



Smart Display using Nodemcu with Alert System

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Abstract:

In this paper, Building an IoT-based project provides for rapid data transformation and user access from any location on the planet. For this project, we designed an IoT-based smart display. The main purpose of this project is to develop an electronic display that is self-contained, reliable, and autonomous. The information is shown on an LCD screen, and sensors are utilised to detect rain, gas leakage, and fire and send alert alerts to the organization's leader. NodeMCU was used to create this electronic notice board. It has an inbuilt WIFI module and sensors, and the Blynk app connects to NodeMCU through the internet, and this app is also used to send notifications to the user; the notice is displayed on the Blynk app, and the user sees it.

Keywords- LCD Display, Sensor, Nodemcu, Blynk.

1.Introduction:

This paper gives a brief description about the usage of internet of things (IOT) to build a smart display using node mcu with alert system. As it is a prototype we used LCD display to be the one which displays the messages. As the nodemcu has an in-built WiFi module there is no need to connect it externally. The current technology or the existing works make use of a GSM module and a sim card for communication purpose with the user. Other works include the designing of a personalized webpage for message or notice entry. We have a built a smart display which doesn't require GSM module or the designing of a webpage. An android application called Blynk is used for notice or message entry and to get the notification whenever any fire, gas or rain is detected. This acts as both smart display and a simple alert system. It is a secure system as the application

used by the user is protected by id and password. With one login id and password we can create and control more than one projects and each one is given a unique authentication token which is sent to the user's respective email id.

2.Literature survey:

[1] In this paper, the project is designed using pic microcontroller and GSM module which requires a sim card to function. The message or notice is displayed using a Led matrix which makes it effective when the content to be displayed is less or limited.

[2] In this paper, an Arduino board is used and is directly connected Ethernet module for internet connectivity using internet of things (IOT). This uses a personal home page which is designed using an HTML-embedded, server-side scripting language.

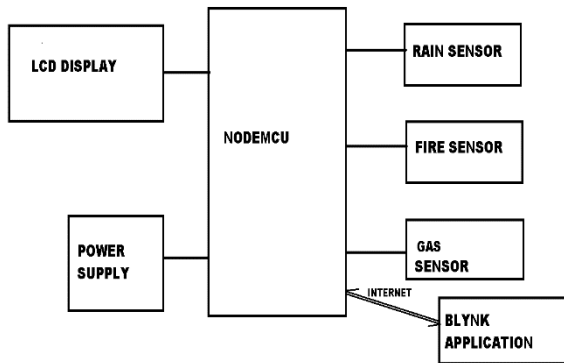
[3] In this paper, the main component used is raspberry pi which has an in-built WiFi module and Bluetooth module. It is connected to LCD monitor via HDMI interface. In this a personal webpage is created to communicate with the raspberry pi and which can be accessed through desktop computer or a mobile. It is a little pricey yet very effective way of displaying the notice.

[4] This paper uses Arduino Uno as the core device which is connected to ethernet shield and uses ethernet libraries to connect with the internet and a webpage is created for notice message entry.

[5] This paper employs raspberry pi 3 and an LCD monitor for displaying the message and is operated by an android app/web.

3. Proposed system:

The proposed system consists of nodemcu, lcd display, sensors. Along with nodemcu connected with blynk application through internet with the help of the wifi module present in the nodemcu.



Block diagram of Smart display

This is the block diagram for the proposed system. The main objective of this paper is to build a user friendly smart display which has some properties like easy to install, easy to use and the ease of maintenance. It can be operated by a mobile phone which has an application named Blynk installed in it. It is very secure as the auth token provided is unique for every project.

4. Working

The designed smart display is used at the colleges and schools for displaying day-to-day information continuously or at regular intervals during the working hours. Being WI-FI transceiver system, it offers flexibility to display alert messages or announcements faster than the programmable system. WI-FI-based display system can also be used at other public places like schools, hospitals, railway stations, gardens etc. without affecting the surrounding environment. With the help of sensors nodemcu sends alert messages to lcd display through blynk application over internet.

Need of Blynk application:

The main reason to use blynk application is it provides more security compared to GSM module. It is easy to use. Sensors send alerts with the help of nodemcu to lcd display. Blynk app acts as an intermediary between nodemcu and lcd display.

This smart display working is mainly depends on the algorithm which we dumped into the nodemcu. According to the alert messages we included in the

algorithm will display on the lcd display when the sensors detect any issues like rain, fire, gas leakage and send alerts to nodemcu.

Instead of sitting in front of desktop we can operate the notices on the lcd display from anywhere over internet.

5. Results and Discussions

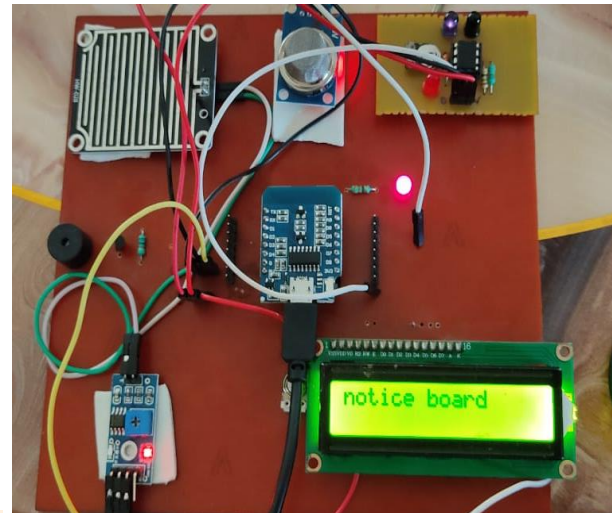


Fig 1a. smart display output

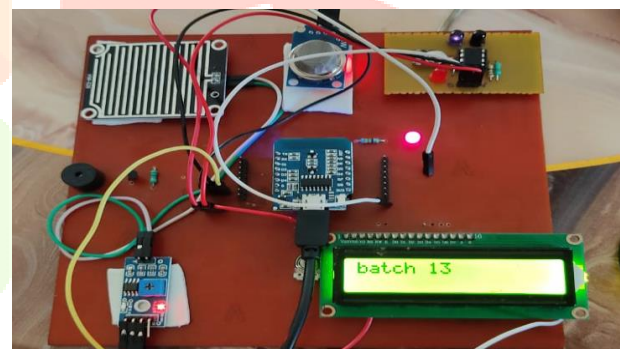


Fig 1b. smart display output

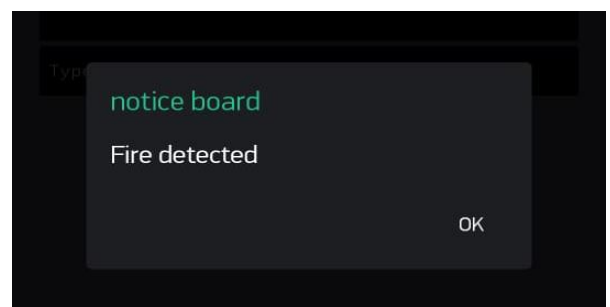


Fig 2a. alert message on blynk app

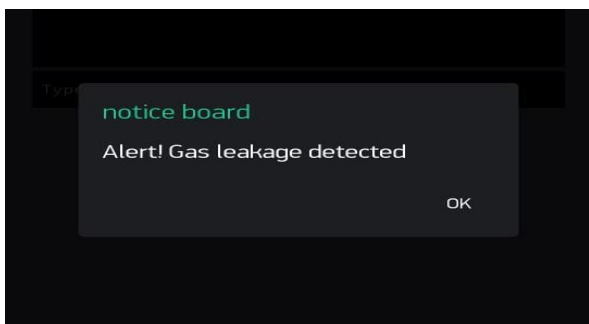


Fig 2b. alert message on blynk app



Fig 3b. fire alert message on lcd

This figure shows the alert message on lcd display when the fire is detected by the fire sensor.

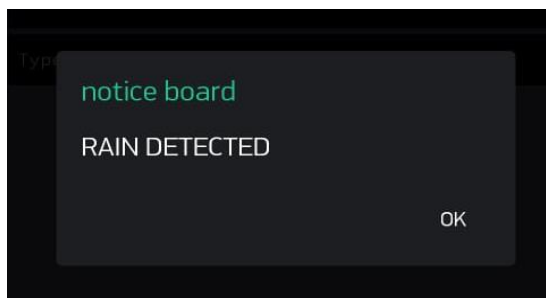


Fig 2c. alert message on blynk app

The above figures shows the alert message which display on blynk app.



Fig 3c. rain alert message on lcd

This figure shows the alert message on lcd display when rain is detected by the rain sensor. With the help of this smart display we can alert the people in malls, airports, railway stations,schools, etc.



Fig 3a. Gas alert message on lcd

This figure shows the alert message on lcd display when the gas leakage sensor detected by the gas leakage sensor.

6. Conclusion:

This paper describes the hardware and software of an IoT-based digital display in detail. When it comes to the benefits of the Internet of Things (IOT), it is one of the most beneficial technological commodities. Display is systematic alignment of portraying desired Although designing a smart display is a simple task, compiling it with a high-level language requires a bit of brilliance. A developed web application is provided with a well-secured system with the help of NodeMCU. We proposed a model that monitors the area, and also

due to alerts system we get the alerts from the sensors and display in the LCD Screen.

7. Future scope:

This system can be implemented in many ways and it can be proceeded to Display in the large screen like monitor or TV etc., and to control by the voice control we can implement by using the raspberry pi.

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