

Oxygen Monitoring System to Evaluate Average Life Span of Human via Indoor

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ABSTRACT: The concept of the web of things (IOT) of objects reshaping human life sets the bottom for solution which will response, innovative products and ultimately new and wonderful ways of doing business. during this study, a system has been developed that communicates by calculating the remaining life times of individuals who sleep in a indoor area and communicating information to the surface user with the assistance of wired and wireless technology so as to follow up things . Moreover, the system prints the quantity of oxygen within the indoor and calculated average lifetime of an hostages until they rescued. Additionally to the present, the temperature and gas values of the indoor environment are measured simultaneously with the quantity of oxygen, in order that the knowledge associated with the system are often transferred through a server system and therefore the possibilities of adverse effects are often observed. The server is made up with NODEJS, JAVASCRIPT languages using NPM (Node Package Manager) software. With this improved system, it's ensured that the person staying indoors is in a position to ascertain the time remaining momentarily, to measure for the amount of your time in check, to avoid unnecessary panic awareness and to avoid movements which will adversely affect the quantity of oxygen within the indoor.

KEYWORDS: Oxygen, gas values, NODEJS, JAVASCRIPT, NPM

I. INTRODUCTION

Today, many technology products have been developed in order to facilitate and even rescue human life in a software and hardware sense. Right now, remaining future of a people who are abandoned in a domain without oxygen section can be determined and educated to both the screen and outside open situations. An individual who is deserted doesn't have the foggiest idea about the rest of the life expectancy and imagines that the air will be expended quickly, particularly for the individuals who are claustrophobia, this impact is considerably more and influences the measure of oxygen in that environment adversely. As a result, people are affected psychologically or physically, such as rapid breathing or self-harm by panic, and even those who can survive as a result of these effects die prematurely. With this improved framework, it is guaranteed that the individual remaining inside can see the time remaining immediately, to live for the time frame levelled out, to stay away from superfluous frenzy mindfulness and to maintain a strategic distance from developments that will unfavorably influence the measure of oxygen in nature. At the same time, in sudden oxygen drops, both the person staying in the closed area and the user outside are warned; it is necessary to stay stable and thus the survival time can be extended.

II. RELATED WORK

Detecting of oxygen in an indoor may also contain other gases such as methane gas, carbon-di-oxide, etc.. In our project we implement a MQ2 gas sensor, temperature and humidity sensor with arduino nano. This setup is connected to the server system. The operation is as follows

1. After detecting gas, humidity, and temperature, data is transfer to the server serially through port.
2. Server is build up with NPM and NODE.JS format.

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3. The Node Red application consist of payload sensors, splitters, and serial ports.
4. Output data shown in a dashboard includes content meters, graphs, and display.
5. The data received in port is splits to payload sensor and then to dashboard.
6. Dashboard data can be viewed in server system as well as server connected systems
7. Output data is stored in a server as a text document for backup.

III. PROPOSED MODEL

An Arduino based life span calculating system via oxygen content is a technique to detect oxygen rate in an indoor to find the remaining lifetime of a person. This project will help to improve quality of service in rescuing system by monitoring the victim rate. The results will be shown also in a form of graph. Remaining life time is varied based on number of person available in the indoor.

IV. WORKING PRINCIPLE

In the proposed system, working principle is divided into two categories- hardware working and software working. These two works in different circuits

A. HARDWARE WORKING PRINCIPLE

This hardware circuits consist of arduinonano, MQ2 gas sensor, DHT12 Temperature and Humidity sensor, I2C LCD display. The MQ2 sensor is used to give the methane content based on which we can calculate oxygen content. The DHT11 is used to show the humidity and temperature. LCD is used to display the oxygen content, life time. In this hardware part every output will be sent in parallel to the arduino nano when it gets power supply where IC7805 will regulate the flow.

B. SOFTWARE WORKING PRINCIPLE

First Node Red application should be installed in the laptop on which the output is shown. The circuit will be pre-designed with the help of Java script code for which we have to download Node JS and NPM (Node Package Manager) in which the library files will be present. Based on these files the circuit will be designed. Now the working is explained as follows. Open Command Prompt and then type node-red and then click Enter. After that open any web browser and enter the IP address for the circuit which is created based on Java script code. Then a screen will be shown with the circuit. Here any changes can be made like interchanging the position of outputs displayed, type of graphs, etc., After changes are made press Deploy button only then the changes will be uploaded.

The node red page is connected to the serial port for input. The connected data is split to the payload sensor module and dash board. Payload sensor stores the data in memory as text file dash board shows the output in graph form. The data is processed for every two seconds. Then connect arduino nano with the laptop in any one of the ports available and check whether the circuit is connected with laptop. If connected, then with the IP address type 'ui'. In this page the output will be shown. The outputs are Oxygen content, Methane content, temperature, humidity. Then we will be asked to enter the number of people in that closed surrounding according to that the lifetime will be displayed. A graph will be shown for the lifetime for every particular number of seconds. This yield can be seen in cell phones too however all gadgets ought to be associated in a system, where with the assistance of the workstation's IP address we can see the yield. The values will be monitored for every 2 seconds which can be seen in Node Red Page.

V. BLOCK DIADRAM

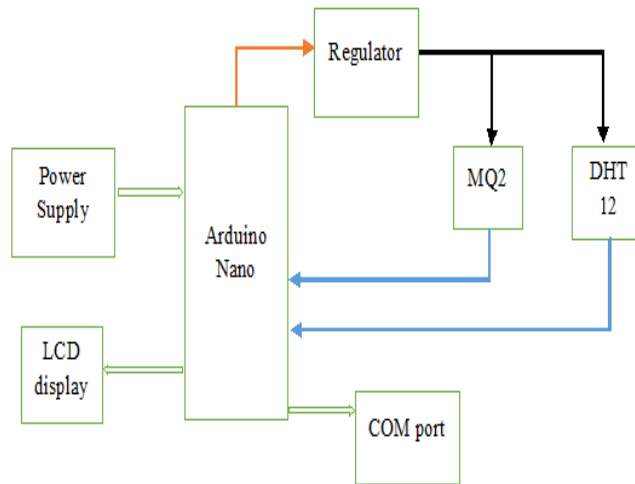


Fig. 1 Hardware Block Diagram

VI. EXPERIMENTAL RESULTS

The development of the electronic tracking system “Calculation of the Average Life Time of an Average Person Based on the Indoor Oxygen Content” measures the amount of oxygen, temperature, humidity and gas in the environment. The output will be varied according to the number of people available in the room. The output is shown via graph.

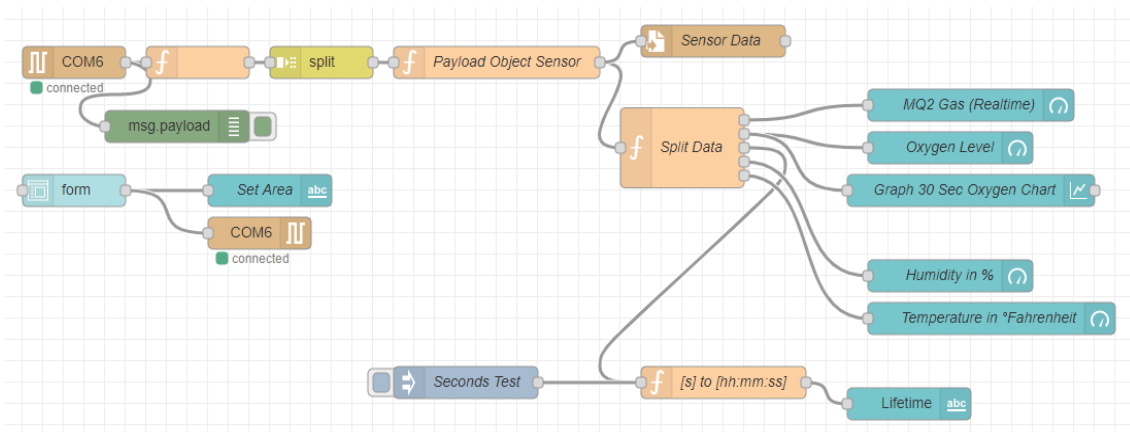


Fig. 2 Software Functional Block diagram of Oxygen Content Monitoring System to Evaluate Human Life Span Via Indoor in Node Red home page

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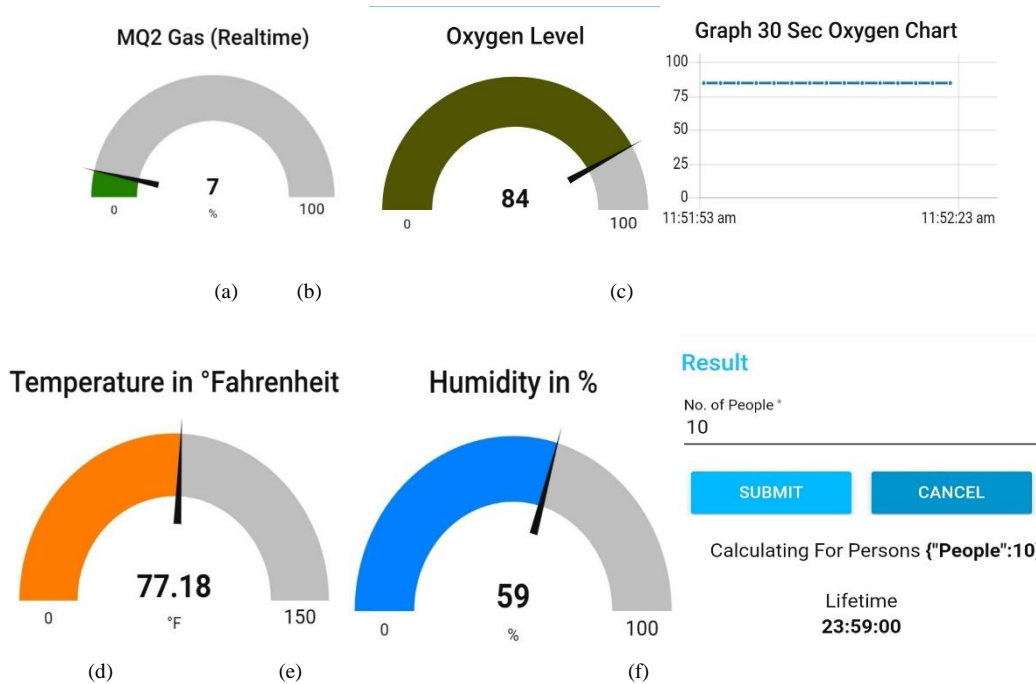


Fig. 3 Various outputs displayed (a) Methane gas Level (b) Oxygen Level (c) Graph for oxygen Level for every 30 sec (d) Temperature (e) Humidity (f) Final result showing the life time according to the number of people

VII. CONCLUSION

This technology of “Calculation of the Average Life Time of an Average Person Based on the Indoor Oxygen Content” help us to measure the oxygen content, temperature, humidity in the closed atmosphere. The outputs which will be displayed are oxygen content, methane content, temperature content, humidity and a graph to show the increase or decrease in lifetime for every particular number of seconds. This will be helpful for the people who are involved in deep underground works such as mining. Based on the number of people the lifetime will be varied accordingly and shown. A LCD display is also used to show the oxygen and lifetime for any exceptional cases. These outputs can also be viewed in a mobile phone if they are connected in a network.

REFERENCES

- [1] Borat, O., Balcı, M., Sürmen, AS., “Hava Kirlenmesive Kontrol Tekniği”, Teknik Eğitim Vakfı Yayınları-3, Ankara, 2016, s.1-4.
- [2] Böbrek, A., Kırbaş, İ., Özcan, K., (2017). Developing a Wifi / Bluetooth Based Patient and Baby Monitoring Application. Mehmet Akif Ersoy Üniversitesi Fen Bilimleri Enstitüsü Dergisi 8 (Ek Sayı 1): 252-261.
- [3] Clark, I. A., Cowden, W. B & Hunt, N. H. (2014). Free radical-induced Pathology. Med. Res. Rev. 5:297-332.
- [4] Intel Corporation. IoT Analizleri ve Yönetilebilirlik. Intel: <https://www.intel.com.tr/content/www/tr/tr/internet-of-things/iotanalytics-and-manageability.html>
- [5] Kerry, J.P., Hogan, S.A., O’Grady M.N., 2010, Past, Current and Potential Utilisation of Active and Intelligent Packaging Systems for Meat and Muscle-based Products: A Review, Meat Science, 74: 1131-130.
- [6] K. Anil Bablu Louis, K.M.S.R. Tarun, T. Teja and B. Santhi Kiran, “Intelligence Spy Robot with Wireless Night Vision Camera Using Android Application”, International Journal for Modern Trends in Science and Technology, Vol. 03, Special Issue 02, 2017, pp. 01-05.
- [7] K. Uma, M. Swetha, M. Manisha, S. V. Revathi and Anand Kannan. “IOT based Environment Condition Monitoring System”, Indian Journal of Science and Technology, Vol. 10 (17), May 2017.
- [8] Kumar D, Aseri TC, Patel RB. EECHDA: Energy Efficient Clustering Hierarchy and Data Accumulation for Sensor Networks. BIJIT. 2010; 2(1):150-7.

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- [9] Lovlin, R., Cottle, w., Pyke, I., Kavanagh, M., Belcastro. A. N. (1987). Are indices of free radical damage related to exercise intensity. *European Journal of Applied Physiology* 56:313-16.
- [10] Marco A, Casas R, Falco J, Gracia H, Artigas JI, Roy A. Location-based services for elderly and disabled people. *Computer communications*. 2012; 31(1):1055–66.
- [11] Shukla H, Bhawe V, Sonawane S, Abraham J. Design of efficient communication algorithms for hotspot detection in data centers using Wireless Sensor Networks. 2016 IEEE International Conference on Wireless Communications Signal Processing and Networking (WiSPNET); 2016.
- [12] T. Marco, A. Juan, C. Henry, M.Diego and P. Carlos. IoT-based system for indoor location using bluetooth low energy. *Communications and Computing (COLCOM)*, 2017 IEEE Colombian Conference, Colombia.