Smart Mirror Technology with Home Automation

[1]Prof. Pratiksha Kale, [2]Iqbal Bagwan, [3]Rushikesh Kadam, [4]Adesh Bishe

[1,2,3,4]Department of Computer Science and Engineering, Siddhant College of Engineering, Sudumbare Pune, India
Authors -Email: [2]bagwaniqbal32@gmail.com, [3]rushivr46@gmail.com, [4]adeshbhise9@gmail.com

Abstract - **The Internet of things (IoT) connects druggies with connection of effects to grease the life. IoT is now shifted towards 'Thing to Thing '. Smart home conception brings comfort and convenience to our lives with the aid of IoT. Technology has been bettered to live people's life most fluently. Developing an operation in such a way that the technologies reach the mortal to live a sophisticated life. Smart Mirror is one of the stylish ways to bridge the gap between the mortal and technologies. Since each person uses the Mirror in his diurnal life, the glass provides a natural means of commerce through which the residents can control the ménage smart appliances and access substantiated services. So erecting time operation fashion in glass will be useful and an effective bone. Making smart glass helps the physically challenged people much by making them up to date with modern technologies and provide ease of access to them.**

Keywords: Smart Mirror, Information System, Internet of Things, Automation, Raspberry Pi, Raspbian OS.

I. INTRODUCTION

Effective time management is one of the most import ant factors for every person's life, especially if the person is physically challenged. By increasing the integration of technology in our lives helps us to maintain an efficient schedule. Keeping the event and the social media notification up to date is made easier through technology such as PC's, smart phones etc. But using these gadgets doesn't make us to use in busy life and also provide distractions that can interrupt anyone's routine. So concept of integrating those high-tech features in mirror helps user to effectively manage their time in their daily routine.

This high-tech feature helps the physically challenged people. They cannot move from one place to another often for their every need. So voice recognition will be very helpful by the way of controlling the Home appliances. Security option will make them to be safe in home where physically challenged need no other security appliances. In an emergency case, if they need to contact any one for help, just by voice commanding. Emergency alerting system using GSM benefits the users for up-to-date notification from mirrors.

II. PROBLEM STATEMENT

The recent world has become a place of an intense competition among the people. Human race has become more goal oriented and strive to be the best in all aspects whether its sports, business or entertainment. We all, ultimately, strive to be the best. Following the news, adapting the varied weather conditions are some of the interruptions that hinder our daily progress. Activities like these consume a lot of our time and can be very distracting which might affect our day-to-day activities.

People value how they look and spend a ridiculous amount of time in front of a mirror throughout their daily routine. And this is the exact time where a lot of important things can be performed. But spending time with a smartphone and managing daily tasks, while preparing for the day would be a hard task. Therefore, a -device with certain technology is required which allows a person to efficiently complete all the work needed for them to prepare for the day. And all of this has to be done at the same time and in one place. Hence, an Artificial Intelligence based Smart Mirror.

III. PROPOSED SYSTEM

In the current existing systems, a mirror is designed that acts as a smart mirror, this mirror is made of a frame and the LED monitor is placed behind the two-way mirror. The frame is developed using wooden and nails. There is a two-way mirror in front of the wooden frame and the LED monitor is placed and the back of the wooden frame. Multiple features allow the user to save time and increase his productivity. The user sees temperature, news, clock, and time updates. Voice-controlled electrical appliance system is also implemented using Google speech API. The mobile application is also developed for controlling smart mirror when the user is not at home. Firebase fire store is used as a means of communication between the IONIC mobile application and the Raspberry Pi. The main purpose of building a mobile application is that the user can also interact with a smart mirror even he is not at home. User can control electrical appliance using the mobile application, push or delete to-do list items and can see security messages which were sent to users when raspberry pi detects any intruder. The user can also delete security messages and will be able to add new tasks.

IV. SYSTEM ARCHITECTURE

Module 1: Speech Command Operations

It's our project most important module. It contains various commands to perform regular computer operations and functions. The speech is recognized from the mic and then compared with the conditions given and then the operations are performed. In this module we have made used of wired headset for taking the voice input. The module contains a dict. gramfile which contains various commands like computer, browser, open, play Spotify, open YouTube etc. which we use to run the functionalities in computer like My Computer, MS-Paint, Browser, Face book, G-mail etc.
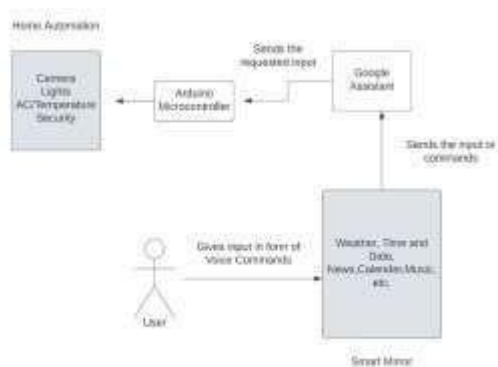
V. SYSTEM DESIGN

fig: HOME AUTOMATION USING AI AND CATOPTRIC TECHNOLOGY (SMART MIRROR)

VI. TECHNICAL REQUREMENTS

Hardware Requirements

Raspberry pi 3b+, Raspberry camera module, Old monitor, Two way mirror, Micro SD card(32gb), Raspberry charger, HDMI cable.

Software Requirements

Raspberry OS, Google Assistant/ Alexa/ google voice assistant, Java Script, python, Linux, AWS.

VII. CONCLUSION

Smart mirrors are the most innovative technology of this decade. These are providing benefits to the human in many ways like allowing them to save their time, managing their routines, getting important updates and making their life much easier. These an be used in every aspect and field of life by utilizing them in a proper way they can be added with many features. The goal of the mart mirror is to reduce the time of the user while doing multiple tasks. The user can save time by seeing all the important information on the screen while doing his task. The feature of home automation makes it very convenient and comfortable for the user to control electrical appliances in their home. The user can even interact with the mirror when he is at work or not at home with just a mobile application. In today's world, the security of the house is one of the most important features of any system, therefore, it is also implemented a security module in this system. Smart mirror makes it easy for everyone to use their time effectively; there can be a lot of new features that can be added to enhance the user experience. The system is designed in a way to reduce human efforts and provide benefits to humanity. There are certainly a lot of technology integration opportunities in the home, but a smart mirror is one of the best places to start.

VIII. FUTURE SCOPE

Smart Mirrors will revolutionize smart homes, industry, healthcare, and other markets. Combined with augmented reality, Smart Mirrors give consumers options such as trying on clothing or viewing themselves with different makeup from the comfort of their home or in a store.

Smart mirror market is projected to reach USD 5.9 billion by 2027 from USD 2.7 billion in 2022, at a CAGR of 16.8% during the forecast period. The market is driven by the increasing demand for smart mirrors in the automotive, healthcare, and retail industries.

REFERNCES

[1] Hailong Li Zhendong Wu ,. Jianwu Zhang ,School of Communication Engineering, Hangzhou Dianzi University,Hangzhou, China. "Pedestrian Detection Based on Deep Learning Model". CISP-BMEI.

[2] N. Dalal, B. Triggs, Histograms of oriented gradients for human detection. In: Computer Vision and Pattern

Recognition, .CVPR. IEEE Computer Society Conference on. Vol. 1. June 005:pp.886–893 vol. 1.

[3] Husni Ruslai3, Kamaruzzaman Jahidin4, Mohammad Syafwan Arshad4, Smart Mirror for Smart Life IEEE .[4] Muhammad Mu'izzudeen Yusri1, Shahreen Kasim1, Rohayanti Hassan2, Zubaile Abdullah1 Husni Ruslai3, Kamaruzzaman Jahidin4, Mohammad Syafwan Arshad4 1Soft Computing and Data Mining Centre, Fakulti Sains Komputer dan Teknologi Maklumat, Universiti Tun Hussein Onn Malaysia, Johor, Malaysia 2Faculty of Computing, Universiti Teknologi Malaysia, Johor, Malaysia." Smart Mirror for Smart Life". IEEE.

[4] IEEE Website: http://www.ieee.com.

[5] Google website: http://code.google.com/SRS

[6] Wikipedia website: http://www.wikipedia.com/Speech

[7] Google Website: http://www.google.co.in

[8] For Core JAVA and JavaScript "JAVA complete reference" by Herbert Scheldt.

[9] For Speech Recognition "Speaker Identification" by Lawrence R.

[10] Magic Mirror Guides.

Citation of this Article:

Prof. Pratiksha Kale, Iqbal Bagwan, Rushikesh Kadam, Adesh Bishe, "Smart Mirror Technology with Home Automation" in proceeding of International Conference of Recent Trends in Engineering & Technology ICRTET - 2023, Organized by SCOE, Sudumbare, Pune, India, Published in IRJIET, Volume 7, Special issue of ICRTET-2023, pp 242-244, June 2023.

****