirror is, it has two capacities. To start with, it acts like a customary mirror. You take a gander at the mirror and see your customary reflection. Second, it likewise shows content from behind the mirror. Both of these capacities is accomplished with a two-way reflect.

A Smart Mirror works similarly. At the point when a showcase is held behind a two-way reflect, the light from the presentation radiates through. There are a couple of various ways this should be possible utilizing either glass or acrylic sheets.

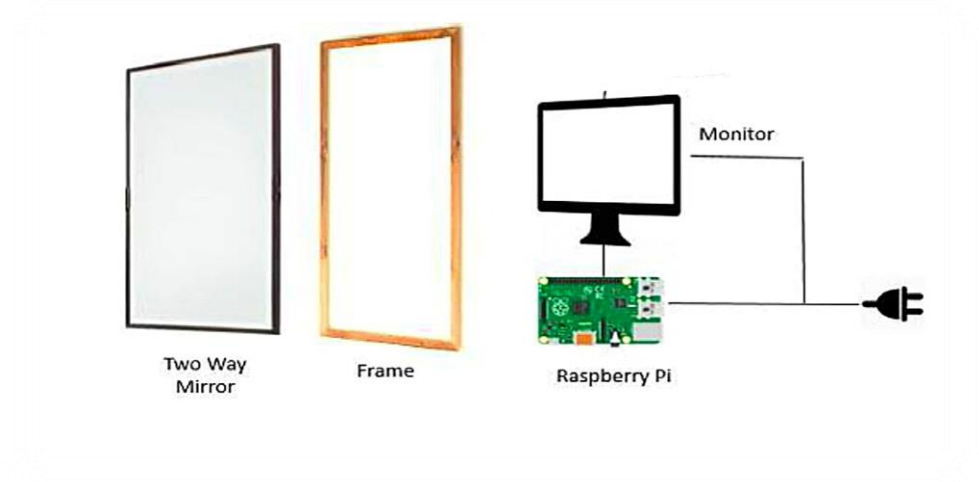

Figure 3: Smart mirror
https://www.researchgate.net/figure/Smart-mirror-component-design-and-architecture-Facial-Recognition-Algorithm-OpenCV-is-a_fig3_317060140

Figure 3 show the Smart Mirror, and all the tools that are used to make a successful tool. Two way mirror, and frame will be needed to adjust the mirror in it. Moreover the most important thing in whole tool, Raspberry Pi will be connected to monitor screen, giving the required power supply.

3.2 Other Complications:

In our quickly creating world, data is in every case directly readily available - on your telephone, on your PC, perhaps on your watch. Remaining associated with new data is both significant for amusement and day by day life. With such an assortment of choices, there is trouble in after the entirety of your information streams. Frequently, during your day, you may wind up in a position where it is awkward, or even unimaginable, to take out your telephone or PC and check the most current update. You can't focus on a more slow collaboration. You need a showcase to look at, with the data you need all set. Be that as it may, style are comparably significant as showing data. Keeping an additional PC in your washroom or lobby would be awkward, and would not fit well with the appearance of a cutting edge room. A smooth, basic showcase, simple for a normal purchaser, is a need in today's world.

3.3 The Tech Issue

Most have us have a wish to be proficient in our regular daily existences. We need to achieve undertakings effectively, we need to deal with our timetables, and most we just need to feel in charge of our lives as they unfurl. The coming of keen advances has assisted with filling this need, as regular articles are incorporated with progressively refined degrees of innovation. Nonetheless, there are as yet an immense measure of unexploited specialties in our homes where innovation could make our lives smoother and more advantageous, and it is this specialized issue that our bunch will address with our item, the Smart Mirror. The

family reflect is regularly underestimated in our every day schedule, however it's one of the items that remain to acquire the most usefulness out of a tech update. Mirrors are a point of convergence of our consideration pretty much each and every day, but we seldom actually contact them. This makes it an outstandingly simple center to show significant data on, from the hour of day to your #1 site's driving features.

3.4 Problem Statement and Proposed Solution:

The serious issue of any current mirror is showing simply the article before it or simply the human face without communicating with them. This undertaking is created with the expectation that individuals invest quality energy before the mirror.

The world we live in today has become a position of the fiercest rivalry, regardless of whether it is in sports, diversion, or the work market. To be the awesome, necessities to allot an exceptional measure of time to their objectives with little interruption. Be that as it may, the coming of data innovation will in general demonstration like a double edged blade with regards to work efficiency; some of the time one can utilize the simplicity of data to help them complete a task, yet it can likewise give huge interruption. At last one endeavors to be their best, however, the interference of staying aware of the everyday news, or getting ready for approaching climate can ruin one's advancement. Requiring some investment for the duration of the day for these different exercises can be amazingly diverting and extraordinarily cut into execution. Alongside data, individuals significantly esteem their appearance, spending roughly an hour daily

before the mirror during their morning and night schedules. This is a huge measure of time where significant things are occurring, yet the brain isn't working. It would be amazingly helpful to invest that energy on the telephone or PC finishing any of the undertakings referenced above, yet shockingly it is hard to do as such while getting ready for the afternoon. An item is required that can permit an individual to productively complete all they require to do to get ready for the afternoon, across the board place and at the same time.

3.4.1 Our Solution

Our answer is an open stage for discrete presentation advancement. We offer a stylishly satisfying mirror, with a secret keen presentation under. With a conventional showcase, the mirror can be worked to any measure so the data can be both in your face while showing you your face. Our item contrasts from the opposition with a simple to-utilize interface that is both basic for the normal client and open for the high level engineer. A smooth showcase gives all degrees of clients an advanced center of innovation for their own every day association, one which the two shows outwardly all the data you could need or need, and works with a basic cooperation that you could find a way into your day by day schedule. By making a stage open to adjustment, engineers will likewise be add new usefulness at their own speed. This will permit our showcase to be a tailor able and versatile stage. A web application gives the interface that the client sees and associates with. An on the web configurator will soothe the dissatisfaction and trouble of customizing your data, just as permit smoothed out improvement of new modules. Controlled by a little PC, the shrewd mirror will have extraordinary

potential for extension by engineers. As an open stage, shoppers and engineers will actually want to without any problem fabricate, adjust, and hack their savvy mirror to meet their own requirements. Our item will be a stage later on for IoT, interfacing your everyday mirror to your well informed world. The objective of the Smart Mirror is to give a solitary simple to get to area for an individual to get all the data that could influence how they get ready for the afternoon. Through the utilization of LCD shows and a two way reflect, climate, time and date, news, and other valuable data programmable through the Smart Mirror application would be accessible at a look. By incorporating these highlights into a mirror, which the vast majority will as of now be utilizing in their morning schedule, it is feasible to introduce this data so that it will consistently mix along with the assignment of early daytime preparing.

Chapter 4

Requirements Analysis

4.1 Major Requirements:

For investigation of execution two significant things are being thought of while sending the brilliant mirror.

• **Hardware Design:** It is a critical issue to be thought of while breaking down an equipment gadget. In front of a LCD screen, a two-way reflect is put. Accordingly, at the point when not presently being used, the framework can go about as a mirror, while when being used, the LCD projects through the mirror. The core of the item, the Raspberry Pi, is found behind the LCD board, associated with the LCD for visual show. The Raspberry Pi runs our product and we can additionally interface for web administrations to the Internet.

• **Software Design:** The project will likely make an open improvement stage, and all product parts should fit that objective. The product is intended to run on various stages and fit numerous kinds of showcases.

4.2 Functional Requirements

The accompanying prerequisites characterize the objectives of the venture laid out in the presentation. The practical necessities characterize highlights that should be accomplished for the task to be viewed as a triumph, while the non-useful prerequisites characterize how the utilitarian necessities are accomplished. Necessities are ordered into basic, suggested, and proposed. Basic prerequisites are totally important, suggested are exceptionally alluring, and proposed prerequisites are excessive but rather would be ideal to add. Plan requirements are measures that

the arrangement should stick to. The imperatives are set by the customer and are non-debatable. The accompanying necessities characterize the objectives of the task illustrated in the presentation. The utilitarian prerequisites characterize highlights that should be accomplished for the venture to be viewed as a triumph, while the nonfunctional necessities characterize how the practical prerequisites are accomplished. Prerequisites are sorted into basic, suggested, and proposed. Basic prerequisites are totally vital, suggested are profoundly attractive, and recommended prerequisites are excessive but rather would be ideal to add. Plan limitations are models that the arrangement should cling to. The limitations are set by the customer and are non-debatable

Useful Requirements, Non-Functional Requirements, Plan Constraints, Prerequisites Justification

4.3 Non-Functional Requirements:

Basic:

1. A more straightforward UI than a PC

2. Framework has great execution for clients

3. Framework keeps up great unwavering quality for clients

4. Show vanishes and turns into a mirror

Suggested:

1. A cordial UI that works by choosing modules

2. Framework recollects client name and can answer to client by name

Proposed:

1. Capacity to expand a reflection

Design Constraints

Limitation

1. Arrangement should be principles consistent for prominently upheld interfaces

2. Arrangement should be open-source

3. Framework should be available for specialists

4. Framework should be scale-capable, extensible, and extendable

4.4 Requirements Justification

Because of the restricted time and labor accessible for this undertaking, we couldn't carry out all prerequisites. Every necessity will be satisfied dependent on degree of need all together to make a base deliverable framework. The base framework for conveyance will fill in as a benchmark for additional discrete presentation advancement. As an open-source framework, Smart Mirror will be a stage for designers, programmers, and creators. Here, engineers will be the principle focus as they will actually want to add extra highlights to the extendable and extensible framework. Adding suggested highlights will improve ease of use and usefulness for programmers and creators. A more easy to understand framework will permit more noteworthy admittance to the stage for the public. Progressed highlights, for example, elective info techniques are critical for long haul convenience, yet were

excessively hard to carry out and would have required as well much extra examination.

4.5 System Architecture and Features:

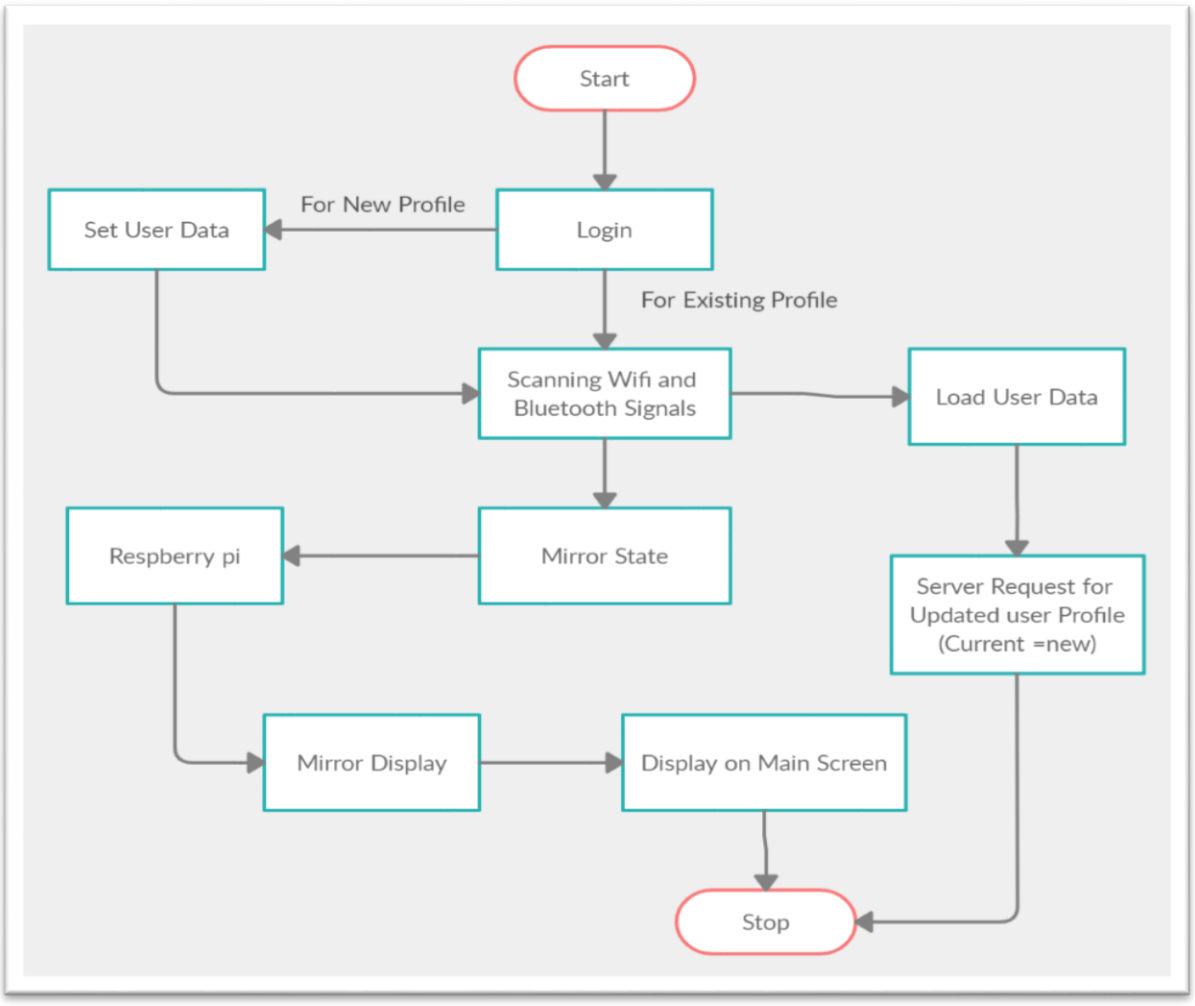

Figure 4.1: System Architecture

Figure 4.1 shows the flowchart that is showing the overall working and complete architecture of the system. The features plot underneath were chosen to feature the task's plan and Targets.

Highlights execute goals and details identified with both equipment furthermore, programming. The keen mirror will be fuelled by a little PC housed inside the mirror itself. He shrewd mirror is will associated with a 32 inch show, estimated slanting set in a picture direction. This showcase will be mounted behind a one way reflect.

- The client will have the option to interface with the savvy reflect by means of voice orders subsequently the mirror will execute a type of voice acknowledgment programming which will go about as the essential methods for association.
- While it is running, the keen mirror will show industrious applications by any means times. The choices will incorporate a clock, schedule, news channel, climate, and music player.
- The mirror will permit the client to tweak which of the relentless applications are available when the mirror is on.
- The savvy reflect will have the choice to give sound yield through speakers housed inside the edge or outer speakers to give sound yield.

4.6 Use Case:

The following are a couple of utilization cases for our foundation. Use cases are instances of how our framework is to be utilized. The fundamental entertainers of our framework are the purchaser, who intends to connect with gadgets, and the engineer, who intends to make new gadgets.

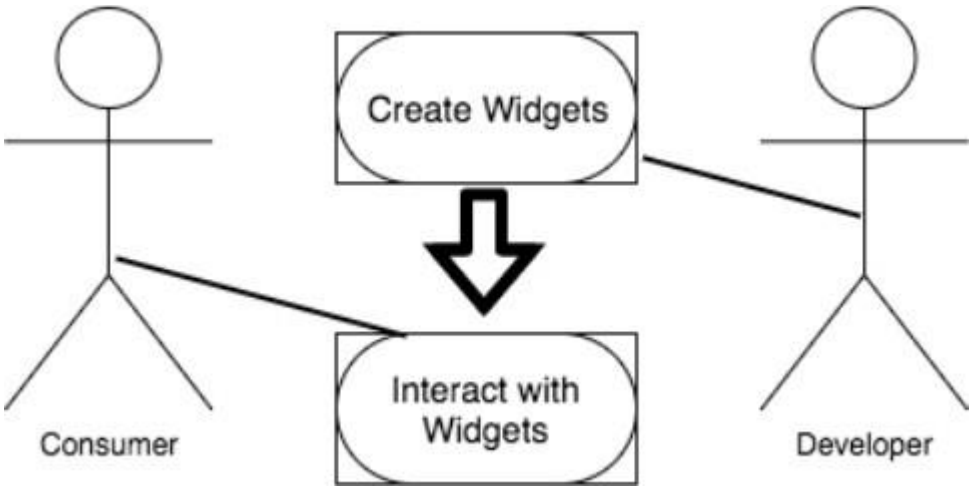

Figure 4.2: Use Case for Project.
https://ece-eee.final-year-projects.in/a/2926-smartmirror-a-glance-into-the-future.html

Figure 4.2 shows the presentations of our utilization case graph for our framework. We can get to know that through our project Smart Mirror, the developer will be responsible for creating the widgets and so that consumer/user will interact with those widgets

4.7 Activity Diagram:

The overall work-stream of the organizer can be graphically addressed in this below activity diagram.

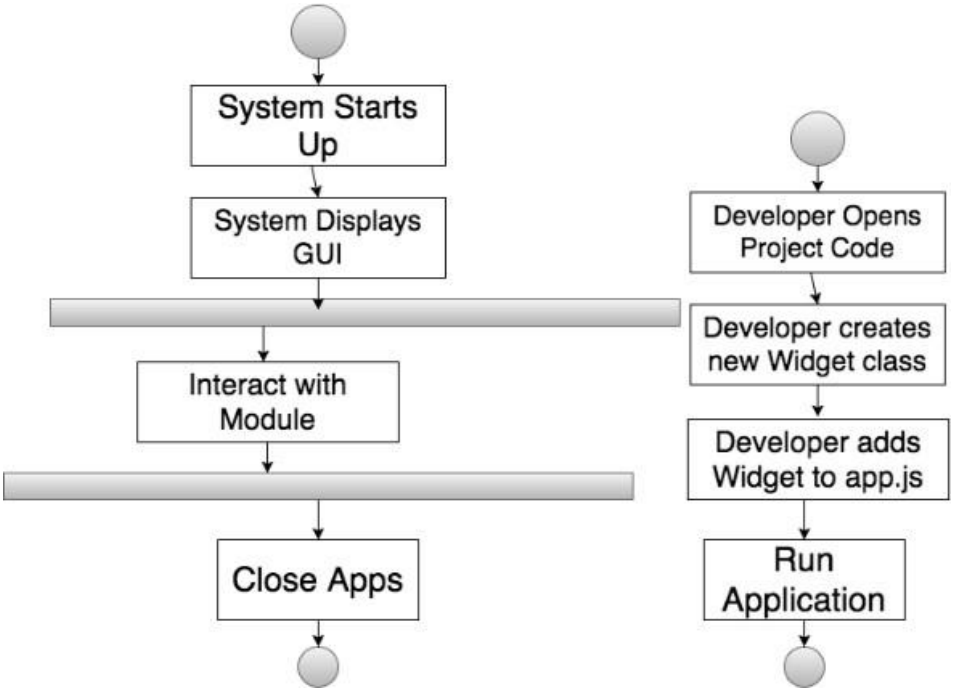

Figure 4.3: Activity Diagram for Consumer (left) and Developer (right).
https://ece-eee.final-year-projects.in/a/2926-smartmirror-a-glance-into-the-future.html

Figure 4.3 the graph shows the work stream for every single normal client. The framework will stack the client GUI. The client is then ready to connect with chosen modules, or open new modules. The overall work-stream of the organizer is graphically addressed in this above activity diagram.

4.8 Block Diagram:

Following figure shows the block diagram of our tool “Smart Mirror” that’s built using the technology of Raspberry Pi.

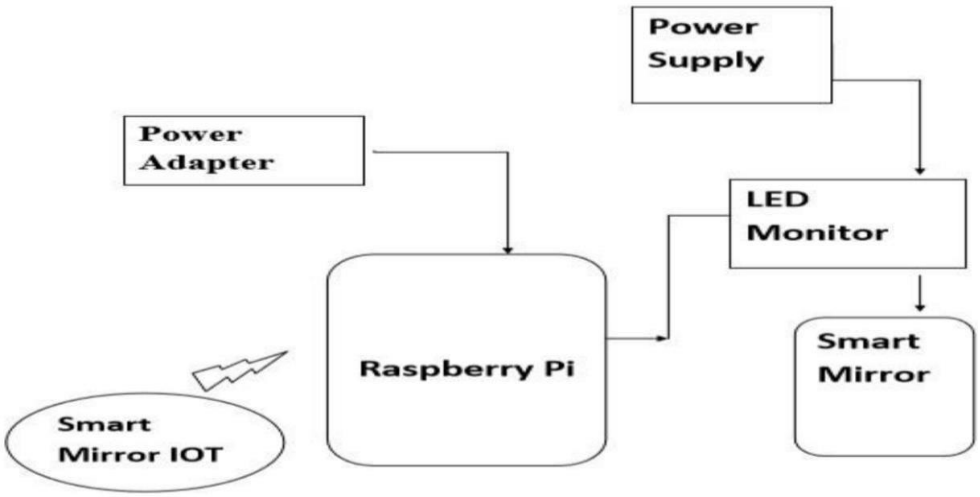

Figure 4.4: Block Diagram

http://ijirt.org/master/publishedpaper/IJIRT147730_PAPER.pdf

Figure 4.4 shows the block diagram of Smart Mirror that is built using the latest technology 'Raspberry Pi', this diagram explains to allow Raspberry Pi to start working first its needed that it must be connected to power adapter, through this power supply will be activated that will be enable the monitor to get active & through this, Smart Mirror will successfully start its working.