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Industrial Monitoring System using LoRa Module with IoT

S. Manoj Kumar[1], M. SriRama Subrahmanyasai[2], R. Harish Goud[3], Dr. Satyanarayana Murthy Andhe[4]
[1, 2, 3]*Students,* [4]*Professor, Department of Electronics and Communication Engineering, B. V. Raju Institute of Technology, Medak, Telangana, India*

Abstract: ***Now a day's due to global warming and climate changes there are challenging situations in Industries. To reduce the cost as well as to improve productivity along with product quality the automation in the field of Industries is necessary, which will also reduce the industrial worker's efforts. Due to many people who died in an industrial accident, industrial safety plays a key role in the industrial producing process. By adding advancements in the Internet of Things, this paper proposes an intelligent monitoring system for Industries. The proposed sense of network architecture is completed based on Arduino and LORA technology. The sense node's work cycle is extended by a specific work model. The position of Workers can be obtained through inquiry routing tables of network nodes. Manage system is designed to provide services for industrial managers. The proposed system can monitor the process of Industrial intelligently and warn Workers and managers immediately when dangerous issues emerge, such as gas leaking and sudden temperatures rise.***
Keywords: ***Industries, LORA technology, gas leaking, temperature.***

I. INTRODUCTION

The underground areas are labyrinths, in which long and narrow tunnels are a few kilometers long and a few meters wide. Thousands of industrial workers are required to work in critical conditions according to construction needs, and hundreds of Workers die in industrial accidents every year. It is now widely acknowledged that underground industrial activities are at high risk. In this view, the monitoring and control system needs to be deployed as one important resource to ensure industrial security and to coordinate various activities. Almost Underground factories mainly consist of random locations, branch channels, and this informal structure makes it difficult to send any bone of communication networks. In such a case, the use of the wireless sensor network (WSN) and other sensitive devices may have the unique advantages of access control for global monitoring and control under rapid and flexible transmission. We can overcome the transmission mechanism of multiloop tunnel structure and this paper provides sufficient scope for the design of an industrial monitoring system, and is best suited for wide-scale monitoring environments, which can effectively detect outflow failures an underground cable monitoring system. The Industrial App has gone beyond the connectivity of a few large back-end systems, and more and more underground physical devices make the state of objects and surroundings more accessible to software systems. Functions Most are based on the construction of a monolithic system, which is ridiculous and difficult to reconcile. The necessary step in Industry monitoring and automation management is to provide accessible and well-organized information that is streamlined with the same dumping process. It is needed to allow users to identify Industry Security Standards of Security, and possibly amend the monitoring and control laws to ensure industrial safety. In addition, the user can also control the physical devices through the Web. Existing Industrial security systems that focus on real-time data collection are user-friendly, but cannot fully meet user requirements with high usage constraints and often require complex operation definition and optimization to monitor and control operating systems, and cannot fulfill the need for ad-hoc services by end users. However, they focus more on integrating information resources and not focusing on the requirements that come with the integration of physical devices. The middleware for industrial monitoring and control of automation requires immediate coordination of communication between business processes and distribution, multimodal sensors Also, industrial middleware and dynamic control should change dramatically in their constant and constantly changing global underground industries.

II. EASE OF USE

It is very suitable for the comprehensive monitoring and controlling workstations to compensate for the deficiencies of the existing underground cable monitoring system and It allows the users to identify the levels for industry safety alarming, and possibly adjust monitoring and control rules to ensure the industry's safety. The user can also control the physical devices remotely via the web. Currently available Industries safety monitoring and control systems that focus in the real-time information collection are useful, but cannot meet the user needs fully with a very high usage obstacle and often requires a complex operation definition and configuration for monitoring and control automation applications. Very useful in IoT proto communication, since we are using Lora it is highly efficient with long-range communication.

III. HARDWARE AND SOFTWARE DESIGN

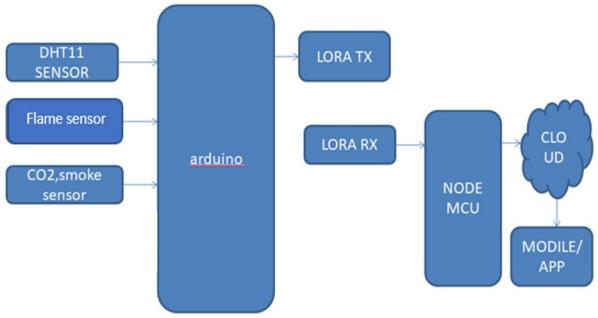


Figure 1: Block Diagram

Figure 1, is the Arduino based Industrial monitoring system. The following components and the sensors are used:

A. Arduino UNO
B. Node MCU
C. DTH11 Humidity and Temperature sensor
D. Flame / Fire Sensor
E. LoRa Trans-receiver

The software tools used are
1) Embedded c
2) Arduino IDE
3) ThingSpeak Cloud

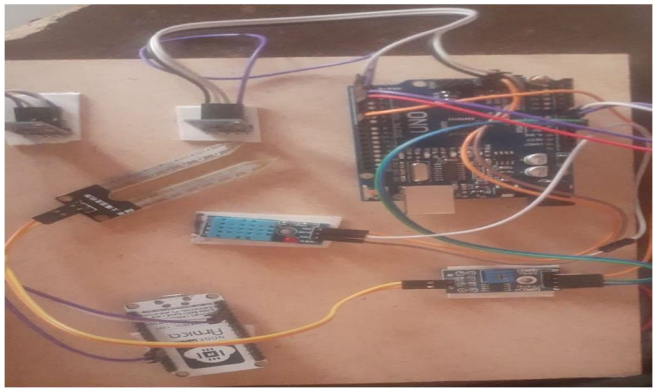


Figure 2: Results in Thing speak cloud

IV. WORKING

The following are the steps that are to be followed for the working and implementation of our proposed device:

A. The purpose of this project is to do Industries security system using Lora and cloud
B. As we don't have an Internet system in the underground it is difficult to transmit the data collected by the sensors
C. So, we use Lora to transmit the information collected by the sensors
D. With the help of Lora, we can transmit the data up to 10km, but we are using the range of 80m due to cost issues.
E. Once the data is received by the node MCU will upload data to the cloud.
F. After uploading to the cloud, if the parameters reach their threshold limit, then we get an SMS.

The flow of the Industrial monitoring process is as

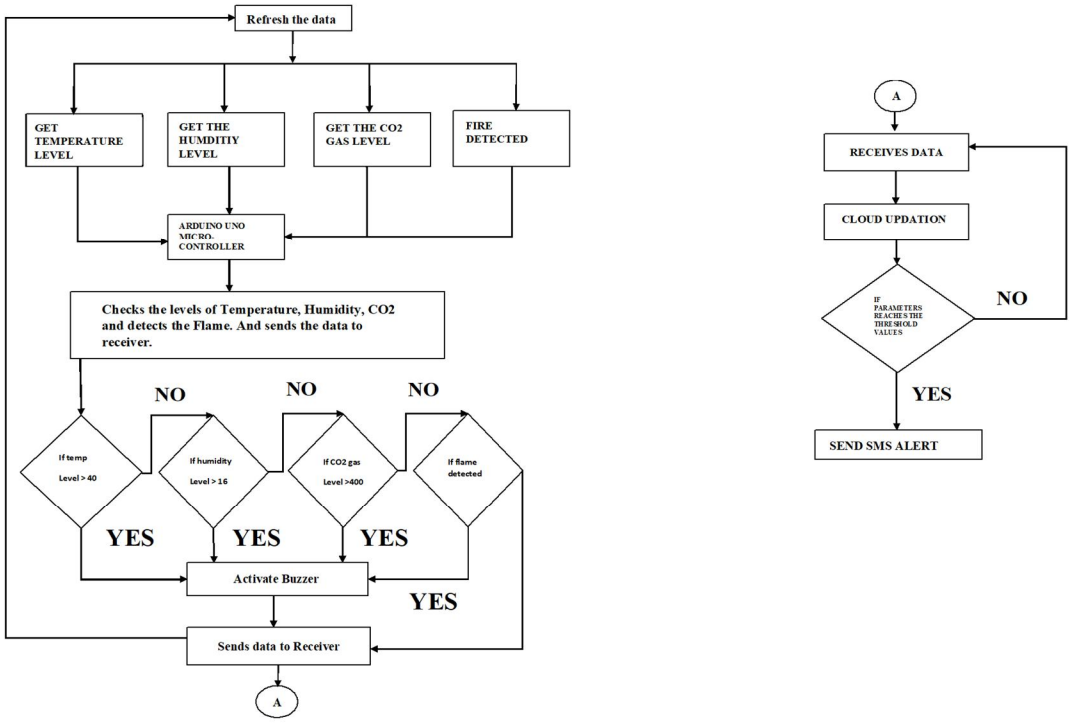


Figure 3: Flow chart of the Industrial monitoring process

V. RESULT

Figure 4: Results in Thing speak cloud

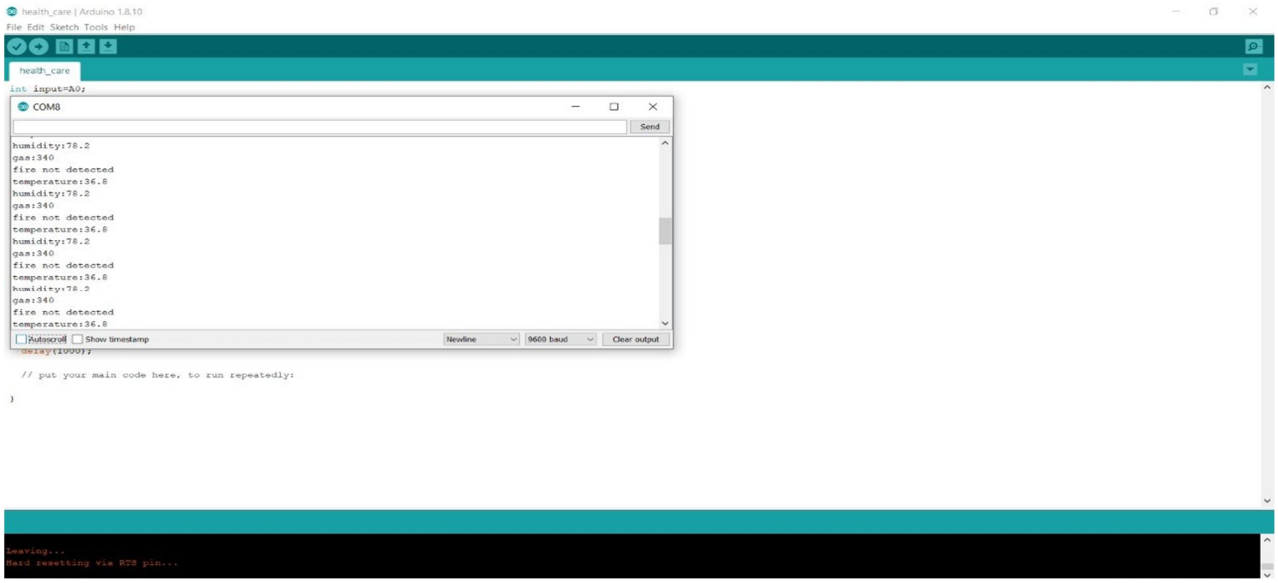


Figure 5: Results in Arduino IDE

VI. CONCLUSION

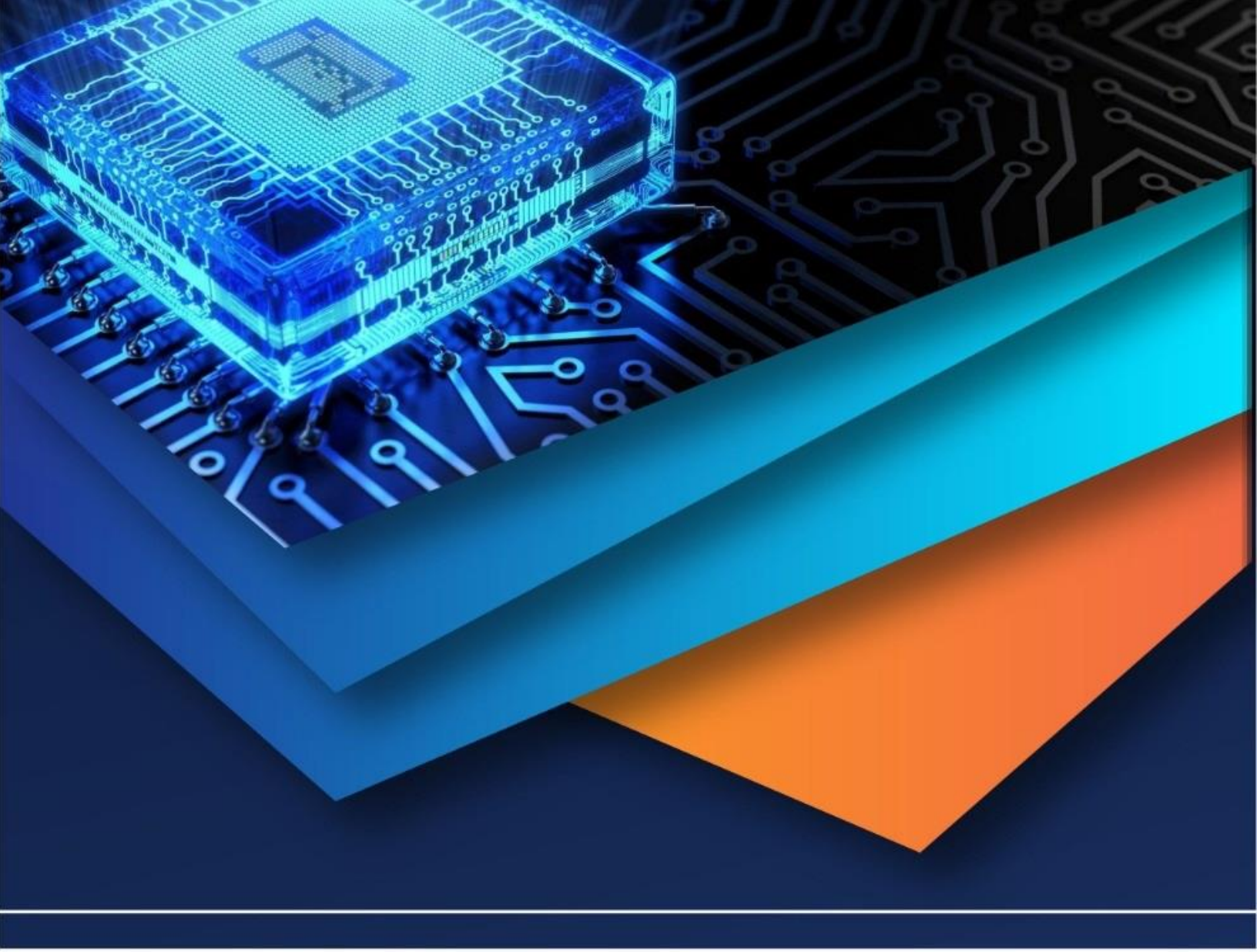
This paper builds a middleware for remote monitoring of industries and control of detection. Focus on the design and operation of an underground wireless network deployment, device access layer, distribution network distribution, event-driven service engine, and RESTful-based open API interface. The new feature of this study is to develop an industrial middleware and control middleware that is easy to use and installed for developers. Since most of the app is Web-based, any personal computer and web browser can connect to the Internet and install a Web page to use the app, which can reduce the cost of Industrial security monitoring and control of automation performance. Therefore, it is expected to have a significant impact on the Industry in a more efficient and safer environment. There are many issues to be addressed. First of all, as an extension of security monitoring and the Sector's available facilities, visualization technology can improve the visibility of underground sensors, such as 3D technology, which provides valuable support for decision-making and real-time management in underground workstations. Second, it is important to add real-time data distribution service and data collection techniques to integrate with different QoS concepts for large-scale industrial deployment. These activities are currently underway in our lab.

VII. FUTURE ENHANCEMENT

We can use an industrial surveillance camera to monitor environmental conditions and get data in the cloud except for transmission lines for short distances. We can use the underground wireless network (WSN) transferring and receiving ground information in the mines to upgrade the network centers in underground mines.

REFERENCES

[1] K. Page, "On Blood: The Impact of Diversity on Organizational Dimensions and Industrial Risks," J. Security Reserve, iv. 40, no. 2, pages 85 - 95, 2009.
[2] L. Mallet, c. Voight, along with M.J. Brinich Jr., "Public Relations with Underground Fireflies: A Case Study of Diseases in an Emergency," Security Science., Vol. 16, no. 5, pp. 709-728, 1993.
[3] M. Nado and G. Why. Delisle, "An Modline Broadcast Model," in Proc The 60th IEEE Vehicle. Technology. Confidence., 2004, Vol. 5, chap. 3584-3588.
[4] J. Wood, J. Dykes, A. Slingsby and Kay. Clark, "Exploring Collaborative Views of Large-Scale Local Data: Thinking about Global Solutions," IEEE Trans. Vis. Computer. Graph., Iv. 13, no. 6, pages 1176-1183, November. - December 2007.
[5] X.-G. It's, X-H. Huang, Zed. Zhao, Y.H. Zhang, C.C. Huang, and LCC, "Design and Analysis of the Wireless Sensor Network for Industrial Security Monitoring," Proc. IEEE Globacom, 2007, p. 1230-1236.
[6] M. Lee and Y.-H. Liu, "Underground Industrial Placement by Wireless Sensor Networks," ACM Trans. Registration Device. Net., I.V. 5, no. 2, chap. 1-29, 2009.
[7] G.-Z. Chen, Z.-C. , Zhu, G.B. Zhou, c. F. Shane, and J.J. Surya, "Sensor Node Breakdown Strategy in Wireless Networks of Underground Industrial Networks," by J.K. China Univ. Industrial technology. Iv. 18, No. 4, p. 561-55, 2008.
[8] A. Buggettaya, s. Nepal, w. Sherchan, x. Zhou, J. Wu, S.P. Chen, D. Liu, Li Li, H. B. Wang and X.M. Liu, "End-to-End Support for IEEE Trans Mashup Services." Praying. Comput., Iv. 3, no. 3, pages 250-263, July. - September 2010.



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