

Novel approach in O₂ Monitoring and Control System for Medical Emergency

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Abstract—The Internet of Things (IoT) has been broadly used to interconnect the accessible therapeutic assets and offer shrewd, dependable, and powerful social insurance administration to the elderly individuals. Wellbeing checking for dynamic and helped living is one of the standards that can utilize the IoT focal points to enhance the elderly way of life. In this paper, we display an IoT engineering tweaked for social insurance applications. The proposed engineering gathers the information and transfers it to the cloud where it is handled and broke down. Criticism activities in view of the investigated information can be sent back to the client. A model of the proposed engineering has been worked to show its execution points of interest

Keywords— *Health monitoring, Internet of Things (IoT), Medical devices, Sensors Platform, implementation Cloud computing.*

INTRODUCTION

The surrounding air quality in Indian urban areas has debased to unsafe levels in the course of the most recent two decades. People groups are presented to outrageous wellbeing dangers because of expanding particulate issue, risky airborne specialist in indoor spaces, discharge toxic gases from enterprises and vehicles and open sewerage frameworks. Henceforth a need as emerged to make imperative strides in screen and keeps up indoor air nature of our home and workplaces. With headways of gas sensor innovation in the course of recent decades there has been critical advance in contamination control and along these lines, to ecological assurance. For this reason, an IOT based gadget can be made for end application in home/office and other indoor spots. We can likewise limit human intercession by coordinating gadget with our home system like individual Wi-Fi.

As a sort of highlight of the proposed framework, it will likewise demonstrate body temperature of the patient by utilizing Thermistor. Another target of this framework is to check climate oxygen supply is going from the terminal point i.e. from an ace point from where finish slave framework gets the oxygen supply. The gadget will be fit for giving the caution as per the signs gave by oxygen gas sensor to the overseer to make each conceivable move in like manner.

Principle motivation behind IoT based O₂ observing and control framework is, as if there should arise an occurrence of biomedical application, tolerant experiencing any extreme circumstance and needing oxygen. All things considered, if amount of oxygen is going to complete, this framework will screen the level of oxygen and control. And additionally, the proposed framework likewise, offer alarm to guardian or concern individual about respective warnings.

• Objective

- a) As a sort of highlight of the proposed framework, it will likewise demonstrate body temperature of the patient by utilizing thermistor.
- b) Another goal of this framework is to confirm climate oxygen supply is going from the terminal point i.e. from an ace point from where finish slave framework gets the oxygen supply.
- c) The gadget will be equipped for giving the alert as per the signs gave by oxygen gas sensor to the overseer to make each conceivable move as needs be.
- d) Controlling a solenoid valve to influence controlled arrival of O₂ to gas and restorative measures.
- e) The gadget ought to likewise have the capacity to gauge voltage levels from sensors and report it to a focal server.

B. Scope of the project

- a) Principle reason for IoT based O2 checking and control framework is, as if there should aroused an occurrence of biomedical application, persistent experiencing any extreme circumstance and needing oxygen.
- b) All things considered, if amount of oxygen is going to complete, this framework will screen the level of oxygen and control.
- c) As a sort of highlight of the proposed framework, it will likewise demonstrate body temperature of the patient by utilizing thermistor.
- d) Another target of this framework is to confirm climate oxygen supply is going from the terminal point i.e. from an ace point from where finish slave framework gets the oxygen supply.
- e) As well as, the proposed framework likewise, offer alarm to guardian or concern individual about respective notices.
- f) As the name recommends, the proposed framework is useful in biomedical applications.
- g) As the proposed framework is IOT based, we can have its entrance around the world, i.e. from any side of the world.

[1] LITERATURE SURVEY

A low-control wearable IoT framework for dynamic and helped living social insurance application is developed and plotted the principle parts of the proposed framework and clarified their usage points of interest. Model show the distinctive execution parts of the proposed framework. The preparatory execution assessment comes about have shown the productivity of the proposed framework- notwithstanding being an ease one. This makes the proposed framework a decent contender for executing a wide arrangement of wearable human services frameworks [1]. Execution of this framework utilizing Arduino mega for wise observing is another strategy to checking of weight esteems and controlling of gas is finished. It underpins disconnected supervision and control inside private system. It likewise set aside to 30% of gas utilizing gas control circuit and ensures the human wellbeing. The consequence of this framework demonstrates that the framework has quick powerful reaction [2]. Here, proposed configuration is executed with Arduino stage for nursery checking, controlling temperature and soil dampness with the assistance of Web server utilizing IOT [3]. It has been produced by coordinating highlights of all the equipment segments and programming utilized. Nearness of each module has been contemplated out and put deliberately in this way adding to the best working of the unit. Also, utilizing Raspberry pi and with the assistance of developing innovation the task has been effectively executed [4]. From the optical spectra the sensor assesses the electron temperature and examinations the relationship between's chosen sets of phantom lines. Every one of the estimations is performed continuously. Contrasted with other optical sensors, the primary preferred standpoint of this framework is that it has an awesome endless supply of the welding metal or the joint geometries. Truth is told once the substance creation of the composite is known and the significant plasma discharge lines are distinguished, just a minor adjustment of the product settings is essential. Given that the outflow line parameters are known, this strategy is especially easy to understand on the grounds that it doesn't require an excessive number of counts and can be effectively executed for constant temperature checking [5]. The aftereffects of this investigation show the likelihood of understanding the procedures in the entrance divert in EBW in view of the parameters of plasma auxiliary outflow electron current flag framed over the welded zone. A copied harmonica of the wavering recurrence commands in plasma auxiliary current flag range at EBW with electron-shaft swaying over the joint. Both first and second music are available at the procedure of EBW with electron-shaft wavering along the joint in the plasma optional current flag. The strategy depicted here makes it conceivable to watch the state of the keyhole specifically in the welding administration. In the under focused administration, the pillar interfaces with a forward divider and the base of the keyhole. In the over focused administration, the keyhole turns out to be more symmetric and the bar collaborates similarly with the forward and back dividers of the keyhole [6]. In this paper, another design for a persistent home and individual observing framework has been introduced. The framework depends on Wi-Fi systems administration and actualizes an authentic IoT vision, in which every sensor in the system specifically logs its information to a cloud benefit. The framework is gone for supporting autonomous

existence of elderly individuals: inside such viewpoint, the reception of Wi-Fi advances may bring about awesome improvement in framework arrangement and establishment, as for more traditional remote sensor organize innovations (e.g., ZigBee). Being a not so much meddlesome but rather more natural approach, Wi-Fi should cultivate much better openness and agreeableness. Additionally, by exploiting standard advancements and of characteristic plan includes, a cost diminishing and better versatility can be accomplished [7]. Horticultural data innovation (AIT) has been extensively connected to each part of agribusiness and has turned into the best means and instruments for upgrading agrarian profitability and for making utilization of full rural assets. As an imperative sub-innovation of AIT, the utilizing of innovation of Agriculture Information Management straightforwardly influences the level of farming informatization and effectiveness of rural creation's choice. In this paper, based on presenting the idea of horticultural data administration and breaking down the highlights of Farming information, the outlining strategy and design of Intelligent Agriculture MIS was talked about in detail, at long last, this paper gives a usage case of framework in agrarian creation [8]. Through the scene investigating and testing of security creeping robot, video show with clear correspondence picture is figured it out. Lighting light is arranged in a dim place for enlightenment. Numerical show of CO sensors, temperature sensors changes synchronously as per that deliberate in working environment to satisfy constant transmission, which has better elements of observing, counteractive action and save, accordingly tackling the issue of staff non appearance in scene are some features [9]. This paper presents design of an ICT-based wellbeing checking framework, which takes into consideration data administrations associated with various remote wellbeing sensors. The article additionally portrays the joining of this framework into a substantially more extensive and broadened AAL design (i.e. SAAPHO) that means to give dynamic maturing to the elderly in their homes. The paper has supplemented the mechanical angles with client assessment led in two nations. The point of this work has been to research how clients communicate with observing framework at home, how well they can take the estimations, and how well they can consult through the different menus and alternatives. The point of the paper has likewise been to assess whether there was an apparent value of the framework. By and large, the impression of the framework has been sure given that there is relative straightforwardness in working the physical sensors. The level of detail of the data has been considered adequate and the printed proposals were exceptionally valued [10].

III. PROPOSED SYSTEM

The block diagram of the proposed system is shown in below Figure 1. This is a healthcare system where a patient is in ventilator and doctor continuously can't monitor him. The pressure regulator regulates the pressure and connected oxygen sensor senses the oxygen level, similarly thermistor connected to the controller checks the temperature of patient. Both thermistor and oxygen sensor are connected to the Arduino microcontroller. The Wi-Fi module (ESP8266) connected with Arduino sends the data about patient to the doctor wirelessly on Thingspeak server.

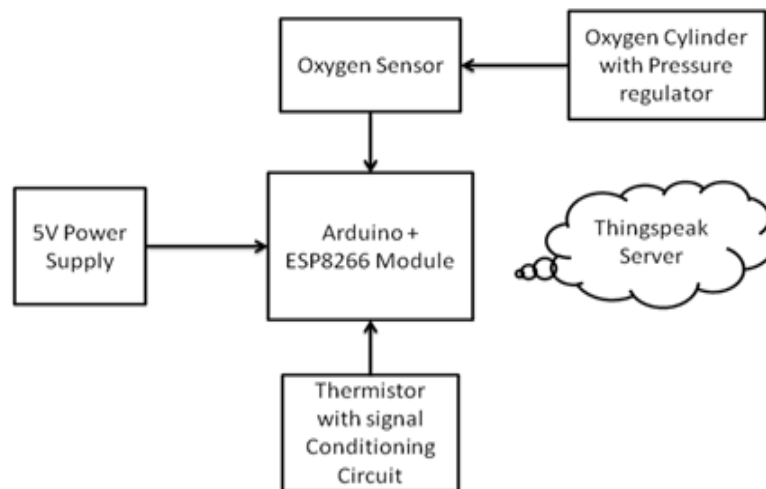


Figure 1:- Block diagram of proposed system.

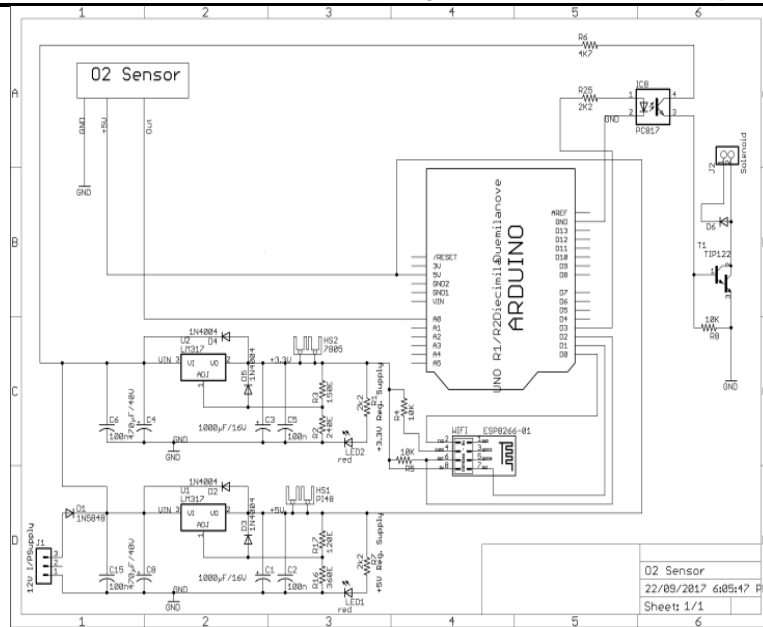


Figure 2:- Circuit diagram of proposed system

ThingSpeak enables the creation of sensor logging applications; thus ThingSpeak users can analyze and visualize uploaded data using MATLAB without requiring the purchase of a Matlab license from Mathworks. ESP8266 Wi-Fi module gives tasks access to Wi-Fi or web. It can speak with any microcontroller and it is the most driving gadgets in the IOT stage. ESP8266 runs on 3.3V, so connect the VCC and the CH_PD to the 3.3V pin of Arduino. The output of ESP8266 is 3.3V hence we have to make a voltage divider for it which will convert the 5V into 3.3V. This can be done by connecting three resistors in series like we did in the circuit. Connect the TX pin of the ESP8266 to the pin 10 of the Arduino and the RX pin of the esp8266 to the pin 9 of Arduino through the resistors. Associate the Oxygen sensor with the Arduino. Connect the VCC and the ground stick of the sensor to the 5V and ground of the Arduino and the Analog stick of sensor to the A0 of the Arduino. When gas sensor interface with Arduino it detect the oxygen level in the gas cylinder and alerts the alarm as per the given requirements.

IV. RESULT

By considering today’s polluted scenario, it is must for the person who is patient to inhale good quality of oxygen like the oxygen provided externally through oxygen gas cylinder. But, many times it happens that in hospitals, the care taker may unavailable due to any issues, in that case, if oxygen in the oxygen cylinder may get finish or is about to finish and hence in that case, if patient does not get continuous supply of oxygen, there are chances of sudden death of patient.

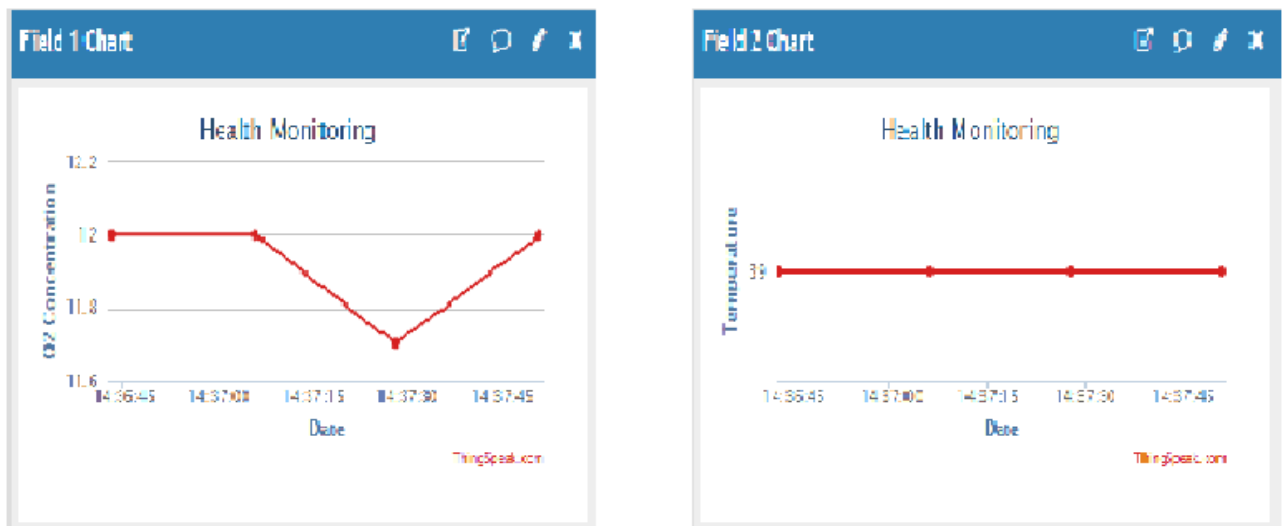


Figure 3:- Output of sensore on Thinkspeak

So, here is the proposed system which is IoT Based Oxygen Monitoring And Control System. In this proposed system, if the oxygen in the oxygen cylinder goes to finish or is about to finish in that case, this system will continue monitor and control oxygen level in cylinder with the help of gas sensor inside the oxygen mask of patient and also the body temperature of patient can be measured using thermister. And as well as gives alert to the care taker to take instant and necessary actions according to the situation and health of the patient.

V. CONCLUSION

In this way, IOT based oxygen monitoring and control system is designed for the purpose of monitoring the health of patient. The main purpose of this system is in biomedical application such as in hospitals. Weather care taker is present or not, using proposed system, health of patient can be monitored via alerting to the care taker. This system can also be implemented in the situation where system can be act as a master unit which will monitor the supply of oxygen to all the slave units and if lack of supply then it will raise alarm and care taker can take necessary actions and hence human errors can be reduced.

REFERENCES

- [1] Ahmed Abdelgawad, Kumar Yelmarthi and Ahmed Khattab, "IoT Based Health Monitoring System for Active and Assisted Living," IEEE, vol.4, No 4,pp. 572-582.
- [2] Abhijeet A. Chavan and R. M. Autee, "IoT Based Controlling and Monitoring of CO₂ Gas in Welding Machine," International Journal of Innovative Research in Computer and Communication Engineering, Vol. 4, Issue 1, January 2016
- [3] Prof. D.O.Shirsath, Punam Kamble, Rohini Mane, Ashwini Kolap, Prof.R.S.More "IOT Based Smart Greenhouse Automation Using Arduino" International Journal of Innovative Research in Computer Science & Technology (IJRCST) ISSN: 2347-5552, Volume-5, Issue-2, March 2017 DOI: 10.21276.
- [4] K.Jhansi Rani, K.Niranjan Reddy "IOT Based Secure System For Monitoring And Control of Coal Mine Environment of Robotics" International Journal of Recent Advances in Engineering & Technology (IJRAET) 2347 - 2812, Volume-3, Issue -9, 2015
- [5] Teresa Sibillano, Antonio Ancona , Vincenzo Berardi and Pietro Mario Lugarà "A Real-Time Spectroscopic Sensor for Monitoring Laser Welding Processes" Sensors 2009, 9, 3376-3385; doi:10.3390/s90503376.
- [6] Dmitriy Trushnikov, Vladimir Belenkiy, Valeriy Shchavlev, Anatoliy Piskunov, Aleksandr Abdullin and Georgy Mladenov "Plasma Charge Current for Controlling and Monitoring Electron Beam Welding with Beam Oscillation" Sensors 2012, 12, 17433-17445; doi:10.3390/s121217433 IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT, VOL. 66, NO. 12, DECEMBER 2017
- [7] Marco Bassoli, Valentina Bianchi, Ilaria De Munari, and Paolo Ciampolini "An IoT Approach for an AAL Wi-Fi-Based Monitoring System"
- [8] Duan Yan-e "Design of Intelligent Agriculture Management Information System Based on IoT" 2011 Fourth International Conference on Intelligent Computation Technology and Automation.
- [9] Zhenjun He, Jiang Zhang, Peng Xu, Jiaheng Qin and Yunkai Zhu "Mine Detecting Robot Based on Wireless Communication with Multi-sensor"
- [10] Mobyen Uddin Ahmed, Jesica Rivero Espinosa, Alenka Reissner, Àlex Domingo, Hadi Banaee, Amy Loutfi and Xavier Rafael-Palou "Self-serve ICT-based Health Monitoring to Support Active Ageing" The International Conference on Health Informatics (HEALTHINF-2015),pages374-382