IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

IOT BASED WIRELESS ELECTRONIC NOTICEBOARD

[1]K. Swathi,[2]Ameena Juhi,[3]Mounika Pamarti,[4]V. Meghana,[5]G. Tejaswini

[1]Assistant Professor, [2]Student, [3]Student, [4]Student, [5]Student

Department of Electronics and Communication Engineering

G. Narayanamma Institute of Technology and Science (For Women), Hyderabad, India

Abstract: The proposed system aims to develop an IoT based wireless electronic notice board that can display messages from a remote location. The system consists of a microcontroller unit that is connected to the internet and receives messages from a cloud-based server. The microcontroller unit is connected to an electronic notice board, which displays the message, announces the message, and counts the viewers. The system is designed to be flexible and scalable and electronic notice boards to expand the system's coverage area. The system offers several advantages over traditional notice boards, including ease of use, convenience, and the ability to update messages remotely. IOT based Wireless Notice Board using Arduino is cheap, quick reliable and secured for any organization that requires to circulate notice regularly and reduce physical efforts. Overall, the IOT based wireless electronic notice board is a cost-effective and efficient solution for displaying messages in public spaces.

Index Terms **- IOT, Microcontroller unit, Arduino, internet, cloud-based server, Wireless noticeboard.**

I. INTRODUCTION

One of the most popular methods of mass communication, notice boards are utilized in everything from primary schools to enormous corporations. Numerous organizations utilize a lot of paper, which is then wasted. An IoT based wireless noticeboard is a smart device that allows for remote and automated display of messages and information. This device is connected to the internet and can be controlled via a smartphone. The system consists of an electronic display, wireless communication technology, and a microcontroller unit that receives data from various sources and updates the display accordingly. In addition to this this system also counts the number of viewers who watched the notice.

The use of wireless noticeboards in various public places such as schools, colleges, offices, hospitals, and shopping centres has become increasingly popular in recent years. These noticeboards provide a convenient and efficient way to communicate information to a large audience. The IoT based wireless noticeboards have several advantages over traditional noticeboards. They are more flexible and can be updated in real-time from any location. The system can be integrated with other IoT devices to provide a comprehensive and automated solution. Overall, IoT based wireless noticeboards are a powerful tool for communication and can greatly improve the efficiency and effectiveness of information dissemination in various public places.

II. RELATED WORK

"Design and Implementation of a Smart Notice Board Based on IoT" by S. Al-Sharif et al. This paper presents the design and implementation of an IoT based wireless noticeboard that can display real-time information such as weather updates and news feeds.[1]

"IoT Based Electronic Notice Board Using Raspberry Pi" by K. N. K. Rao et al. This paper presents a wireless noticeboard system based on the Raspberry Pi microcontroller unit that can display text messages, images, and videos.[2]

"Development of an IoT based Interactive Smart Notice Board for Educational Institutions" by R. H. Kulkarni et al. This paper presents the design and implementation of an IoT based wireless noticeboard system for educational institutions that can display class schedules, announcements, and other important information.[3]

"Smart Notice Board Using IoT: A Review" by N. Gupta et al. This paper provides a comprehensive review of various IoT based wireless noticeboard systems and their applications in different domains such as healthcare, education, and transportation. Overall, these studies demonstrate the potential of the IoT-based wireless noticeboards in various domains and highlight the need for further research and development in this area.[4]

III. PROPOSED WORK

The basic block diagram of the An IoT based wireless noticeboard is shown in figure below fig. 1, The system consists of a Raspberry Pi with SD Card and Power Supply, Speaker, Arduino Nano, 2-P10 Display, IR in sensor, IR out sensor, telegram bot app.

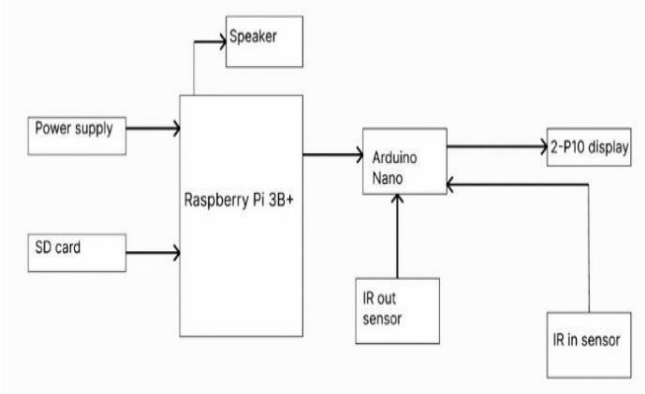

Fig. 1: Block diagram of proposed system

3.1. P10 Display

The P10 32x16 (Total 512 LEDs) LED Display module makes it simple to assemble LED display sign boards of any size, whether they are for indoor or outdoor use. This panel has a total of 512 red high-brightness LEDs set on a premium plastic casing created for the greatest display outcomes. To create an LED sign board or graphics board of any size, these panels can be combined in a variety of ways.Two P10 32x16 (total 512 LEDs) LED modules are used for the display in the suggested setup. There are 32 LEDs in each row and 16 LEDs in each column in a 32*16 module. Consequently, each module unit contains 512 LEDs in total. To create an LED sign board or graphics board of any size, these panels can be combined in a variety of ways. Raspberry Pi

It is a microprocessor. It has the following specifications – Processor 64-bit quad-core with a speed of 1.4 GHz and a memory of 1GB RAM, Bluetooth 4.2, and USB & HDMI ports and also supports Wi-Fi. It has 40 GPIO pins. In, this project Raspberry Pi 2B microprocessor is used to convert the text to speech announcement through a speaker and to display it in LED display.Raspberry Pi applications include building desktop computers, media accessibility robot control, serving as a printer server substituting web servers, repurposing as vintage game consoles, when connected to security cameras, aiding digital signage, network penetration testing, supplying information for business intelligence dashboards.

3.2. Speaker

It is connected through a 3.5mm audio jack to the microprocessor. Text-to-speech software library is used to convert the text message received in the Raspberry Pi into audio format and audio is given to the speaker to announce.Sometime people may not pay attention to the information display as they are busy with their own work so the speaker can grab the attention and covey the information.

3.3. IR sensors

IR sensor is an electronic device that emits the IR radiations in order to sense some object in the surroundings nearby. It has a range up to 5-10cm.The two main components of the IR sensor module are the IR Transmitter that emits radiations and IR Receiver consists of a photodiode which detects the radiation. The emitter is an IR LED (Light Emitting Diode). Photodiode is sensitive to IR light of the same wavelength which is emitted by the IR LED. When IR light falls on the photodiode, the resistances and the output voltages will change in proportion to the magnitude of the IR light received.The below Fig.2 shows the internal working of the IR sensor module where IR light is transmitted and if the light is blocked or reflected back then it assures that an obstacle is present

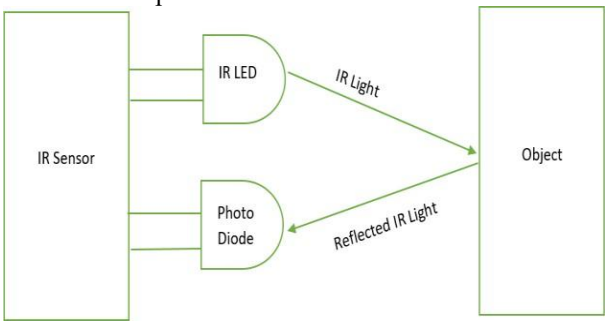

Fig. 2: Working of IR sensor module.

3.4. Arduino Nano

Arduino Nano is a small, flexible, and breadboard-friendly Microcontroller board, based on ATmega328p microcontroller, developed by Arduino.cc in Italy in 2008 and contains 30 male I/O headers, configured in a DIP30 style. It comes with an operating voltage of 5V. Arduino Nano consists of 14 digital pins, 8 analog Pins, 2 Reset Pins & 6 Power Pins. The Arduino Integrated Development (IDE) is used for programming the board. In the proposed system, two IR sensors

are interfaced with the Arduino Nano board for the purpose of counting the number of visitors and display the visitor count on the noticeboard.

3.5. Telegram bot

Telegram Messenger a cloud-based voice over IP and instant messaging service. It enables the project to develop bots with notice board interaction. Bots are external programs that operate inside Telegram. By delivering these messages, commands, and inline requests, users can communicate with bots. Utilizing HTTPS calls to the Telegram Bot API, you manage your bots.In the project telegram bot plays major role in communicating with the P10 display board. We send the text messages which must be displayed on the board through Telegram bot. After following certain steps, we will be able to communicate with display board.

The ESP32/ESP8266 will interact with the Telegram bot to receive, handle the messages, and send responses. In the project telegram bot plays major role in communicating with the P10 display board. We send the text messages which has to be displayed on the board through Telegram bot. After following certain steps, we will be able to communicate with display board. The ESP32/ESP8266 will interact with the Telegram bot to receive, handle the messages, and send responses. The Fig.3 shows how to setup the telegram bot channel and use it for transmission of data.

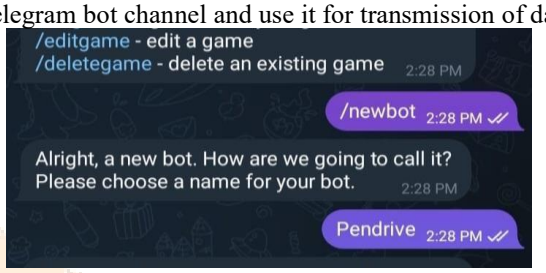

Fig. 3: Telegram Bot channel to create services.

IV. METRICS

User-friendly: All that we need is a mobile device or computer to input messages, which are then wirelessly shown on the display unit.

Eliminates the need for printers: Since this method does not require paper to display information, printers are also unnecessary.

Long Range: As long as we have the required network coverage, we can deliver messages from anywhere in the world.

Wireless: Wireless operations allow for the provision of services like long-range communications that are either difficult or impossible to perform via cables.

Information-transfer methods that are quicker: Instantaneous information transfer occurs. As soon as a message is typed, it is displayed.

Flexibility: The content displayed is simply modifiable, enabling the display of a range of messages and facts.

V. RESULTS AND DISCUSSIONS

The prototype of the wireless electronic notice board is designed successfully and is shown below in fig. 4. It can simply be incorporated with any general-purpose display board, demonstrating its mobility.

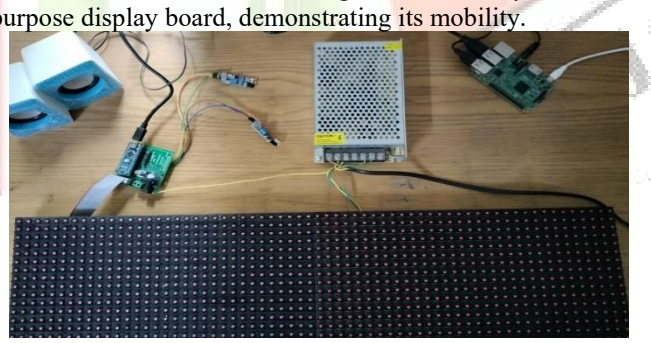

Fig. 4: Working prototype of the system.

The system takes the message to be displayed from the telegram app where we need to create a bot service by saying start and giving the name to it. Entering the message in the telegram bot service will be the one to be displayed on the notice board. Fig.5 shows sending message through telegram bot channel.

Fig. 5: Entering message in telegram bot

It Saves the message and stores it in the cloud and then shows it until another message arrives. Only one message can be sent at once via this mechanism. If the supply is given to raspberry pi then it will be created to remote desktop so it will waiting to receive message.

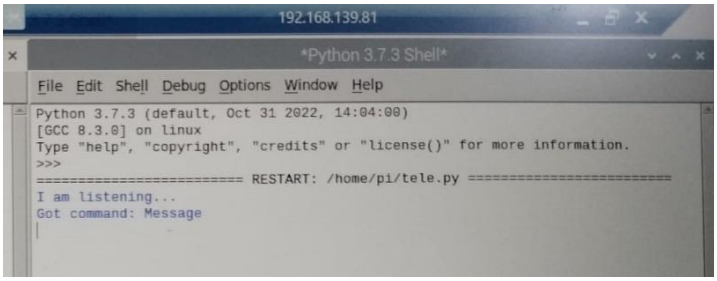

Fig. 6: Raspberry pi responding to the message.

When the message is received by raspberry pi the speaker connected to it gives the voice output and Arduino connected to gives the display on notice board. The message send from telegram app is message as shown in fig.7.

Fig. 7: Display on electronic notice board.

In addition, it counts the number of visitors viewed the notice board using IR sensor IN and display the message as IN: count. In the current scenario shown in fig.8 shows 6 persons near the notice board.

Fig. 8: Number of people viewed the notice board.

It also makes a note on number of people left after viewing the notice and display the it as OUT: count. In the current scenario shown in fig.9 shows people left the place.

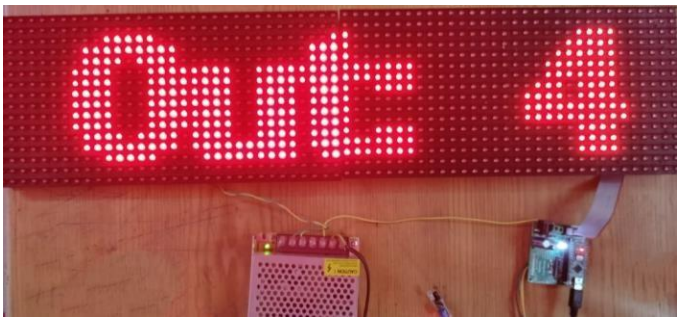

Fig. 9: Number of people left after viewing the notice board.

It also displays the information on how many people are currently watching the notice board by simply subtracting the Out count from the in count. In the fig.10 shows the difference of in count that is 6 and out count 4 and displays the present people 2.

Now = In – Out

Fig. 10: People currently viewing the notice.

Finally, these are the results displayed on LED after the transmission of the values from the Telegram Bot to LED.and interest rates from the economy and foreign companies could not earn considerably higher returns in terms of exchange rate. The investor could only earn a normal profit from KSE.

VI. METRICS

User-friendly: All that we need is a mobile device or computer to input messages, which are then wirelessly shown on the display unit.

Eliminates the need for printers: Since this method does not require paper to display information, printers are also unnecessary.

Long Range: As long as we have the required network coverage, we can deliver messages from anywhere in the world.

Wireless: Wireless operations allow for the provision of services like long-range communications that are either difficult or impossible to perform via cables.

Information-transfer methods that are quicker: Instantaneous information transfer occurs. As soon as a message is typed, it is displayed.

Flexibility: The content displayed is simply modifiable, enabling the display of a range of messages and facts.

VII. FUTURE SCOPE

In the future, longer characters can be displayed using external memory like RAM and more advanced microcontrollers, allowing the system to express longer messages.

The system will become more adaptable and complex for industrial application by adding new features like "No New Information" and "Getting New Notice Ready."

There isn't a separate LED to turn the system ON or OFF; the only way to see if there is adequate power is when the display board itself turns on.

VIII. REFERENCES

[1] "IoT Based Electronic Notice Board Using Raspberry Pi" by K. N. K. Rao et al. This paper presents a wireless noticeboard system based on the Raspberry Pi microcontroller unit that can display text messages, images, and videos.

[2] Jadhav Vinod, nagwanshitejas, "Digital Notice Board using raspberry pi" IJCAT-International journal of computing and technology, volume 3,Issue 2, February 2016".

[3] Jakobsen J B 2015 A Practical Cryptanalysis of The Telegram Messaging Protocol (AARHUS University).

[4] L. Korba, S. Elgazzar, T. Welch, Active infrared sensors formobile robots, IEEE Transactions on Instrumentation andMeasurement 2 (43) (1994) 283–287.

[5] Raspberry Pi for Dummies by Sean McManus, Mike Cook · 2013

[6] Shrutik Katchiiand Pritish Sachdeva, "A Review Paper on Raspberry Pi", Vol.4, No.6,Dec 2014

[7] Tejal Prakash Modi, PratikshaSumtilalOstwal, Noshin Ayaz Kureshi, "Digital Notice Board", International Journal of Engineering Development and Research (IJEDR), ISSN 2321- 9939, Vol.5 Issue 2, April 2017.

[8] "Smart Notice Board Using IoT: A Review" by N. Gupta et al. This paper provides a comprehensive review of various IoT based wireless noticeboard systems and their applications in different domains such as healthcare, education, and transportation.

[9] https://www.hackster.io/Salmanfarisvp/telegram-bot-with-raspberry-pi-f373da

[10] https://www.bvmengineering.ac.in/misc/docs/published-20papers/etel/etel/401066.pdf