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VOICE CONTROLLED WIRELESS NOTICE BOARD

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ABSTRACT

This project proposes an Abstract Wireless Notice Board system designed to overcome the limitations of traditional notice boards, such as outdated information and delayed updates. The system utilizes an Arduino UNO microcontroller and an HC-05 Bluetooth module for wireless communication, allowing users to send messages from a mobile device to the notice board. By using voice commands through a Bluetooth app, users can easily update or change the displayed notice, which is then shown on an LCD screen in real-time. This voice-controlled functionality enhances convenience and accessibility, making it easier for users to update the board without needing technical skills. The system is cost-effective, secure, and efficient, offering a modern solution for timely communication. It is particularly useful in educational institutions, where quick access to relevant information is essential. By ensuring that notices are updated instantly, this system reduces confusion and ensures that important messages are delivered to the intended audience without delay.

Keywords: Wireless Notice Board, Arduino UNO, HC-05 Bluetooth Module, Voice Commands, LCD Display, Real-Time Updates, Bluetooth Communication, Mobile App.

I. INTRODUCTION

In today's modern world, where time is increasingly valuable and efficiency is crucial, technology has revolutionized the way we communicate and interact with our surroundings. The growing reliance on wireless technology has transformed many aspects of daily life, making communication faster, more accessible, and more convenient. One of the areas where this shift is particularly noticeable is in the realm of information dissemination. Traditional notice boards, which have long been used in various settings like workplaces, schools, bus terminals, shopping malls, and educational institutions, are becoming less practical. These physical notice boards require someone to manually post updates, often leading to outdated or irrelevant information being displayed. With the advent of digital wireless notice boards, this traditional method is rapidly being replaced by systems that allow users to manage and update notices remotely, saving time and labor.

By utilizing Bluetooth technology, wireless communication, and microcontrollers like the Arduino UNO, individuals can now easily send messages to notice boards without having to approach them physically, making it a faster and more efficient way to communicate.

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At the heart of this digital wireless notice board system is the Arduino UNO microcontroller, which is responsible for receiving and processing the commands sent through Bluetooth from a mobile device. The process begins when an authorized user connects their mobile device to the system via Bluetooth, enabling them to transmit text messages to the notice board. The Bluetooth module, such as the HC-05, establishes the wireless connection between the mobile device and the microcontroller. Once the message is sent, the Arduino processes the data and commands the connected display, usually an LCD or LED screen, to show the message. This setup not only eliminates the need for manual intervention, but it also ensures that information on the notice board is always up to date, as messages can be posted remotely at any time. Moreover, the system incorporates robust security measures to ensure that only authorized individuals can send updates. This could include authentication processes like passwords or PIN codes, which guarantee that the integrity of the information displayed is maintained and that only trusted personnel can make changes.

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The benefits of this digital wireless notice board system go far beyond convenience; they offer a range of features that significantly enhance communication and information management. One of the major advantages is the ability to update multiple notice boards simultaneously, which can be incredibly useful in larger organizations, schools, or public spaces with numerous locations that need information displayed in real time.

II. EXISTING METHOD

In today's world, where communication is increasingly becoming fast-paced and reliant on digital technology, traditional methods of disseminating information, such as manual notice boards, have become inefficient. People today want quick access to information and up-to-date notices that can be communicated without wasting time or resources.Voice-Based Notice Board Using Android is a significant innovation that addresses these issues by integrating the convenience of smartphones and voice recognition technology. This system allows users to speak the message they wish to display on a notice board, and through a voice-to-text mobile application, the spoken words are converted into text and instantly displayed on an electronic notice board. This seamless process eliminates the need for manually writing out messages or physically posting them, reducing human effort and time spent on updating notice boards. The system is not only user-friendly but also offers a hands-free method of posting information, making it accessible for a broader range of individuals.

Additionally, it can be easily used by anyone, from students in a school to employees in a corporate environment, enabling rapid communication of important announcements, without requiring specialized knowledge or complicated processes.

The Voice-controlled wireless notice board Using Android takes the idea of convenience and efficiency a step further by incorporating wireless communication technology, making the entire system fully automated and voice-operable. Powered by Arduino and connected to a digital notice board, the system allows users to speak the

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message they want to broadcast, and the board instantly displays it. The use of voice commands allows for real-time posting, which is especially advantageous in time-sensitive situations such as emergency notifications, where immediate action is required. This feature removes the need for printing out paper notices, significantly reducing the consumption of paper, ink, and other materials that are typically required in traditional methods. Moreover, the system enhances the efficiency of information distribution by ensuring that there is no delay in message transmission. As soon as the message is spoken, it is transmitted and displayed on the notice board, making the process faster and more effective. Whether for routine updates or urgent notifications, the ability to instantly share information through voice input makes this system highly reliable and convenient for diverse environments like schools, offices, hospitals, and other public spaces.

The Voice-Assisted Smart Notice Board is another advanced solution that incorporates a combination of technologies to enhance the overall communication process. This system is powered by a Raspberry Pi, which functions as the core processor behind the notice board. The Raspberry Pi is connected to Wi-Fi, enabling wireless transmission of messages from the transmitter to the receiver, eliminating the need for physical cables. Users can interact with the system through voice commands, which makes updating and managing the notice board a hands-free, seamless experience. This system adds an extra layer of security by incorporating QR code authentication.

Before a user can update or post a message on the notice board, they must first authenticate themselves by scanning a unique QR code, ensuring that only authorized individuals can make changes. Once authenticated, the user can use voice commands to post or retrieve personal information, or to update announcements on the notice board.

The system can manage multiple boards simultaneously, making it an ideal solution for larger institutions or offices that need to manage several notice boards across different

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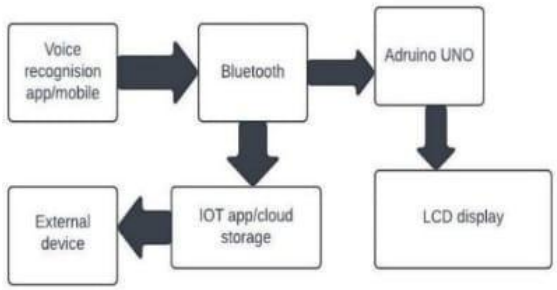
locations. This wireless and secure communication system not only enhances convenience but also ensures that only authorized personnel can access and update sensitive information. The combination of voice interaction, Wi-Fi, and QR code authentication provides an advanced, user-friendly, and secure platform for information dissemination. Whether for individual users or large organizations, this system is designed to streamline communication, making it more efficient, secure, and accessible for everyone involved.



Existing Approach

III. PROPOSED METHOD

The Voice-Activated Digital Wireless Notice Board is a cutting-edge system designed to overcome the limitations of traditional notice boards by harnessing the power of modern technologies, such as mobile app integration, voice recognition, cloud storage, and wireless communication. This system allows users to update notices and announcements on a digital display simply by speaking into their smartphones, which uses voice- to-text technology to convert spoken words into written messages displayed instantly on the notice board. Unlike traditional manual notice boards, which require time-consuming updates and physical effort, this system streamlines the process, enabling users to quickly add or remove notices from any location.

The mobile app not only enables easy posting but also allows users to customize messages, adjust font sizes, choose text colors, and apply scrolling effects to enhance the visibility and presentation of the notices. The system uses wireless communication technologies, such as Wi-Fi and Bluetooth, to transmit the information in real time, making it ideal for environments like schools, offices, and public spaces where constant updates are needed. The

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elimination of paper-based notices also contributes to sustainability by reducing waste, making the system both environmentally friendly and cost-effective. The integration of voice commands makes the entire process hands-free and accessible, further simplifying the management of announcements and providing a more user-friendly alternative to traditional notice boards.

The Proposed System improves upon existing voice-based notice board systems by incorporating
Cloud-based Storage and Advanced Security Features such as Multi-Level Authentication. Cloud storage enables users to schedule, store, and retrieve notices easily, providing greater flexibility in managing updates. For example, routine announcements can be scheduled to appear at specific times, while important notices can be archived for future reference. The cloud-based system ensures that all notices are securely backed up and can be recovered if necessary, offering additional reliability and peace of mind. To protect the integrity of the system and ensure that only authorized individuals can update or modify notices, the proposed solution introduces a multi-level authentication mechanism. Users will be required to authenticate through secure methods such as QR codes, biometric verification (fingerprint or facial recognition), or a secure login, depending on their role. Role-based access control will allow organizations to assign different levels of permission, ensuring that only authorized personnel can post or modify specific messages while others may only have viewing access. These security features are critical in environments where sensitive or confidential information is being shared, ensuring that the notice board remains protected against unauthorized tampering and data breaches.

In addition, the system includes Voice-Activated Navigation, enabling users to interact with the board hands-free by simply asking for specific information or searching for particular notices. This makes the system even more accessible, particularly for those with physical disabilities, and ensures a smoother and more efficient user experience.

The Proposed System also introduces a Modular Display System that can be expanded to meet the

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needs of organizations of all sizes. This modular destination is integral to the functionality of the approach allows users to link multiple digital notice wireless notice board system With the microphone boards together, creating a scalable solution for large function enabled, users have the capability to dictate institutions, such as universities, hospitals, or voice notices, which are then seamlessly converted corporations. Whether it's for a single room or into text and displayed within a designated textbox. multiple locations across a campus, use can manage This interactive feature enhances user engagement and update several notice boards from one central and facilitates efficient communication. Moreover, by interface, reducing the time and effort involved in simply clicking "send text," the message is manual updates. Additionally, the system integrates transmitted to the Arduino UNO, where it undergoes.

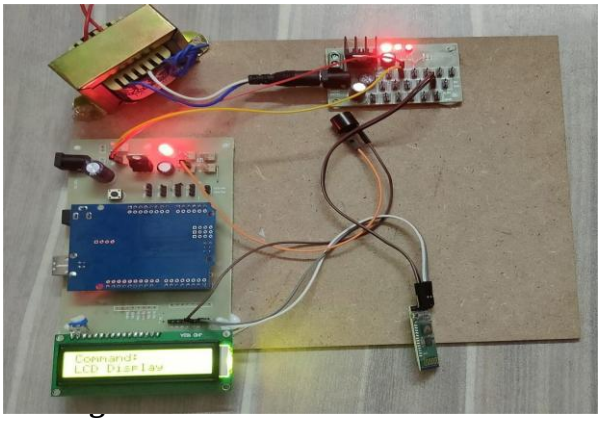
with existing infrastructure, such as email systems, parsing for further processing. Figures 3 and 4

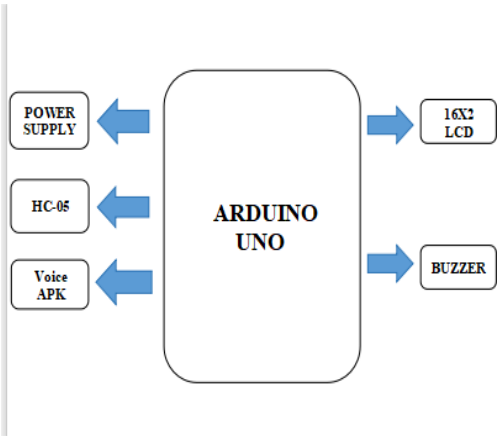
event management platforms, or internal messaging exemplify this process, depicting the transmission of services, allowing notices to be automatically speech messages from a smartphone via Bluetooth to forwarded to the board. For example, important the Arduino UNO, ultimately displayed on an LCD

announcements from an email or calendar system connected to the board, providing real-time can be displayed on the notice board without communication in classroom settings. Similarly, requiring manual input. This seamless integration Figures 5 and 6 showcase the system's versatility, streamlines communication, making the system ideal demonstrating the seamless display of notifications for organizations that require constant and reliable sent from a smartphone directly onto the LCD screen updates. The system is also designed for future within the classroom environment. These visual advancements, such as the potential use of artificial representations underscore the system's effectiveness

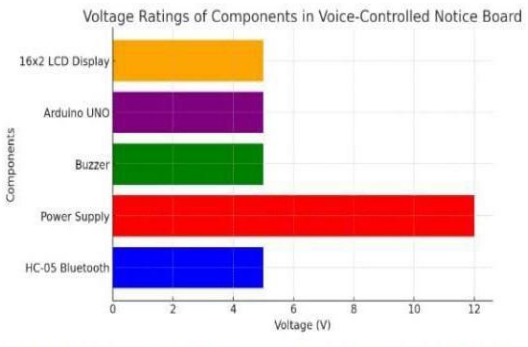
intelligence (AI) to predict and display notices based in facilitating communication and information on user behavior or preferences. By analyzing dissemination in various scenarios. patterns of what information is most frequently

accessed, the AI could prioritize important notices, ensuring that the most relevant content is always displayed. In conclusion, the Voice-Activated Digital Wireless Notice Board is a comprehensive, secure, and highly efficient solution for modern communication needs, combining ease of use, flexibility, and scalability to meet the demands of both small and large organizations.





Graph:1 Voltage Rating of Components in Voice-Controlled Notice Board



IV. RESULTS AND DISCUSSION

The process of receiving and parsing the message string on the Arduino UNO module at the designated

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Table 1:Table of Components and their Values

Here's a simple table with the components and their values:

Component	Value/Specification
HC-05 Bluetooth	3.3V - 5V, 10m range
Power Supply	5V/12V DC
Buzzer	5V DC
Arduino UNO	5V, 16MHz Clock Speed
16x2 LCD Display	5V, 16 Characters x 2 Rows

V. CONCLUSION

This article offers an instance of voice controlled wireless notice board being implemented successfully. This technology represents a major advancement in the field of communication technology. By seamlessly integrating voice commands with wireless connectivity, it offers an efficient and convenient means of sharing information and updates. This combination not only simplifies the process of conveying messages but also enhances and ease of use. In a world where connectivity and ease of communication are increasingly vital, this technology plays a crucial role in streamlining information sharing and ensuring that important messages reach their intended audience promptly. As this technology continues to evolve and integrate with other smart systems.its potential for

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revolutionizing communication and information dissemination is boundless components will be essential to inorder to reduce the operational costs IOT(Internet of things)plays a major role in day to day life that encourages to gather the realtime data the enhanced user experience must be provided Hence we understand the importance of adaptability technological advancements, and user experience enhancement in harnessing the full potential of this technology across various sectors. With continuous development and attention to these key areas, voice-controlled wireless notice boards can indeed become invaluable tools in our increasingly connected.

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