"Real Time Notice Board: An IOT application"

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Abstract:- *In this paper, we propose a secure and Smart Notice Board with real time data that can be accessedusing an Android device with which we can display message on it. In a basic setup, a notice board contains information which has to be updated regularly. This becomes tiresome and requires daily maintenance for everyone.The existing smart notice boards do not provide real- time data and have the support of only Bluetooth connectivity, whereas our proposed approach will be having Wi-Fi accessibility that will overcome geographical limitations as well as provide authorization features. In our proposed approach, the receiver device receives the information from the mobile device that will to be sent to a Raspberry Pi3B+ Module. The Raspberry Pi3B+ uses various codes and displays the message on a LCD screen. This can be used in public spaces such as offices, railway stations or airports where people gather in large numbers and who need information in a reliable and secure manner.*

Keywords: Smart notice board, Remote access, Raspberry pi, smart notice board, IoT

Problem Statement

Our proposed paper overcomes the problem of regular updation by introducing a Smart Notice board that is interfaced to an android device through the internet with security features.

1 Introduction

Nowadays, Smart intelligence through Industry 4.0 is being employed for bringing a paradigm shift in people's lives. Researchers all over the world are coming up withdifferent technologies to make this a reality. In today's world of connectedness, people are becoming accustomed to easy access forall day-to-dayinformation [1]. Whether it is through the internet or television or radio, people want to be informedand stay up-to-date with the latest events happening around the world. Wired networks such as, Ethernet has its own limitations depending on the need and type of connection and is becoming outdated. Nowadays people prefer wireless connection because they can interact with people for easy and secure accessibility. The main objective of this paper is to develop a wireless notice board thatdisplays messages sent from the user's phone and to make a simple, easy to install, user friendlysystem, which can receive and display notice in a particular manner with respect to date and time. This will help the user to easily keep a track of notice board information round the clock whenever he accesses the system. Data updates are done using secure Wi-Fi connectivity.

2 Components

2.1 Raspberry Pi 3B+ Model

The RaspberryPi 3 Model B+ is the latest product in the RaspberryPi 3 range, boasting an updated 64-bit quad core processor running at 1.4GHz with built-in metal heat-sink , dual-band 2.4GHz and 5GHz wireless LAN, faster (300 mbps) Ethernet, and PoE capability via a separate PoE HAT[4]. This latest configuration was selected due to our need for fast data updation happening in real time.

2.2 SD Card(8 Gb)

It is a storage device in which we will install the Raspbian OS and all other files.

2.3 LCD Display

We used LCD display to display all the messages/information that we are sending from an Android device.

2.4 Power Cable

It provides power upto 2.5Amp/5Volt for Raspberry to operate smoothly.

2.5 HDMI and USB Cable

These cables are used for interfacing between all the components. Figure 2 represents the block diagram of our notice board.
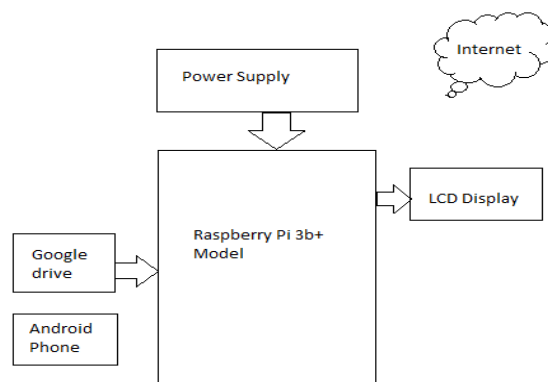
Fig 1Block diagram of Android controlled notice board

3 Methodology

When people use the manual process to update the notices on a notice board, they need to update every notice manually which is a lengthyand tiresome process. The following modules are associated with our android application and we use Google Drive to store information and access it for later use. The following steps illustrate the complete flow-

3.1   Login
User gets logged in to his Google account for uploading the notice. By using our proposed approach, the user can update the notice directly from his/her Android/iOS/Windows phone that will be automatically updated on the Smart notice board.

3.2   Authentication

The authentication process is used to check whether the user who logged in is the authentic user with valid password given by the network admin. Here only a single person is given the user ID and password for security purpose. The whole process helps to keep the system in a secure and in a transparent manner.

3.3. Displaying Message on Notice Board

To display a certain message, the user will have to feed the message in their Google drive application which is used to display the message directly onto the notice board[2]. The connection between software and hardware can be done with Wi-Fi modem.The message to be displayed is sent by an authorized person from an authorized transmitting device whose identity is registered with the network administrator. The Raspberry pi 3 Model B receives the notice through encrypted web pages, and uses secure AES algorithm for encryption and sends and displays the information[3].

3.4Logout
When the notice updation has been completed, the authorized usermust logout to prevent illegal access.

4. Result

The implementation of the design passed all necessary design test conducted such as Black Box and White Box test. Each stage in the development process was tested and evaluated in reference to the existing setup. The test shows that the system performs very well as compared to the existing system. The functionality was then confirmed by sending messages/information to the display and each message having authenticated to be valid was displayed. The prototype of the complete system is shown in Figure 2. Figure 3 shows the interfacing between all the components.
The display is able to give real time news, weather report, holiday list and any other important message on daily basis.

Fig 2 Prototype of our project

Fig 3 Interfacing between various components

5. Conclusion

We thus conclude that the proposed system has removed all the drawbacks of existing systems and enhanced it with the autonomous internet and Wi-Fi notice board system. The proposed system gives the automation in all the processes like updating notices from any remote place. Through the introduction of wireless technology for displaying messages, we can make our communication more efficient and faster. We can display the messages and with less errors and maintenance. This system can be used in large public gatherings such as stadiums, train stations and other infrastructures, where it is difficult to update information in a reliable and secure manner.

6. References

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