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Smart Mirror: A Fusion of Functionality and Innovation

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ABSTRACT: Our project introduces a Smart Mirror powered by the Raspberry Pi platform, blending modern technology with everyday utility. By integrating a Raspberry Pi 4 with a two-way mirror and a high-resolution display, our Smart Mirror offers a dynamic and interactive user experience. Users can not only view their reflection but also interact with the mirror. Leveraging various APIs and services, such as weather forecasts, news updates, calendar events, and date and time, the mirror is setup with the google assistant so that the user can interact with the mirror, the mirror provides personalized information tailored to the user's preferences .With its modular design, our Raspberry Pi-based Smart Mirror provides a flexible framework for future enhancements, promising endless possibilities for innovation and user convenience.

KEYWORDS: Raspberry pi 4, Google Assistant , MagicMirror Modules

I. INTRODUCTION

Nowadays in this world, technologies are advancing day by day. For this reason, maximum devices need to be updated with smart technology. We got many smart devices like smart TV's, watches, phones etc. which have various applications. Artificial intelligence (AI) organizes smart systems and creates smart equipment that makes gadgets more interactive with the user. A mirror is one of the most often used items in most households. 'Everyone is extremely preoccupied with their daily tasks, making it impossible for them to check daily essential information such as the latest news, to-do lists, social media news feeds, traffic updates, weather forecasts, and so on. This concept allows users to access all of this information on a smart mirror, which is automatically updated from time to time. The Google voice assistant is incorporated, and the user may use it to interact with the mirror, watch YouTube videos, listen to music, and so on.

II. LITERATURE SURVEY

1. Title: Research and Analysis of Smart Mirror, Author:Teja Patil, Artarava Parwa ,Sahil Yadav ,Aju Palleri. Published on: 02/Feb/2020, Description: A smart mirror is a system that functions as mirror with additional capability of displaying date, time, current temperature, weather details. The mirror will also perform some advance functions such as Home Automation using Smart Mirror. This mirror with AI will provide an extraordinary experience to the user.
2. Title :A Smart Mirror using Raspberry pi Based on IOT, Author: Dr. C.K Gomathy, Venkata Narayan , T. Giridhar Reddy .Published on : 10/Oct/2021, Description: The project explains about the development and design of a smart mirror that represents an elegant and interface about the smart mirror. It also gives the information about the thief detection in an environment using IOT.
3. Title: IOT smart mirror using raspberry pi, Author: Griffin Technologies. Published on :2017

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4. Description: GriffinTechnologies unveiled their take at the smart mirror at the 2017 CES convention. They call their product the Connected Mirror and it will serve as the smart home hub for several smart home appliances made by Griffin Technologies. The mirror can display local time and weather, notifications from your phone and statuses from other Griffin smart home tech connected to the mirror.

III. METHODOLOGY

Assembly:

- **Mount the Display**: Secure the display screen behind the two-way mirror. Ensure it's positioned so that the reflective side of the mirror is visible when looking from the front.
- **Frame the Setup**: Construct a frame to house both the mirror and the display, ensuring that everything fits snugly and the setup looks neat.
- **Software Setup**:
- **Operating System**: Install an operating system on your computer or microcontroller. For example, if you're using a Raspberry Pi, you might install Raspbian or another Linux-based OS.
- **Magic Mirror Software**: Install and configure magic mirror software. A popular choice is the MagicMirror² software, which is open-source and highly customizable.
- **Modules and Customization**: MagicMirror² software supports various modules that can display time, weather, calendar events, news, etc. You can configure these modules through a configuration file (config.js) to suit your preferences.
- **Test the Setup**: Power everything on and verify that the display behind the mirror is functioning correctly and that the mirror effect is achieved. The mirror should look normal when not lit, but the screen content should appear when powered on.
- **User Interface**: Customize the user interface to fit your needs. By installing Google Assistant we can interact with mirror.

IV. BLOCK DIAGRAM

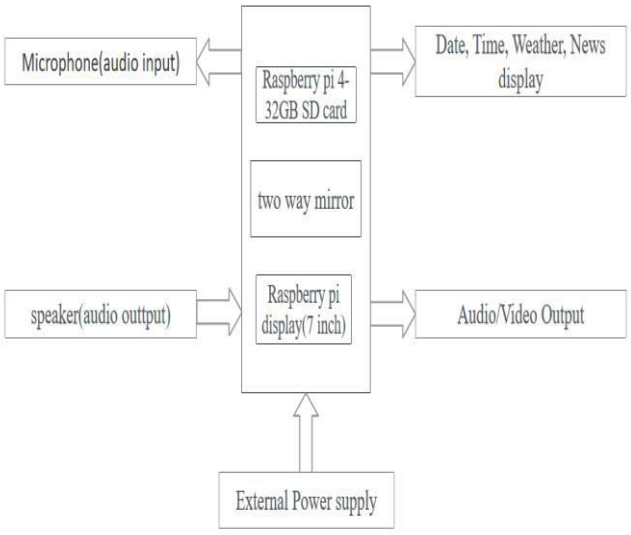

Fig 1: block diagram showing the setup

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V. EXPERIMENTAL RESULTS

a. Raspberry pi 4

b. Raspberry pi display

c Two way mirror

c. Microphone

d. Speaker

Fig. 2. Components used in building smart mirror.

VI. EXPERIMENTAL RESULTS

A futuristic smart mirror system that provides information like time, date, accurate temperature and humidity, and latest news while looking and grooming in front of mirror and also provide user interaction with the google assistant . The google assistant is activated on receiving the command “Jarvis” or “ok google” once activated it responds according to user commands.

VII. CONCLUSION

The smart mirror project, exploring the integration of digital technology with traditional mirror functionality, reveals a compelling convergence of innovation, user experience, and practical applications. This conclusion synthesizes the project's key findings and reflects on the implications for future development and deployment of smart mirrors. In future this project can be improved by adding interactive touch screen ,geo-location, face detection and some more features.

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