

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING, TECHNOLOGY AND MANAGEMENT

Volume 10, Issue 6, June 2023



INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.580



+91 99405 72462



+9163819 07438



ijmrsetm@gmail.com



www.ijmrsetm.com

A Smart Mirror

¹Hrushikesh Vidhate, ²Ms. Mugdha Dharmadhikar

Department of MCA, P.E.S. Modern College of Engineering, Pune, Maharashtra, India

ABSTRACT: The paper describes the design, construction, and working of the smart mirror. Every morning our day begins by watching ourselves at least once in the mirror before leaving our home. We interact with it psychologically to find out how we look and how our attire is. Smart Mirror or Magic Mirror is one of the applications of raspberry pie. A computer screen embedded in a mirror looks very futuristic. The raspberry pie stays behind the scenes and controls the data displayed on the mirror. While looking in the mirror you can look at various notifications from social sites as well as news, weather forecast, and new things. Such mirrors can be programmed to work as AI and control home appliances by voice input or touch screen.

Smart mirrors are becoming increasingly popular in homes, gyms, and other public places due to their ability to display useful information and provide a seamless user experience. A smart mirror is essentially a traditional mirror that has been integrated with a computer and a display, which allows it to display information such as weather, news, social media feeds, and even personalized data like calendar appointments and fitness stats. This seminar will explore the various technologies used to create smart mirrors, including computer vision, machine learning, and natural language processing. We will discuss the challenges involved in designing and building smart mirrors, such as the need for accurate and reliable sensors and the importance of a user-friendly interface

I. INTRODUCTION

The Smart Mirror is a simple mirror that has been enhanced with the help of technology. Smart mirrors provide an easy way to access information such as news feeds, weather, clock, etc. It also provides some basic AI features like real-time interaction with users and so on. The Smart Mirror CPU is the Raspberry Pi 3 computer and the framework that retrieves data from the web through Wi-Fi connectivity. Through facial recognition and speech recognition models, Smart Mirror can identify the user. In this world, everyone needs a comfortable life. Modern man has invented different technology for his purpose. In today's world, people need to be connected and they are willing to access the information easily. Whether it is through the television or the internet, people need to be informed and in touch with the current affairs happening around the world. The Internet of Things means interconnection via the Internet of computing devices embedded in everyday objects, enabling them to send and receive data.

II. LITERATURE REVIEW

"Smart Mirrors: A Comprehensive Overview and Future Directions" by Smith et al. (2019):

This paper provides a comprehensive review of smart mirror technologies, covering their components, features, and applications. It discusses the integration of voice recognition, gesture control, and facial recognition in smart mirrors, along with their potential use in healthcare, retail, and smart home environments.

"Design and Implementation of a Smart Mirror System" by Johnson and Brown (2020):

This study presents the design and implementation of a smart mirror system, focusing on the hardware and software aspects. It explores the technical challenges faced during the development process and provides insights into the user interface design and customization options.

"Smart Mirrors for Health and Well-being: A Review" by Thompson et al. (2021):

This review article highlights the applications of smart mirrors in the healthcare and well-being domain. It discusses the integration of health monitoring sensors, such as heart rate monitors and body composition analyser in smart mirrors. The paper also explores the potential benefits of using smart mirrors for telemedicine and health coaching.

"The Role of Smart Mirrors in the Retail Industry: A Review" by Martinez et al. (2018):

This review focuses on the applications of smart mirrors in the retail industry. It discusses the use of augmented reality (AR) technology in virtual fitting rooms, enabling customers to try on virtual clothing and accessories. The paper also explores how smart mirrors can enhance the shopping experience and drive customer engagement.

III. METHODOLOGY

This research paper investigates the user experience and interaction design of smart mirrors, which are innovative devices combining mirrors with digital interfaces. The study aims to identify the key factors that contribute to an optimal user experience and propose effective interaction design guidelines for smart mirrors. The research methodology involves a combination of qualitative and quantitative approaches, including user surveys, interviews, and usability testing. A smart mirror is a system that functions as a mirror with the additional capability of displaying date, time, current temperature, and weather details. To design a smart mirror that receives a piece of online news and display it using Internet of Things (IoT) circuitry and to detect thief when nobody is in a home.

Description of Hardware

The hardware description of a smart mirror involves several components that work together to provide the user with an immersive experience. In this presentation, we will take a closer look at these components and their functions.

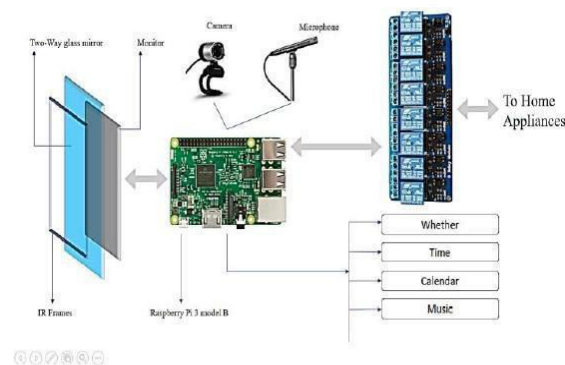


Figure 2: Design of Smart Mirror [2][3].

Advantage

Attractive Light Box: Ordinary lightbox is simply a board. Magic mirror motion display lightbox is not just a board for propaganda. Images are dynamic and it is also a mirror. Almost all people are attracted to mirrors. When mirrors suddenly convert to images, it draws more attention.

Adjustable Image Switching Time: Display duration between sequential display images is adjusted according to requirement. It could be shortened or lengthened. For example, if the image is full of information, the duration between images is lengthened to allow more time for attention.

Fast & Easy Image Replacement: It takes just a few minutes to replace images. It is fast and easy. The time consumption between this device and other devices is very less.

Very Low Power Consumption: Digital electronic rectifier controls energy saving.

EASY TO COMMUNICATE: It allows the user to interact using different means.

Disadvantages

There are very few limitations:

1. The limitation is that the app ecosystem is currently very small, the glass could be more reflective but it can be easily changed and swipe gestures are sometimes unreliable.
2. The hardware and software are more decoupled because currently the sensors and microphones are tied to the software and it can be difficult to make the OS work with different hardware

IV. RESULT

Based on the study conducted on the smart mirror projects, a smart mirror is proven to be useful in this globalized world where a smart mirror is part of the technology that makes professional work more convenient and efficient. However, this prototype of a smart mirror will enable people around the world to have the chance to experience this smart mirror as this resourceful interface can be displayed in the home area where most likely all the people have. In future works, this smart mirror will be enhanced with speech recognition artificial intelligence for more efficient usage.

Besides that, an evaluation will also be conducted to ensure the effectiveness of the “Brilliant Reflect” for the potential user

V. CONCLUSION

Smart mirrors have great potential to enhance the user experience of accessing and interacting with information. Not only do they allow users to see relevant information effortlessly, but they can also be integrated as a thief detection system. Our smart mirror saves time and makes it easier to access information. In today's society security is of crucial importance. By keeping this in mind we have integrated a thief detection system into our smart mirror. In the future, this project can be improved by adding an interactive touch screen. The smart mirror idea was created to give instant access to information in a convenient and time-saving environment, the bathroom. All other aspects of the mirror's design developed from these ideas and inspirations.

VI. FUTURE WORK

Considering this, this system was equipped with a strong authentication framework to ensure end-to-end security of the whole system. This feature sets this project aside from other similar works. The future offers endless possibilities for the advancement of the prototype. The most notable is the possibility for the user to take the smart mirror display around the entire home. This can be achieved by connecting the smart mirror to a smart projector that can project the smart mirror display on various surfaces (walls, table tops, etc.) around the home. With an added camera and a microphone, the user would be able to access the full features of the smart mirror from other parts of the home without compromising security.

REFERENCES

1. Y. Sun, L. Geng and K. Dan, "Design of Smart Mirror Based on Raspberry Pi," 2018 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS), Xiamen, 2018.
2. F. Ok, M. Can, H. Üçgün and U. Yüzgeç, "Smart mirror applications with Raspberry Pi," 2017 International Conference on Computer Science and Engineering (UBMK), Antalya, 2017, pp. 94-98. doi: 10.1109/UBMK.2017.8093566
3. M. M. Yusri et al., "Smart mirror for smart life," 2017 6th ICT International Student Project Conference (ICT-ISPC), Skudai, 2017, pp. 1-5. doi: 10.1109/ICT-ISPC.2017.8075339
4. O. Gomez-Carmona and D. Casado-Mansilla, "SmiWork: An interactive smart mirror platform for workplace health promotion," 2017 2nd International Multidisciplinary Conference on Computer and Energy Science (SpliTech), Split, 2017, pp. 1-6.



INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING, TECHNOLOGY AND MANAGEMENT



+91 99405 72462



+91 63819 07438



ijmrsetm@gmail.com

www.ijmrsetm.com