VOICE CONTROLLED NOTICE BOARD

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Abstract: : Displaying spoken words into announcement message using Arduino and android application is the prime objective of this project. Comparing to manual typing it reduces the time taken to disseminate a message digitally. The input voice command is converted into text through "BT Voice control for Arduino application", which is a platform for converting the voice command into messages. The Bluetooth acts as a communicating entity between the software available in the mobile and the hardware Arduino interface. Dot matrix display of information is performed with simulation using Arduino IDE, Embedded "C" as the scripting language. The flash memory has been used to dump the 'Matrix display code'.

Index Terms - **Arduino, Electronic Notice Board, Voice Commands, Bluetooth Module, Wireless Technology, Android Application.**

I. INTRODUCTION

People are accustomed to having quick access to information in today's communication-cantered culture. The world wants to be updated on the most recent developments taking on throughout the globe. Primary schools and large enterprises both use traditional notice boards to post messages. Institutions use a lot of paper every day, so taking one little, innovative step to use technology regularly would make communicating the information easier. A voice-to-text mobile application designed for Android phones allows the user to talk out the message. The notices were simple to add and remove.

Bluetooth wireless technology is currently a well-liked kind of communication. The field of wireless technologies is increasing quickly. Bluetooth technology is being used in this project to facilitate wireless data transmission and reception between devices. Also, this project makes use of speech synthesis, which creates human speech in an artificial manner. This is done by utilising a voice synthesiser, which can be achieved using hardware or software. Notice boards are common in offices, bus stops, train stations, and shopping centres where we do our everyday business. The places to publish public information, such as event advertisements, event announcements, public awareness campaigns, etc., are hence notice boards.

Another advantage of the voice-controlled notice board is its versatility. It can be used in a variety of settings, including homes, offices, public spaces, and more. The board can display a range of information, including news headlines, weather forecasts, upcoming events, and so on. It is also possible to integrate the board with other systems such as home automation systems or security systems, making it an even more powerful tool. The implementation of a voice-controlled notice board requires a few key components. These include a high-quality LED display, a powerful microcontroller, and the necessary programming. The LED display must be large enough to display the desired information, while the microcontroller must be powerful enough to handle voice commands and display updates quickly. The programming of the microcontroller can be complex and requires knowledge of programming languages such as C++ and Python. However, there are many tutorials and resources available online for those who wish to create their own voice-controlled notice board.

Creating a voice-controlled notice board is an exciting project that requires careful planning and execution. The first step is to choose the right components and ensure that they are compatible with one another. It is also important to choose the right microcontroller and programming language for the project. Once the hardware and software are set up, the board can be tested and calibrated to ensure that it is functioning correctly. One of the most important aspects of creating a voice-controlled notice board is the programming of the microcontroller.

notice board is a modern-day innovation that has made it possible to display and update information using voice commands. It is an intelligent technology that is gaining popularity due to its convenience and ease of use. This technology is designed to allow users to interact with the notice board without physically touching it. The notice board is made up of an LED display, which is connected to a microcontroller such as an Arduino or Raspberry Pi. The microcontroller is programmed to recognize and respond

to voice commands, allowing users to update the display with new information. The voice-controlled notice board offers a range of benefits, including accessibility, versatility, and ease of use.

The voice-controlled notice board offers a range of benefits, including accessibility, versatility, and ease of use. The board is accessible to users with disabilities or mobility issues who may find it difficult to interact with a traditional notice board. The voice-controlled feature makes it possible for such users to easily update and access information without having to physically interact with the board

There are many potential applications for a voice-controlled notice board. In a home setting, it can be used to display important information such as weather forecasts, reminders, and news headlines. In an office setting, it can be used to display meeting schedules, upcoming events, and other important information. In a public space, it can be used to display travel information, news headlines, and other relevant information.

Traditionally, notice boards have been physical boards that display information using printed or written materials such as posters or flyers. However, physical notice boards can be time-consuming to update and maintain, and may not be accessible to all users, such as those with visual impairments. Voice-controlled notice boards offer a more convenient and accessible alternative. With this technology, users can update and display information using simple voice commands, eliminating the need for physical materials and allowing for real-time updates. Additionally, voice-controlled notice boards can be programmed to display customized information based on user preferences, further increasing their convenience and usefulness.

Overall, a voice-controlled notice board is a powerful and versatile technology that has the potential to revolutionize the way we interact with information. Its accessibility, versatility, and ease of use make it an ideal solution for a wide range of settings and applications. With the right components and programming, anyone can create their own voice-controlled notice board and take advantage of this exciting technology.

II. RELATED WORK

1. Proposed Voice Based Notice Board Using Android

In today's communication-centered culture, people are used to having easy access to information. The world wants to be informed on the most recent events occurring throughout the planet. Large corporations and elementary schools both use conventional notice boards to post messages. Universities use a lot of paper, so making one little, creative change to routinely use technology might help with information sharing. The user can speak out the message using an Android phone voice-to-text mobile app. It was easy to add and remove the notices.

2. Voice Based E-Notice Board Using Android

They put automatic electronic notice boards into use using wireless technology. The system is entirely voice-operable thanks to the Arduino and e-notice board used in its construction. By speaking out the complete message, an emergency announcement can be broadcast instantaneously. Also, it does away with the option of printing notices, saving a tonne of paper that was previously utilised to display information. Another benefit is that messages are revealed immediately after being written, with no delay in transmission.

3. Voice Assisted Smart Notice Board

The project's brains come from the Raspberry Pi. Notices are sent via a server, and the raspberry pi is connected to Wi-Fi at the receiving end. WI-FI is used to transmit data wirelessly between transmitting and receiving ends without a physical connection. Users will be authenticated via QR codes as well, and once that is done, they can access personal information using voice commands.

4. SMS Based Wireless E-Notice Board

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5. Wireless Electronic Notice Board using GSM

The Wireless Electronic Notice Board using GSM is a project that aims to create a digital notice board that can be updated remotely using a GSM network. The notice board consists of an LED display screen, a microcontroller, and a GSM modem. The project is designed to be user-friendly, allowing users to update the notice board remotely by sending text messages from their mobile phones. The system also includes a password protection feature to ensure that only authorized users can update the display. The Wireless Electronic Notice Board using GSM has several advantages over traditional notice boards. It eliminates the need for physical materials such as paper and ink, and allows for real-time updates from remote locations. This makes it an ideal solution for organizations and businesses that need to share information with a large audience .The project is based on embedded systems technology and requires a good understanding of microcontrollers and programming languages such as C or C++. It also requires knowledge of GSM networks and protocols.

III. RESEARCH METHODOLOGY

This proposed system consists of an Arduino controller as a main controller, Bluetooth, and a LCD to display the notice. Using voice commands, the notification that needs to be updated on the notice board is delivered to Arduino using Bluetooth, which is attached to the Arduino. so that we can communicate.

A proposed system for a voice-controlled notice board would improve accuracy through advanced speech recognition algorithms and noise-cancellation technology, while also enhancing functionality by supporting additional content types. To protect privacy, the system would include a physical switch to turn off the microphone and process voice commands locally. The system would be designed with robustness in mind, including fault-tolerant features and redundancy to minimize the impact of technical difficulties. Overall, the proposed system would provide a more advanced and user-friendly experience, addressing the limitations of existing systems and ensuring accuracy, reliability, and privacy.

3.1 Data Collection and Preprocessing

Data collection and preprocessing are essential steps in building a voice-controlled notice board system. Here are some steps that can be followed for data collection and preprocessing:

- Determine the purpose of the voice-controlled notice board system and the type of data that needs to be collected. For example, the system might be used to display news updates, weather forecasts, or upcoming events.
- Decide on the type of voice recognition technology that will be used. There are several options available, including pre-built libraries like Google Cloud Speech-to-Text or Amazon Transcribe, or open-source libraries like CMU Sphinx.
- Collect a sample dataset of voice commands that will be used to control the notice board system. This dataset should include a variety of voices and accents to ensure that the system can recognize commands from different users.
- Preprocess the voice data to remove any background noise or other interference that could affect the accuracy of the voice recognition system. This can be done using tools like Audacity or Adobe Audition.
- Convert the voice data to a format that can be used by the voice recognition system. Most voice recognition systems require audio files to be in a specific format, such as WAV or FLAC.
- Create a language model for the voice recognition system. This model should include a list of all the possible voice commands that the system will recognize.
- Train the voice recognition system using the sample dataset and the language model. This will help the system learn to recognize voice commands accurately.
- Test the system with a variety of voice commands to ensure that it is working correctly. Make any necessary adjustments to the language model or voice recognition system to improve accuracy.

By following these steps, you can collect and preprocess the data needed for a voice-controlled notice board system that accurately recognizes voice commands and provides the desired information

3.2 Data and Sources of Data

Data and sources of data for a voice-controlled notice board system can include news updates, weather forecasts, upcoming events, and other relevant information. These can be obtained from various sources such as news outlets, weather services, and event calendars.

3.3 Theoretical framework

The theoretical framework for a voice-controlled notice board system involves understanding various concepts such as speech recognition technology, natural language processing, and machine learning algorithms. The system should be designed to accurately recognize voice commands from users with different accents, intonations, and speech patterns. This requires using advanced speech recognition algorithms that can handle noisy environments and recognize different languages and dialects.

Once the system recognizes a voice command, it must then process and interpret it using natural language processing techniques. This involves understanding the context of the command, identifying relevant keywords, and determining the appropriate response or action. The system can utilize various machine learning algorithms such as neural networks, decision trees, or support vector machines to accurately recognize and respond to voice commands.

The theoretical framework should also consider the ethical implications of using voice data. This includes ensuring data privacy and security, as well as addressing concerns about the potential misuse of the data collected. It is also important to consider issues such as bias and fairness in the design of the system to ensure that it is accessible and inclusive to all users. The theoretical framework for a voice-controlled notice board system should be grounded in a deep understanding of speech recognition, natural language processing, machine learning algorithms, and ethical considerations. This will help to ensure that the system is accurate, reliable, and accessible to all users.

3.4 Statistical tools and econometric models

Statistical tools and econometric models can be used in a voice-controlled notice board system to analyze data and make predictions about user behavior. These tools and models can help to improve the functionality and user experience of the system by providing insights into user behavior and preferences.

One statistical tool that can be used in a voice-controlled notice board system is time-series analysis. This tool can be used to analyze patterns in data over time. For example, it can be used to predict user demand for certain types of information on the notice board at different times of the day or week. By analyzing trends in user behavior, the system can adjust its content and delivery strategy to better meet user needs. Another tool that can be used is regression analysis. This econometric model can be used to identify the relationship between different variables. For example, it can be used to identify the factors that influence user satisfaction with the notice board system. By analyzing the relationship between user satisfaction and various system features or design elements, the system can be optimized to improve overall user experience.

Classification models are another type of statistical tool that can be used in a voice-controlled notice board system. These models can be used to classify voice commands into different categories based on their content. This can be used to improve the accuracy of the speech recognition system and ensure that the system responds appropriately to different types of commands. For example, commands related to weather information can be classified separately from commands related to news updates, allowing the system to provide more targeted and accurate responses. Sentiment analysis is another statistical tool that can be used to improve the voice-controlled notice board system. This tool can be used to analyze the sentiment of user feedback about the notice board system. It can help identify areas for improvement and help to improve user satisfaction with the system. For example, by analyzing user feedback and identifying negative sentiment related to a particular feature of the system, the system can be adjusted to better meet user needs.

In addition to these statistical tools, econometric models can also be used in a voice-controlled notice board system. For example, models can be used to predict user demand for different types of information based on various factors such as time of day, weather, or user demographics. These models can help the system to optimize content delivery and ensure that users are provided with the information they are most interested in. Overall, the use of statistical tools and econometric models can help to improve the functionality and user experience of a voice-controlled notice board system by providing insights into user behavior and preferences. These tools and models can help to optimize content delivery, improve speech recognition accuracy, and identify areas for system improvement. As such, they are an important part of the theoretical framework for a voice-controlled notice board system.

IV. RESULTS AND DISCUSSION

4.1 Testing and Evaluation

Testing of a voice-controlled notice board system can be done through user testing, functionality testing, and performance testing to ensure it functions as intended and meets user needs.

Figures
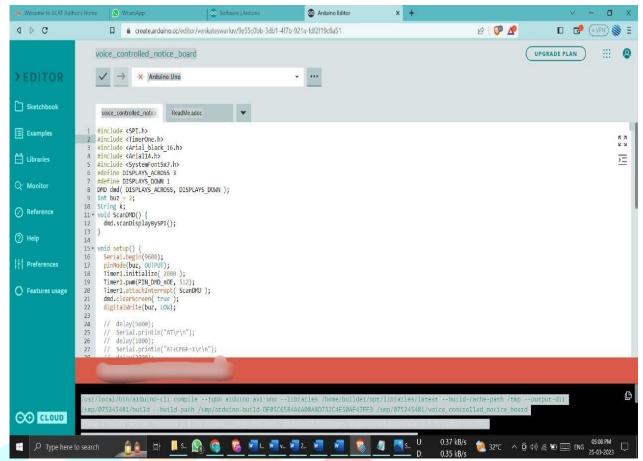

Fig 1 Final output of the notice board

Fig 1 Notice Board Code Working

V. CONCLUSION & FUTURSCOPE

Wireless technology has revolutionized communication by enabling faster and more efficient data transfer. An android application that utilizes voice control and Bluetooth technology has been created to display error-free messages on notice boards, while also requiring minimal maintenance. This system can be applied in a variety of settings such as schools, colleges, offices, railway stations, and even for personal use, thereby reducing the reliance on traditional resources like pen and paper. In the future, this technology can be utilized for remote teaching classes, demonstrating its potential for further applications.

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