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“CLOUD-CONNECTED SMART NOTICE BOARD WITH NLP-BASED MESSAGE FILTERING AND DISPLAY”

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Abstract: Cloud based digital communication systems are gaining more and more importance for improving the efficiency of information dissemination in educational institutions and organisations. This paper describes a Cloud Connected Smart Notice Board with Intelligent Message Management and Real Time Display. It is a digital notice board based on internet which can replace conventional paper based notice boards. The proposed system is developed in HTML, CSS and JavaScript with Firebase as the cloud database to store the notices securely and synchronise them in real time. Authorised administrators can upload announcements, images and event information remotely, via a web interface. These are instantly displayed on a Smart Android TV over an Internet connection. The system has automatic notice expiration to eliminate obsolete information and keep the displayed content relevant and well-organised. The proposed solution combines the cloud technology with a smart display platform, it minimises the manual effort, reduces the paper consumption and improves the communication efficiency by providing instant updates and centralised management. Experimental evaluation shows reliable real-time synchronisation, fast notice retrieval and easy-to-use operation. The proposed architecture is scalable and can be deployed in educational institutions, corporate offices, hospitals, shopping malls and other public places where information is to be disseminated in a timely manner. The system offers an alternative to notice boards that is more efficient, cost-effective and environmentally sustainable, with a flexible platform for future enhancements such as intelligent content filtering, user authentication, scheduling and multimedia support.

Keywords— Cloud Computing Digital Notice Board Firebase Realtime Database Smart Android TV Web Application Real Time Synchronisation Information Dissemination HTML CSS JavaScript Remote Notice Management Digital Communication Cloud Based Display System

I. INTRODUCTION

The rapid advancement of cloud computing and web technologies has transformed the way organizations communicate and share information. Educational institutions, offices, hospitals, and public organizations still rely on traditional notice boards to display announcements, schedules, and event information. However, these paper-based notice boards require manual updates, consume significant time and resources, and often result in outdated or cluttered information. To address these limitations, the proposed Cloud-Connected Smart Notice Board with NLP-Based Message Filtering and Display provides a digital platform that enables real-time dissemination of information through a Smart Android TV connected to a cloud database.

The proposed system is developed using HTML, CSS, and JavaScript with Visual Studio Code as the development environment, while Firebase serves as the cloud database for storing and synchronizing notices. Authorized administrators can upload notices, announcements, and images remotely through a web-based interface. Once uploaded, the information is synchronized automatically and displayed on the Smart Android TV without requiring manual intervention. The system also supports automatic deletion of expired notices after a predefined period, ensuring that only relevant and updated information is displayed. This approach significantly improves communication efficiency while reducing paper consumption and administrative workload.

The proposed digital notice board offers a scalable and user-friendly solution suitable for educational institutions, corporate offices, shopping malls, hospitals, and other public organizations. By integrating cloud storage with real-time synchronization, the system enables centralized management of announcements and remote accessibility from any location with internet connectivity. The implementation demonstrates that cloud-based notice management improves accessibility, minimizes manual effort, and provides a modern alternative to conventional notice boards. The architecture also provides opportunities for future enhancements, including multimedia support, user authentication, scheduling mechanisms, and intelligent message management.

II. RELATED WORK

Several researchers have used different communication technologies to propose digital notice board systems for effective dissemination of information. The initial methods used ESP8266 Wi-Fi modules, GSM communication, and Bluetooth technology to send notices electronically. These systems eliminated the need for manual paper-based updates to notices and allowed wireless communication. However, they were limited by factors such as limited communication range, dependency on SMS, network latency and security issues that limited their suitability for large institutional contexts.

Recent work has concentrated on Internet of Things (IoT) and cloud-based technologies to improve scalability, reliability, and remote access. The display devices pull the information in real time and administrators can update the notices through a web application, Wi-Fi and cloud-enabled notice boards allow this. Further, Raspberry Pi-based display systems could handle multimedia content. Information display systems integrated with cloud services facilitated centralised management and synchronisation of multiple display units. These methods showed an improvement in the efficiency of communication compared to the traditional digital notice boards.

Based on these developments, the proposed Cloud-Connected Smart Notice Board employs the web-based architecture integrated with Firebase cloud services and Smart Android TV display. It allows centralised management of notices, real time synchronisation, automatic removal of expired notices and remote access through internet connection. The proposed solution features better scalability, ease of administration and improved real-time communication compared to previous approaches and still maintains a user friendly interface suitable for educational institutions and organisations. It's worth mentioning that the uploaded document neither describes nor implements an NLP module, despite the fact that the project title refers to NLP-based message filtering.

III. METHODOLOGY

The proposed system adopts cloud-based client-server architecture to provide efficient digital notice management and real-time information dissemination. The methodology starts with a web application developed using HTML, CSS and JavaScript, in which authorised administrators create and manage notices through an intuitive interface. The application is integrated with Firebase Realtime Database which acts as a centralised cloud repository to store announcements, images and related information. The architecture provides a secure storage, centralised management and smooth synchronisation of the administrator interface and display devices.

When you upload a notice Firebase immediately pushes the data to all connected devices via the Internet. Smart android TV constantly checks the cloud database and fetches the newly uploaded or updated notices in real time. The information is collected and presented in an organised digital format, enabling prompt

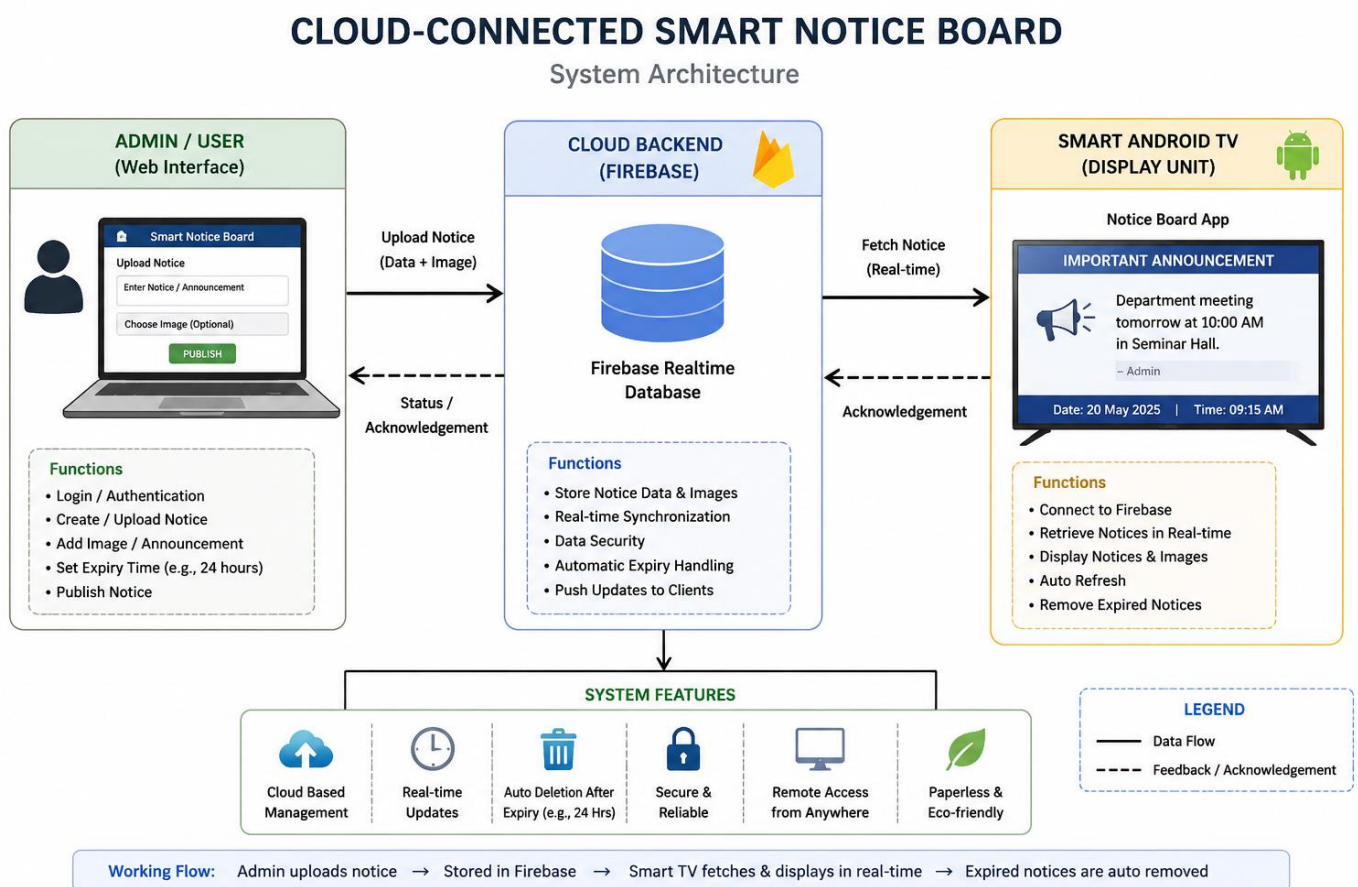
announcements to students, staff, and visitors without the need for manual updates. The system has an automatic notice expiration mechanism that keeps the displayed information relevant by removing outdated notices after a predefined duration and enhances the overall information management.

The implementation methodology also covers functional testing of cloud connectivity, synchronisation performance, notice upload time, display latency and system reliability. The experimental evaluation also confirms that the proposed system is able to realise efficient real-time communication with minimal delay as well as reducing the use of paper and administrative effort. The modular architecture of the system allows its extension with additional features such as multimedia display, scheduling, authentication and intelligent message management in future implementations, making it suitable for deployment in educational institutions, offices, hospitals and other public organisations.

IV.SYSTEM ARCHITECTURE:

The proposed Cloud-Connected Smart Notice Board is designed based on client-server architecture. The administrator uploads the notices using a web application developed using HTML, CSS and JavaScript. The uploaded notices are stored securely and synchronised. Firebase Realtime Database is used as the cloud server. The Smart Android TV with internet connection fetches the latest notices from Firebase and displays them in real time continuously. The system also provides an automatic removal of expired notices so that only current and relevant information is displayed. The architecture provides centralised management, remote access, real-time synchronisation and efficient digital communication.

A. Architecture Diagram:



V. EXPERIMENTAL SETUP:

The experimental setup is used to evaluate the performance and functionality of the proposed Cloud-Connected Smart Notice Board with NLP-Based Message Filtering and Display in a real time environment. The system is composed of a web-based administrator interface built with HTML, CSS, and JavaScript, a Firebase Realtime Database for cloud storage and synchronisation, and a Smart Android TV as the display unit. A stable Wi-Fi/Internet connection allows communication between the administrator interface and the display device so that uploaded notices are synchronised and displayed immediately. The implementation was done using Visual Studio Code as development environment.

In the experimental evaluation, we uploaded notices, announcements and images through the administrator interface, and checked if they were synchronised with the Smart Android TV. Parameters such as notice upload time, cloud sync time, display response time and application performance were measured in the testing. We tested several cases to confirm the notices were updated in real-time, fetched automatically from firebase and displayed without much delay. The system also checked for the automatic deletion of expired notices after the defined time frame to ensure that only relevant information was displayed..

VI.RESULT AND DISCUSSION:

The proposed Cloud-Connected Smart Notice Board with NLP-Based Message Filtering and Display was implemented successfully and tested in a real-time environment. The system can synchronise the notice between the administrator interface and the Smart Android TV using the Firebase Realtime Database reliably. You will see that the newly uploaded notices were updated almost instantly, so the cloud sync is working nicely and the components of the system are talking to each other.

The experimental evaluation demonstrated that the proposed system improves the information dissemination significantly compared to the traditional notice boards. The system enables remote management of notices, reduces paper usage, minimises manual effort and gives timely access to announcements through real time updates. The results show that the proposed solution is efficient, user-friendly and suitable for implementation in educational institutions and other organisations that require fast and reliable communication.

VII. CONCLUSION:

The proposed Cloud Connected Smart Notice Board with NLP Based Message Filtering and Display offers an efficient and modern solution for digital information dissemination in educational institutions and organisations. The system offers a web application along with Firebase Realtime Database and Smart Android TV for real-time notice updates, centralised cloud storage and remote notice management. The implementation overcomes the disadvantages of traditional paper notice boards by reducing manual work, reducing paper usage and ensuring that important announcements are displayed on time and accurately.

Experimental evaluation demonstrates that the proposed system can provide reliable performance with real-time synchronisation, fast notice retrieval and efficient cloud-based communication. The architecture is scalable, user friendly and can be deployed in schools, colleges, offices, hospitals and other public institutions. Also, the system provides a robust basis for future enhancements such as user authentication, multimedia support, intelligent message filtering, and scheduled notice publishing, rendering it a viable and sustainable digital communication platform.

VIII.REFERENCES:

- [1] Google LLC, Firebase Documentation. [Online]. Available: <https://firebase.google.com/docs>. Accessed: Jul. 28, 2026.
- [2] Mozilla Developer Network (MDN), HTML: HyperText Markup Language. [Online]. Available: <https://developer.mozilla.org/en-US/docs/Web/HTML>. Accessed: Jul. 28, 2026.
- [3] Mozilla Developer Network (MDN), CSS: Cascading Style Sheets. [Online]. Available: <https://developer.mozilla.org/en-US/docs/Web/CSS>. Accessed: Jul. 28, 2026.
- [4] Mozilla Developer Network (MDN), JavaScript Guide. [Online]. Available: <https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide>. Accessed: Jul. 28, 2026.
- [5] Google LLC, Firebase Realtime Database Documentation. [Online]. Available: <https://firebase.google.com/docs/database>. Accessed: Jul. 28, 2026.
- [6] P. Sethi and S. R. Sarangi, "Internet of Things: Architectures, Protocols, and Applications," Journal of Electrical and Computer Engineering, vol. 2017, Art. no. 9324035, 2017.
- [7] L. Atzori, A. Iera, and G. Morabito, "The Internet of Things: A Survey," Computer Networks, vol. 54, no. 15, pp. 2787–2805, Oct. 2010.
- [8] M. Armbrust et al., "A View of Cloud Computing," Communications of the ACM, vol. 53, no. 4, pp. 50–58, Apr. 2010.
- [9] Android Developers, Android TV Overview. [Online]. Available: <https://developer.android.com/tv>. Accessed: Jul. 28, 2026.
- [10] Visual Studio Code Team, Visual Studio Code Documentation. [Online]. Available: <https://code.visualstudio.com/docs>. Accessed: Jul. 28, 2026.