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AN INTELLECTUAL CHEVAL GLASS - SMART WAY TO MAKE THINGS SMARTER

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Abstract

In this technological period, the "Intellectual Cheval Glass" was one of the innovations for next generation physical entities interconnected with many applications. "Intellectual Cheval Glass" is a creative object that combines contextual details by the use of Raspberry Pi 3 to provide the reciprocal user interface on the mirror surface. The approach involving smart mirror research, software and hardware design, specimen creation, implementation and finally the analysis stages must be considered in order to build this smart mirror.

1. Introduction

As the world around us is continuously evolving as technology progresses Smart Mirror is such evolutionary technology that is incorporated as a two-way mirror with an electronic display behind the glass [1]. Intelligent Internet of Things (IoT) systems are actually the foundation of all connected appliances that are used every day. IoT applies to billions of physical computers that are now connected to the internet, storing and exchanging information across the globe. [2] The term IoT is commonly used for computers that are typically not supposed to have an internet access and can communicate regardless of human intervention with the network.

Since 1982, the evolution of IoT in human civilization, creation of telegraph by Barron Schilling of Russia, and invention of own communication code by Willhelm Weber and Carl Friedrich in 1833, to communicate within

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Germany which is at over 1200 meters distance[2]. Smart cars made to have proxy driving or autonomous are from a safe and convenient stage to tackle recent developments in technology in the application of IoT in life to resolve the requirements of manual driving [3]. The development of the application was made to substitute initial approach needing more labor and work.

The field of domotics is also renowned for the use of smart IoT equipment. An automatic home is often referred to as a smart home [4]. There are several other real-world implementations using IoT for home automation, such as creating a switch to monitor the lighting depending on an individual's presence in the house. This implementation is now carried out by an intellectual assistant. An impression of the person and the path in front of the mirror is still calculated as the mirror offers different details that are present before us [5]. Life becomes easier because checking of mobile for every small information is minimized. The calculation is reliable across all the scenarios and offers a good collection of everyday procedures that reinforce the thought making for management.

This paper mainly focuses to make an IoT implementation of a mirror which is capable of projecting the time, date, temperature, along with the notifications of their scheduled appointments in addition to live news feed from various sources and also real-time messages. All these specifications will be incorporated and implemented by making use of a raspberry pi board from the internet which runs on Linux OS Stack method is used along with javascript for display page creation that is used on both client side as well as server side [5, 6].

The flow of the article is structured as, in which the relevant analysis on this area is discussed in Section 2. The attributes of the prototype and its features are discussed in Section 3. The preliminary assessment performed and discussions of the outcome obtained are explained in Section 4. Finally, for prospective work, the paper concluded. "A summary of the literature included in Introduction to clarify the disparity between this presented document and other documents, to showcase this to be novel, to define the study phase in the chapter Research Process and to help the interpretation of the findings in the chapter Findings and Analysis [2].

2. Related Works

The smart mirror has been useful to individuals with various aspects, depending on the creator whose aims are to be reached when different types of functionality can be used in the smart mirror. Nowadays, not only can the smart mirror show the reflect of the individual but also about the basic data like a clock and also about the scheduled appointments [7].

There is also an intelligent mirror that provides an approach to customizable assistance and monitoring of all the IOT based devices used in our homes. An effort is made to create a mirror like interface which is smart and also an interacting environment [8]. The Aware Mirror is one example of a smart mirror for an environment that is ambient. It was clarified [9] that it is an expanded screen that is installed in the bathroom to present the customer with personalized details. It uses a proximity sensor to sense a person's presence in the bathroom and identify the user through the use of the toothbrush. It gives helpful details such as the nearest timetable, details on travel and the climatic conditions. While trying to have an inborn gui, it has some setbacks which are limiting it from wider use.

The Regular Computer Lab's Memory Mirror [8, 9] serves to be advisor for aged by graphical status display of opioid consumption over a period of 24 hours. It monitors and documents the medications withdrawn from the pharmacy cabinet in a background log to show past use information and to warn of potentially misplaced products.

The Memory Mirror relies heavily on Radio Frequency Identification and allows RFID tags to be connected to household products and RFID readers in order to identify the status of these objects. Electromagnetic fields are used in RFID [10] to locate and detect marked objects automatically. Tags contain information stored electronically. It cannot be used as a conventional mirror and it is not ideal for accessing specialized services and operating home equipment as an interface, which are the two key objectives we plan to achieve.

Mirracle [11] is used to teach anatomy, and is an virtual reality magic mirror which helps and assists in the selection of makeup products [11], which is integrated with the makeup features. To view an augmented 3D

representation of the user with makeup features, the author proposes a smart mirror device. The consumer will see the potential effects of various makeup applications in the smart mirror in this method without compromising the appearance of the actual face. The system includes 3D modeling of face along with IR-based tracking and a comprehensive contribution to open GL material to deliver the elevated face. A claim was made that consumers would be able to flexibly determine the beauty items of their choosing by displaying the enhanced grooming characteristics.

The above-mentioned initiatives of designed mirrors are also really helpful to individuals, but they would only be helpful to particular classes of individuals. Therefore, relative to the projects mentioned above, a wide variety of individuals can use our project as a normal appliance along with their home automations. The proposed project briefs out some similarities with Aware Mirror, which offers valuable details such as the prediction monitor.

3. Methodology

The "Intellectual Cheval Glass" is developed in various stages of ADDIE model which include analysis, design, development, implementation and evaluation as shown in figure 1. The proposed algorithm is thought to be more sophisticated in the development of "Intellectual Cheval Glass" to evaluate the errors that may fall during the implementation phases.

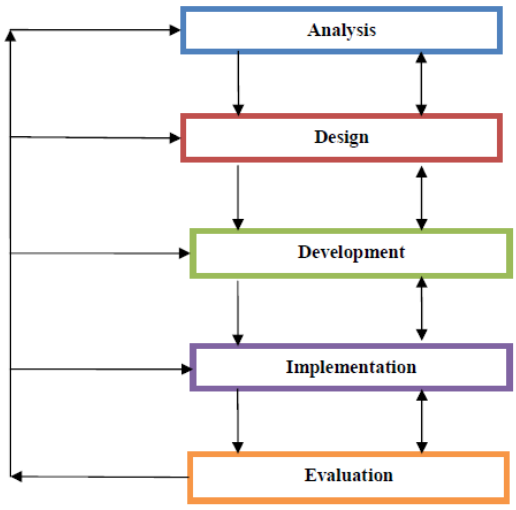

Figure 1. Data flow diagram of ADDIE model.

3.1. Analysis

We studied several facets of the smart mirror in this process. The issue-related comment about the present scenario made us to build this prototype is the feature that we concentrated on after evaluating the issue. Software and hardware analysis were also done to ensure that everything is applied in the design and development.

3.2. Design

For the intelligent mirror interface, features and positions to be applied to the "Intellectual Cheval Glass" were decided in this process. Designing the wood work was also carried out to build the outer frame correctly for the monitor; raspberry pi and two-way mirror were positioned exactly to make it look like a original mirror for consumer convenience.

3.3. Development

The first step in the development phase is to gather all the requirements of the project. Raspberry pi, which is the primary focus in designing the features for the smart mirror, was used after the equipment was prepared. The Raspbian operating system was used for various modules to be installed. After the modules were obtained, HTML, CSS and Javascript are used to edit the functionality and to make them consistent with the current place.

3.4. Implementation

The "Intellectual Cheval Glass" was checked with all the able users to check with the efficacy in everyday use. All the users from 18 to 28 year age range were described as being the active generation of Internet users and considered to be hooked in their everyday lives on technology advancement. As such, in their daily lives, "Intellectual Cheval Glass" will be an essential technology to be introduced.

3.5. Evaluation

Evaluations, which is taken as the final step of error analyzation with respect to functionality of "Intellectual Cheval Glass" and defining consumer performance in the use of the functionality of the smart appliance. When the measurement was carried out, the data was obtained to be analyzed using a predictive research kit.

4. Development

A two-way mirror which is a Raspbian-based operating system monitor, runs on the built project prototype and this was achieved with the introduction of the technology by integrating the interface and the features of each detail to be visualized. In process of making the project to function, such as To-do list Application, YouTube, live news feed, messaging in real time, display images and Calendar, some programs need to be run along with the characteristics.

The aim of separating the functionality into different parts basing on the characteristics is to discriminate between the details that the user would get.

4.1. Clock, date, Alarm, weather

The clock that was used here is displayed in both 24-hour format and 12-hour format for the user convenience. The clock region is set to Indian Standard Time (IST) with default time offset of UTC+05:30. The temperature and weather forecast depends on the local region of India. Date display is also made to user friendly with normal date format. Alarm clock which will ring for one minute is user defined along with the choice of the alarm tone to finish the daily chores within the stipulated time. Figure 2 displays all the functionalities included in "Intellectual Cheval Glass".

Figure 2. Functionalities of the "Intellectual Cheval Glass".

4.2. Daily reminder and holiday calendar

Because of the connectivity of Todoist app with the mirror, with the usage of smart phones as function of remote control, users can change their timetable and Notifications. The Holiday Calendar displayed is based on the national holidays provided locally.

4.3. YouTube and on demand video access

The center part of the mirror is arranged to display the YouTube videos and also the on demand video access that can be displayed using the smart phones that are intended to use as a remote control with the smart mirror.

4.4. Live news feed and ISRO news feed

A unique API call provided by concerned authorities turned the entire mirror to be more realistic not only with the general happenings across the globe but also about the fascinating and interesting developments that are being done technically in ISRO that which are not confidential and brings the enlightenment to the user.

5. Conclusion

Smart mirror is proved to be valuable keeping in view of all the data available with the same segment display systems. This "Intellectual Cheval

Glass" prototype, however, by encouraging everyone around by providing an opportunity to feel this as resourceful interface. In upcoming years these mirrors can be made much more realistic by incorporating the gesture and feature based recognition technique which in turn makes it owner friendly.

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