IoT Notice Board

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Abstract

The Internet of Things (IoT) enables smart communication between devices, making everyday tasks more efficient. Traditional notice boards require manual updates, which can be time-consuming. This paper proposes a Smart Digital Notice Board using IoT to replace conventional boards, reducing manpower and resources. The system utilizes a mobile app to send messages remotely, which are displayed via a Wi-Fi-connected electronic board. This approach ensures real-time updates, enhancing accessibility and convenience in institutions like schools, colleges, and public spaces.

Keywords: IoT, Smart Notice Board, Digital Display, Wireless Communication, Mobile App, Wi-Fi Module, Real-Time Updates, Automation, Remote Messaging, Resource Optimization

INTRODUCTION

The Internet of Things (IoT) has revolutionized modern communication by enabling seamless connectivity between devices, making automation more efficient and accessible. With the increasing use of smart technologies, traditional methods of communication are being replaced by digital solutions that offer real-time updates and enhanced efficiency. One such area of improvement is the conventional notice board system, which is widely used in educational institutions, railway stations, offices, and public spaces for disseminating important information. However, manually updating these notice boards is time-consuming, labor-intensive, and often leads to delays in conveying crucial messages.

To address these challenges, this paper proposes a Smart Digital Notice Board using IoT, which allows users to update messages remotely via a mobile application. This system integrates a Wi-Fi module, enabling wireless communication between the user and the display board. Unlike traditional notice boards that require physical interaction for updates, the digital notice board provides real-time message transmission, ensuring that information is shared instantly from anywhere. This significantly reduces the need for manpower, paper usage, and other resources, making it a cost-effective and eco-friendly solution.

The proposed system operates by sending messages through a mobile application, which are then transmitted to the notice board via the Wi-Fi module. The notice board, equipped with an electronic display, updates the message automatically, eliminating the need for manual intervention. This method enhances convenience, allowing administrators, faculty members, or authorities to share announcements effortlessly.

LITERATURE SURVEY

1. "IOT BASED SMART NOTICE BOARD", Sameeksha Poojary*1, Thejaswi*2, Deepthi*3, 2024, This paper delves into the integration of IoT in developing smart notice boards, emphasizing functionalities such as remote content management and real-time updates. The study highlights the use of wireless communication protocols to enhance the efficiency and accessibility of information dissemination.

2. "Smart Notice Board",Kamal Penmetcha,Sathvika Andey, 2021, This research presents the implementation of a smart notice board utilizing Raspberry Pi. It focuses on enabling authenticated individuals to convey messages efficiently, thereby reducing manual intervention and streamlining communication processes.

3. "Smart Digital Notice Board" Asmita M.Khairnar, Rashmi K.Kolambe2 , 2020, The paper discusses the development of a smart digital notice board system that allows authorized users to upload notifications across various categories. The system ensures that notifications are prescribed and approved by higher authorities before being published, enhancing the reliability and accuracy of the information displayed.

4. "Smart Notice Board", Kamal Penmetcha, Sathvika Andey, SreeDrusya Mudunuri, Dhana Sai Prudhvi, 2020, This study explores the design of a smart notice board system that employs Raspberry Pi for its operation. The system facilitates authenticated personnel in conveying messages effectively, thereby improving the overall communication framework within institutions.

METHODOLOGY

The Smart Digital Notice Board project follows a structured methodology to ensure efficient communication through IoT technology. The system architecture consists of three main components: a user interface (mobile or web application) for message input, a communication module (Wi-Fi module like ESP8266/NodeMCU) for transmitting messages, and a display unit for real-time message updates. The hardware components include a microcontroller for processing messages, a Wi-Fi module for wireless connectivity, and a display screen for visual output, all powered by a reliable power supply. The software components include a mobile or web application developed using frameworks like Flutter or React, embedded programming using Arduino IDE or Python, and a cloud server or database such as Firebase or MySQL for storing messages.

The working process begins with users entering messages via the mobile or web application. The message is then transmitted wirelessly to the microcontroller, which processes the data and sends it to the display unit for real-time updates. To ensure security, the system incorporates user authentication, data encryption, and access control, allowing only authorized personnel to send messages while preventing unauthorized modifications. The implementation phase involves rigorous testing, including unit testing of individual modules, integration testing to ensure seamless communication between components, and performance testing to evaluate response time and reliability under various conditions. This structured methodology ensures that the Smart Digital Notice Board is an efficient, user-friendly, and secure system for modern information dissemination.

OBJECTIVE

1. To Develop an IoT-Based Notice BoardReplace traditional notice boards with a smart digital system that allows remote message updates.

2. To Enable Remote Communication – Implement a mobile or web-based application for authorized users to send messages from anywhere.

3. To Improve Information Dissemination – Ensure real-time updates and easy access to important notices without manual intervention.

4. To Enhance Security and Authentication – Restrict unauthorized access by implementing user authentication and encryption techniques.

5. To Reduce Manpower and Resource Consumption – Automate the notice updating process, eliminating the need for physical changes and reducing paper waste.

PROBLEM DEFINATIONS

Traditional notice boards require manual updates, which are time-consuming and prone to delays. This project aims to develop a **Smart Digital Notice Board** using IoT technology, allowing remote updates via a mobile or web application. By integrating a microcontroller, Wi-Fi module, and digital display, the system ensures real-time, secure, and efficient notice dissemination. This solution reduces manpower, minimizes environmental impact, and enhances communication efficiency.

System Architecture
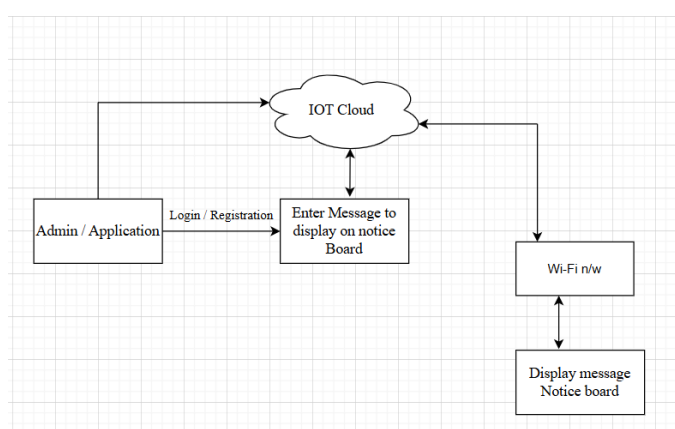
FUNCTIONAL REQUIREMENTS

1. Users can send messages remotely via a mobile or web application.
2. The notice board displays messages in real time once they are posted.

3. Only authorized users can post messages.

4. The system stores messages for easy retrieval and display.

5. Messages are clearly shown on the digital display with proper formatting.

NON FUCTIONAL REQUIREMENTS

1. Reliability: The system should ensure stable and consistent operation, with minimal downtime.
2. Security: The system must protect against unauthorized access through encryption and user authentication.
3. Scalability: The system should support multiple displays and the addition of new features in the future.
4. Usability: The user interface of the mobile/web application should be simple and intuitive.
5. Performance: The system should process and display messages with minimal latency.

CONCLUSION

The Smart Digital Notice Board project effectively addresses the limitations of traditional notice boards by integrating IoT technology for remote message updates. By enabling real-time, secure communication, the

system enhances the efficiency of information dissemination while reducing manual effort and resource consumption. With its user-friendly interface, wireless communication, and scalable design, the system provides a modern, eco-friendly alternative to conventional notice boards. This solution not only improves accessibility and convenience but also supports sustainability by eliminating the need for paper-based notices. Ultimately, the Smart Digital Notice Board offers a reliable and innovative way to manage communications in various settings.

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