Design and Implementation of Smart Mirror for Pilot Assistance

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Abstract. In modern world, high performance is achieved with the advancement of science and technology. In the fast way of life, the developments of automation projects are required. Automation systems are mainly developed by using Internet of Things. Likewise, the project represents the implementation of the Smart Mirror for an individual use instead of a normal mirror. The project is based on the Intel Atom Processor- Z-series which runs with the help of an open source operating system. Using speech processing techniques, the pilot can interact with the Smart Mirror through verbal commands. It actively listens to the pilot's command and once the subsequent voice command is recognized, it performs the function associated with it. Smart Mirror provides common functionalities such as daily weather, time corresponding to the location, using social applications and more. The Smart Mirror can make the people to use other devices with low contribution and get them the entire world into hands through their voice commands itself.

Keywords: Smart mirror · Intel atom processor · IOT · Mobile internet devices · LCD HD · Sensor

1 Introduction

Recently there has been a growing interest in Internet which changed our lives by bringing the entire world into hands. Mobile phones had become smart phones and then this concept has turned into Internet of Thing. The concept of a smart mirror that the user can interact with is attractive and is more in fantasy movies [1].

Home Mirror is developed by electronic people with changing degrees of interactivity. This project describes the method of building a smart mirror using an Intel atom processor and the android operating system. The aim of the project is to design a Mirror that user could interact with it and also to develop further so that new applications would be developed and installed. Finally the results are good because the level of interactivity is being achieved with the help of voice commands through the microphone of a smart phones [2]. A few hurdles are being faced in the construction of

S. Smys et al. (Eds.): ICCNCT 2019, LNDECT 44, pp. 870–875, 2020.
https://doi.org/10.1007/978-3-030-37051-0_97

hardware and software of the project and those drawbacks are rectified by making many trails for the future development of the smart mirror.

2 Literature View

The smart mirror with artificial assistance is designed and developed for commercial uses as well as security purposes in various industries. The project collects real world data and the data is processed by the Intel atom processor. The Smart Mirror which is used as digital personal assistance device is made with equipments such as Intel atom processor, microphone, HD Screen covered with a sheet of reflective one-waymirror provides the basic information like in other electronic gadgets such as daily weather of the city, time corresponding to the location. The speech processing techniques in the speech application makes the Mirror to interact using verbal commands, functions and responds them instantly. ISSN: 2320-2084 (Volume-5, Issue-1, Jan. 2017).

The paper prevails that the development of a smart mirror which is more like an unobtrusive interface for the smart homes. Paper: Ambient Intelligence Vole 5, No 4 (2004).

3 Methodology

The smart mirror is a home mirror with an HD display behind it. The display can be an Android tablet or an HD display. Figure 1 shows the component available in the smart mirror.

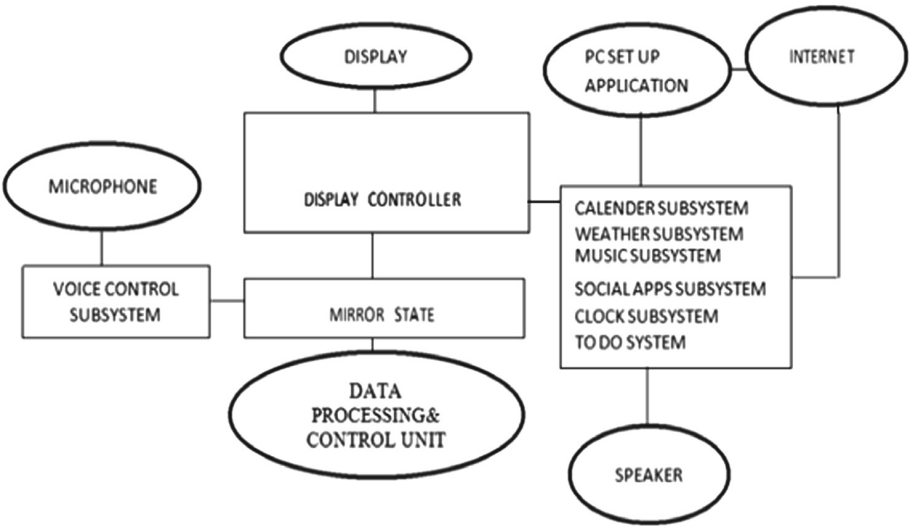

Fig. 1. Smart mirror component

The project collects real world data such as weather reports, time corresponding to the location etc., The data is sent from the machine and managed in a central database by the processing unit. The Smart Mirror which is used as digital personal assistance device is made with equipments such as Intel atom processor, microphone, HD Screen covered with a sheet of reflective one way mirror provides the basic information like in other electronic gadgets such as daily weather of the city, time corresponding to the location. The mirror display is provided by an HD display which displays all the necessary information which are useful to the user. A one way mirror is used to display the things located in front of the Smart Mirror using atom processor. As a result, the smart mirror gives the function of a regular mirror.

4 Workıng and Requirements

The objective is to provide an unobtrusive interface with artificial assistance for the individual convenience. It includes downloading the Android operating system and performing the following steps [3].

- The working is done by Intel atom processor.
- The screen can be an HD display.
- The project collects real world data.
- Use of speech application.
- Displays all the information which is asked by the user.
- One way reflective mirror is used.

4.1 Workıng

- Preparation of the display: HD display is unmounted and is adjusted for the project.
- Preparation of the aircraft Cabin: The cabin made up of wood holds the complete mechanism inside it [4].
- Mounting: The mirror and the HDdisplay are mounted on the cabin.
- Configuration of the processor: The Intel atom processor z-series is configured.
- Configuring Sound and then voice.
- Configuration of the smart mirror.
- Booting the android os on the processor.
- Voice Commands are used to run the Smart Mirror.

4.2 Requirements

4.2.1 Dısplay Unit

For the display a 14.1-inch HD screen display is used for its high graphics resolution. The resolution of the graphics display in the smart mirror is based on the width and height dimension of an electronic visual display device. A display of resolution 1366 × 768 displays photo or video content sharper with pixel art smaller [5].

4.2.2 Intel Atom Processor

Intel atom processors are mainly used in embedded applications ranging from health care to robotics. The Intel Atom x5-Z8350 is the power efficient quad-core SoC for Windows and Android [6–8]. It is clocked at 1.44–1.92 GHz. The SoC offers a Directx 11.2-capable GPU. The memory types this processor is LPDDR3 Memory Controller ($2 \times$ 4 bits and 25.6 GB/s) to the CPU cores. The processor in smart mirror uses the processor count to be 1. In this project, we used a graphics coprocessor called Intel HD Graphics 400 [6]. HD Graphics operates on the Intel Gen8 architecture supporting Directx 11.2. The GPU supports 4 K/H.265 video acceleration [9, 10].

- Microphone.
- Sensors.
- Wooden Frame.

5 Experimental Results

The proposed design of smart mirror used as a normal mirror and also bringing data when ever required based on the voice command of authorized pilot. The Fig. 2 shown the front panel of the product. Figure 3 states that the output given by the product based on request.

Fig. 2. Front panal

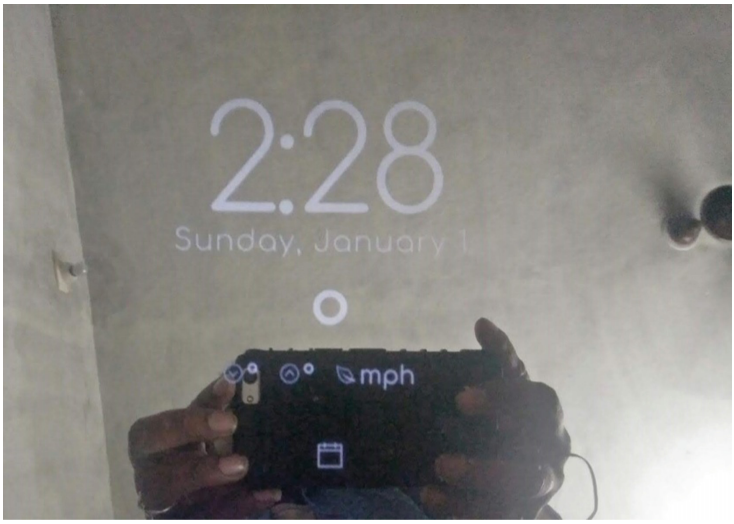

Fig. 3. Output from smart mirror

6 Conclusion

The Smart Mirror provides the pilot with a mirror experience. By making use of smart mirror, the pilot can update the time, weather while preparing for the day with the functioning of the Smart Mirror. Hence the smart mirror that provides interaction between pilot in the aircraft moving in the air and the base station in the earth. The Smart Mirror makes the people to use other devices with low contribution and get them the entire world into hands through their voice commands itself. In the future we would design a separate store to download and install smart mirror applications such as play store and google store, apple store etc., For security purpose, pairing the smart devices with mirror using a QR code is also under construction.

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