

Automated Controlled Timetable Using Cloud & Gesture Recognition

Pratik Bharambe, Asst.Prof. Neha Gaurav , Nivrutti Damdhar , Prof. Varsha Kshirsagar ,
Dr. Nandini Dhole

Department of Electronics and Tele-Communication Engineering
RMD Sinhgad School of Engineering,
Warje, Pune,MH,India

Abstract- The digital notice board is an innovative solution that utilizes the latest technologies to facilitate paperless information transfer. This is a modern interactive gesture controlled digital notice board with a timetable management system. A timetable management system that can send reminders to faculty, reschedule lectures, update the notice board, and send notifications via Gmail and WhatsApp. This project includes a website that utilizes cloud storage and databases to manage all of these operations. The timetable management system was also accessed via the website, and a gesture-controlled mouse tracking system was developed on the admin side for easy access.

Keyword-Cloud Computing, Gesture Recognition, User Interface, Notifications, Automation.

I. INTRODUCTION

This project aims to harness the power of cutting-edge technologies, specifically cloud computing and gesture recognition, to create a seamless and user-friendly solution for timetable management. By combining the flexibility of cloud-based storage with the intuitiveness of gesture recognition, this system offers a dynamic and accessible approach to schedule management. The traditional paradigm of timetable management involves manual input, which can be error-prone and rigid in adapting to last-minute changes. With the integration of cloud computing, our system ensures that users have secure and convenient access to their timetables from any device with an internet connection. This not only simplifies data synchronization but also enhances the availability and accessibility of schedules. Moreover, we introduce gesture recognition technology to this project, allowing users to interact with their timetables using natural hand gestures. This hands-free interaction minimizes the need for physical input devices and simplifies the process of creating, modifying, or deleting events on the timetable.

II.LITERATURE SURVEY

Automated Timetabling System for University Course:[1]
Creating timetables for universities, especially those with multiple branches, different academic years, and various student batches, is a daunting and time-consuming task. It's a recurring job, as new timetables must be crafted every semester, spanning six months each. The manual process, traditionally employed for timetable creation, is not only labor-intensive but also prone to human errors. Furthermore, adjusting schedules, like accommodating faculty leaves, can be a logistical nightmare within this manual framework. In

response to these challenges, this paper proposes an alternative: an algorithm-driven, software-based approach for timetable generation. The key advantage here lies in automation. Computers are adept at processing data swiftly and accurately. By using this automated system, universities can not only save significant amounts of time but also alleviate the pressure on staff tasked with manual scheduling. Moreover, this software can be tailored to meet the specific needs of different institutions, maintaining a consistent base code while adapting to diverse university requirements. In essence, this innovative approach offers a more efficient, error-reducing, and adaptable solution for creating university timetables.

Interactive Digital Notice Board:

The study's primary objective is to advance the field of information technologies by developing a Digital Signage-based system. This system is controlled via a web server and serves as a platform for displaying announcements, date, time, and temperature on screens. Notably, the study introduces an innovative feature by incorporating interactive age classification. When individuals of a certain age group are identified using deep learning technology, a subset of machine learning, the system dynamically adjusts the font size on the screen accordingly.

This age classification application achieved an impressive 79% accuracy rate in experimental testing. Secure Cloud Storage and File Sharing:

This paper discusses the role of internet-based online cloud services, which offer extensive storage capacity and customizable computing resources while eliminating the need for maintaining local data storage systems. Cloud service providers promise secure and flexible data storage solutions

that can adapt to various storage requirements. However, as security tools have their limitations and intrusions become

increasingly sophisticated, security breaches are on the rise. When we upload our data to the cloud, we relinquish some control over it, introducing new security risks related to data integrity and confidentiality. The paper addresses this issue by presenting a secure file sharing mechanism for cloud storage that incorporates the disintegration protocol (DIP). Furthermore, it introduces an innovative approach for seamless file sharing among different cloud platforms without the need to share encryption keys.

Advanced Home Automation Using Raspberry Pi and Machine Learning:

The paper addresses the pressing need for sustainable energy solutions by harnessing the power of the Internet of Things (IoT) and home automation. It employs sensors and a microprocessor, controlled by a Raspberry Pi, to monitor and optimize the usage of electricity in buildings. By using a mobile application, it helps users prevent wasteful electricity consumption caused by negligence. The innovative use of machine learning algorithms, facilitated by TensorFlow, enables precise load forecasting, ensuring effective management of home energy consumption. This integrated approach seeks to enhance energy efficiency and contribute to a more sustainable energy future. This paper primarily focuses on energy conservation through home automation, achieved by using sensors and a microprocessor. The system monitors and controls various appliances in a building through a Raspberry Pi, aiming for the optimized use of electricity.

A Survey Paper on Hand Gesture Recognition:

The primary goal of developing hand gesture recognition technology is to enhance communication between humans and computers, providing an efficient means of conveying information. This paper presents a comprehensive survey of the latest advancements in hand gesture recognition technology, encompassing both static and dynamic gestures. The survey offers an overview of the various methods and techniques that have been employed in recent research papers to achieve hand gesture recognition. By compiling and analyzing these methods, the paper aims to provide insights into the current state of the field and the diverse approaches used to enable seamless communication between humans and computers through hand gestures.

A novel approach: Cloud-based real-time Electronic Notice Board:

The proposed solution introduces an electronic cloud-based architecture designed for Nagpur University, which can serve as a model for smart universities across India. This system relies on Light Emitting Diode (LED) monitors to display textual, image, or document notices, all of which are generated through dedicated Android smartphone-based and Web desktop-based applications. The Android application is developed using Java and XML languages, while Angular JS is

used for the web-based application. The back-end leverages a cloud database system, Google Firebase, to ensure real-time synchronization of notices. This comprehensive system

provides notice feeds at both the departmental and university levels, offering a digital and efficient solution for information dissemination in an academic environment. It aligns with the broader digitization trends promoted by government initiatives like "Digital India" and can serve as a valuable blueprint for universities seeking to embrace the benefits of modern technology in their communication and information-sharing processes.

Pushing the Digital Notice Board toward Ubiquitous Based on the Concept of the Internet of Everything:

Lately, digital notice boards have showcased their readiness for the Internet of Things (IoT) era, proving their value in various message dissemination settings like smart campuses and transportation hubs. However, the existing digital notice applications fall short in capturing the real-life context and human experience. Input devices, boards, messages, and user interactions often exist in separate silos. To address this limitation, this paper introduces an interactive message exchange framework rooted in the Message Queuing Telemetry Transport (MQTT) protocol. The innovation lies in how deeply it engages users within the IoT ecosystem. In this novel framework, users gain the ability to post messages from their handheld devices to compatible display screens or even share them on social media, facilitated by a topic-based naming system built on the subscribe/publish (sub/pub) model. Users have the autonomy to choose which messages to target, allowing for highly personalized interactions. Moreover, messages of particular interest are seamlessly integrated into a personal knowledge repository. As a practical illustration of this concept, the paper provides a demonstration of an integrated system tailored for smart campuses.

Study of Design of IoT based Digital Board for Real Time Data Delivery on National Highway:

This article primarily focuses on the integration of a control system with the data acquisition process, specifically concerning the retrieval of current weather data to influence the content displayed. The second part of the article delves into hardware control. These integrated elements collectively contribute to the creation of a smart digital display board, offering a seamless blend of functionality. The smart digital display board boasts robust content integration capabilities, supports multiple screens, and provides easy access, rendering it a valuable tool for the development of intelligent digital boards. Rather than relying on on-site sensors for weather data, this project taps into a global network of weather stations. It sources data from various international weather data providers, such as Weather, Open Weather Map, Weather Group API, Forecast, Sky, and Earth Weather Online. The project's primary objective is to construct an efficient system capable of presenting the most precise real-time weather data.

Notably, the chief administrator has the autonomy to pair this weather data with additional informational content. The

Application Programming Interface (API) plays a pivotal role in this process by facilitating the retrieval of weather data and enabling the measurement of temperature, humidity, air-speed data, and pollution levels.

Hand Gestures Recognition for Human-Machine Interfaces

A Low-Power Bio-Inspired Armband: In this study, a new 7-channel sEMG armband is introduced, which serves as a human-machine interface for controlling serious gaming and aiding in rehabilitation. The focus was on creating a device that could calculate the Average Threshold Crossing (ATC) parameter, measuring how many times the sEMG signal crosses a set threshold within a fixed time period (130 ms) directly on the armband. Leveraging the event-driven nature of the ATC, the armband can predict common hand gestures onboard, consuming less power compared to other similar devices. After testing the device with the participation of 26 individuals, the average accuracy of the gesture recognition system was found to be 91.9%, including the recognition of 8 active hand gestures and an idle state in real-time. Moreover, with a current consumption of 2.92 mA during active use and a prediction latency of 1.34 ms, the prototype proved to be efficient and suitable for long-term use (up to 60 hours) in both medical and consumer applications.

III.COMPARISON BETWEEN EXISTING TECHNOLOGIES

Table 1 Comparison Between Existing Technologies

Existing Work	Scope of Improvement
Automated Timetabling System for University Course	Replacing an old-fashioned, time consuming timetable system.
Interactive Digital Notice Board	Solution to increasing vision problems in advanced ages.
Secure Cloud Storage and File Sharing	Response can be improved By integrity and security for higher throughput.
A Survey Paper on Hand Gesture Recognition	Needs more computation in comparison to static hand gesture.
Advanced Home Automation Using Raspberry Pi and Machine Learning	Needs to ensure optimal use of the resources at various levels and institution.
A novel approach: Cloud-based real-time Electronic Notice Board	Can serve as a valuable blueprint for universities.

Pushing the Digital Notice Board toward Ubiquitous Based on the Concept of the Internet of Everything	Users should be involved in things and as things, which is an ideal of the IoE-ready environment.
Study of Design of IoT based Digital Board for Data Delivery on National Highway	The website is fully optimized, resulting in a variety of resources.
Hand Gestures Recognition for Human-Machine Interfaces: A Low-Power Bio-Inspired Armband	Planning to develop a serious game to validate the use of our device in an application scenario besides evaluating its classification.

IV. CONCLUSION

In conclusion, the Automated Controlled Timetable Using Cloud & Gesture Recognition concept presents an exciting and evolving area of research and development. It holds the promise of simplifying daily life for individuals by offering efficient and accessible scheduling tools. As technology continues to advance, it is likely that these systems will become increasingly integrated into our daily routines, offering enhanced convenience and accessibility to a wide range of users. Further research and innovation in this field will undoubtedly contribute to more sophisticated, user-friendly, and inclusive timetable management solutions. Through an extensive literature survey, it is evident that this innovative approach has garnered substantial interest and research attention across various domains.

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