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A Literature Review on the Smart Monitoring of Covid-19 Patient Using Internet of Things

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Abstract: Healthcare is an important part of life. Sadly, the spread of Covid-19 has strained the bulk of health systems and therefore the demand for resources from hospital kits to doctors and nurses became extremely high. However, the significant advancement in the computing sector have led to the emergence of Internet of Things (IOT) which has now become one of the most powerful information and communication technologies thanks to its capability to connects object like medical kits, monitoring cameras, home appliances then on… Capitalizing on the efficiency of knowledge retrieval from smart objects in the health sector, it's clear that an answer is important and required to enhance the health sector within the era of Covid-19 pandemic while continuing to supply a high-quality care to patients. In this paper, a real-time covid-19 monitoring system is introduced during a sort of an IOT based bracelet that measures blood heat and blood oxygen level, which are essential factors for determining the patient’s condition and whether he needs a fast intervention to enter ICU room. The bracelet also features a GPS tracker to work out the patient’s commitment to quarantine and social distancing. Based on the study conducted with quite 50 medical stuff, the IOT based bracelet was identified as a promising tool which will help control the spread of the covid-19 virus, by providing a contemporary access to medical healthcare services anywhere and anytime which is beneficial for the patient and hospital management stuff.

Keywords: IoT, Oximeter Sensor, Temperature Controller, Wi-Fi.1.Introduction

Health is usually a serious concern in every growth the humanity is advancing in terms of technology. Like the recent corona virus attack that has ruined the economy of China to an extent is an example how health care has become of major importance. In such areas where the epidemic is spread, it's always a far better idea to watch these patients using remote health monitoring technology. So Internet of Things (IOT) based health monitoring system is that the current solution for it. It is a system which collects patient’s information with the assistance of few sensors. It uses Wi-Fi module to speak this information to the web. There is temperature monitoring module which is contactless and monitors the patient’s temperature. There is oxymeter monitoring which helps to understand and get the vital parameters so that the doctor can get access to these vital parameters pertaining to the patient’s health over the IOT web interface from anywhere over the world. This project has one major advantage in this situation of pandemic where there are situations of shortage of beds and doctors, remote monitoring of patients is an alternate and efficient option. Remote Patient Monitoring arrangement empowers observation of patients outside of clinical settings (e.g. at home), which expands access to human services offices at bring down expenses. The core objective of this project is that the design and implementation of a sensible patient health tracking system that uses Sensors to trace patient health and uses internet to inform their loved ones just in case of any issues. The objective of developing monitoring systems is to reduce health care costs by reducing SMS based patient flourishing viewing and IOT based patient checking framework. In IOT based framework, subtle parts of the patient flourishing are often seen by different clients.

2.Literature Review

D. Pimentel, B. Berger, D. Filiberto [2], research on “Water resources: agricultural and environmental issues”.**Water is essential for maintaining an adequate** food supply and a productive environment for the human population and for other animals, plants, and microbes worldwide.

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D.Pimentel, B. Berger, D.Filiberto [2]., studied on providing adequate quantities of pure, fresh water for humans. Plants require water for photosynthesis, growth, and reproduction. The water used by plants is nonrecoverable, because some water becomes a part of the chemical makeup of the plant and the remainder is released into the atmosphere.

Water is saved by following some methods as: Farmers should implement water-conserving irrigation practices, such as drip irrigation, to reduce water waste. Similarly, farmers should implement water and soil conservation practices, such as cover crops and crop rotations, to minimize rapid water runoff related to soil erosion. So, here in this research essential amount of water is saved for agriculture but here is also need to know the physiological characteristics of plants in order to develop smart agriculture. Thus, after studying this literature review we thought to develop a system for enhancing the agriculture system by controlling and monitoring various physiological characteristics of plants.
E. Playán and L. Mateos [7], research on "Modernization and optimization of irrigation systems to increase water productivity," *Agricultural Water Management*. A number of irrigation modernization and optimization measures are discussed in the research. Particular attention was paid to theimprovement of irrigation management. The purpose of this research is water management in agriculture by modernization and optimization of Irrigation system. So this is why we thought to improve agriculture system by analysing and controlling the plant respiration system.

R.Qui, s. Wei, M.Zhang et al [9],studied on "Sensors for measuring plant phenotyping: a review,"International Journal of Agriculture and Biological Engineering.This research presence a brief review on the parameter measurement for phenotyping to describe its development in recent years.Some parameters that have been measured in phenotyping are introduced and discussed including plant height, leaf parameters, in-plant space,chlorophyll,water stress,and biomass.

In this research, measurement usually focuses on some crop stand parameters. These parameters can be divided into morphometric and physiological parameters. The morphometric parameters, including plant height, stem diameter, leaf area or leaf area index, leaf angle, stalk length, in-plant space, and the physiological parameters such aschlorophyll, photosynthetic rate, water stress, biomass, salt resistance, and leaf water content, which can all influence orrepresent the growth of a plant. So, we thought to develop a system for more improvement in smart agriculture system by analysing plant respiration system and its physiological parameters more deeply.

3.Methodoloy

During the plant cultivation, several steps including temperature, humidity, lightintensity, water nutrient solution level, pH and EC value,CO2 concentration, atomization time and atomization interval time required for flourishing plant growth.

- Therefore, the object of proposal to provide significant knowledge about early fault detection and diagnosis in plant cultivation using intelligent techniques (wireless sensors) and IOT.
- The parameter like temperature, humidity, moisture, water level, pH value, water transpiration, CO2 discharge, effect of light intensity are the wireless sensor as input parameter.
- Whereas some are the output parameter like light intensity, air cooler, and water pump.

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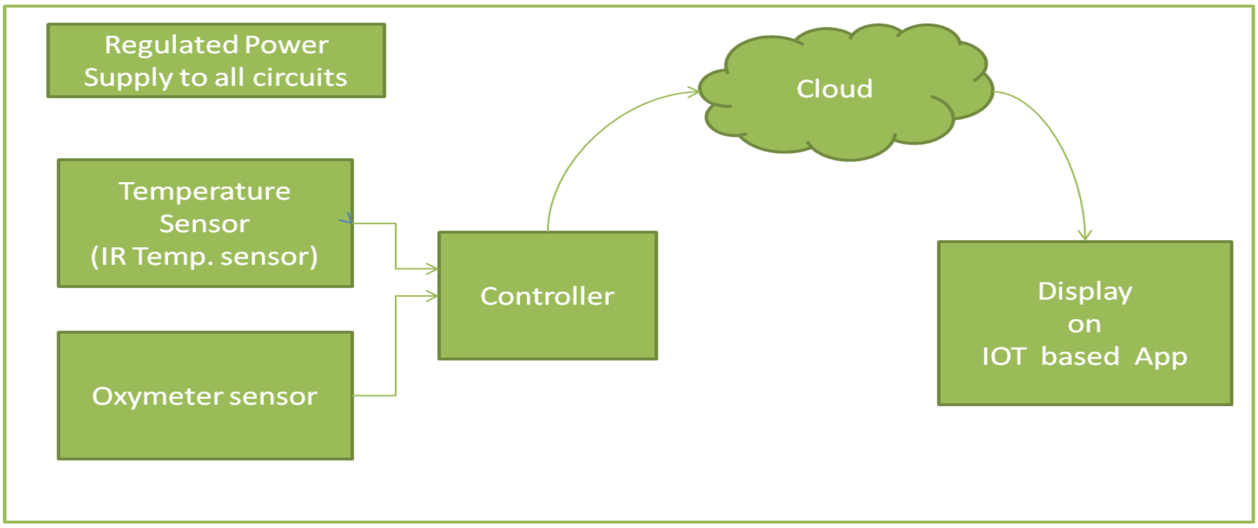
- The temperature of plant and surrounding is sense by the LM 35 temperature sensor and fed to ESP module with analog data. This data will transfer to the Cloud using IOT module.
- The humidity of plant is sense by DHT11 sensor. Same as water moisture and water sensor will be transfer to the ESP 8266 module.
- For water transpiration purpose we used the gas pressure sensor, as well as the pH value of the water we can into consider.
- The released of Co2 by the plant will be measure by MCQ 07 sensor.
- All data of different sensor acquiesce by the IOT module and uploaded to cloud.There are different cloud platform is available ubidots is the one of this platform which provides the data analysis as well as data storages.
- The data is access to control section on desktop PC or as mobile app.



4.Discussions

- **Node clusters shows the data of each node send to cloud and it recovers at the control station for analysis.** Code block diagram for plant. In this project proposal the different sensors are used to measure the physiological parameter of plant detailed discussion about different sensors, and devices has been presented in this section.

5.Conclusion

This article describes in detail an IOT -based conceptual architecture for a COVID-19 patient monitoring system. The solution incorporates a valid and widely used early-warning score method for checking and monitoring hospitalized patients and contains a mechanism for customizing this assessment method to ensure the individualization of assessments. Moreover, IOT -based remote monitoring systems face many challenges, and this article discussed how system features could improve scalability, interoperability, network dynamics, context discovery, reliability, and privacy. Architectural sensitive points and potential risks were also discussed, addressing the ratification in a production environment, managing heterogeneous devices, energy autonomy, access to an internet connection, and privacy requirents. Regarding the latter, our proposal gives a particular emphasis on a consent management module and a blockchain-based platform for consent management. The proposed platform maintains patients' privacy rights by securely storing individual consent and allowing the

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implementation of procedures to check that they are not violated.Ultimately, the solution proposed here will support public health efforts and allow for smarter, safer, and more efficient monitoring of COVID-19 patients and future pandemic outbreaks.

6.References

1. Kim SH, Chung K (2015) Emergency situation monitoring service using context motion tracking of chronic disease patients. Clust Comput 18(2):747–759
2. Parthasarathy P, Vivekanandan S (2018) A typical IOT architecture-based regular monitoring of arthritis disease using time wrapping algorithm. Int J Comput Appl
3. Kumar PM, Gandhi UD (2018) A novel three-tier Internet of Things architecture with machine learning algorithm for early detection of heart diseases. Comput Electr Eng 65:222–235
4. K.R. Darshan and K.R. Anandakumar, "A comprehensive review on usage of internet of things (IOT) in healthcare system," in Proc. International Conference on Emerging Research in Electronics, Computer Science and Technology, 2015.
5. P. Rizwan, K. Suresh. Design and development of low investment smart hospital using Internet of things through innovative approaches, Biomedical Research. 28(11) (2017).
6. K.R. Darshan and K.R. Anandakumar, "A comprehensive review on usage of internet of things (IOT) in healthcare system," in Proc. International Conference on Emerging Research in Electronics, Computer Science and Technology, 2015.
7. W. Baudoin, R. Nono-Womdim, N. Lutaladio et al., Good Agricultural Practices for Greenhouse Vegetable Crops: Principles for Mediterranean Climate Areas (No. 217), Food and Agriculture Organization of The United Nations, Rome, 2013.
8. M. Lee and H. Yoe, "Analysis of environmental stress factors using an artificial growth system and plant fitness optimization," BioMed Research International, vol. 2015, Article ID 292543, 6 pages, 2015.View at: Publisher Site | Google Scholar
9. S. M. Moon, S. Y. Kwon, and J. H. Lim, "Minimization of temperature ranges between the top and bottom of an air flow controlling device through hybrid control in a plant factory," The Scientific World Journal, vol. 2014, Article ID 801590, 7 pages, 2014.View at: Publisher Site | Google Scholar
10. C. Stanghellini, "Horticultural production in greenhouses: efficient use of water," Acta Horticulturae, vol. 1034, pp. 25–32, 2014.View at: Publisher Site | Google Scholar
11. D. Savvas, G. Gianquinto, Y. Tuzel, and N. Gruda, "Soilless culture," in Good Agricultural Practices for Greenhouse Vegetable Crops: Principles for Mediterranean Climate Areas (No. 217), W. Baudoin, R. Nono-Womdim, N. Lutaladio et al., Eds., pp. 303–354, Food and Agriculture Organization of The United Nations, Rome, 2013.View at: Google ScholarI. A. Lakhiar, X. Liu, G. Wang, and J. Gao, "Experimental study of ultrasonic atomizer effects on values of EC and pH of nutrient solution," International Journal of Agricultural and Biological Engineering, vol. 11, no. 5, pp. 59–64, 2018.View at: Publisher Site | Google Scholar
12. J. P. Beibel, Hydroponics -The Science of Growing Crops without Soil, Department of Agriculture. Tallahassee. Bulletin, 1960.
13. J. L. Reyes, R. Montoya, C. Ledesma, and R. Ramírez, "Development of an aeroponic system for vegetable production," Acta Horticulturae, vol. 947, pp. 153–156, 2012.View at: Publisher Site | Google Scholar
14. M. Raviv and L. Lieth, "Significance of soilless culture in agriculture," in Soilless Culture: Theory and Practice, M. Raviv and J. H. Lieth, Eds., pp. 117–156, Elsevier, Amsterdam, 2007.View at: Google Scholar
15. V. Valenzano, A. Parente, F. Serio, and P. Santamaria, "Effect of growing system and cultivar on yield and water-use efficiency of greenhousegrown tomato," The Journal of Horticultural Science and Biotechnology, vol. 83, no. 1, pp. 71–75, 2008.View at: Publisher Site | Google

Scholar

16. L. Maharana and D. N. Koul, “The emergence of hydroponics,” Yojana, vol. 55, pp. 39-40, 2011.View at: Google Scholar
17. International Center of Applied Aeroponics (ICAA), Press Release: Golden Potato, Hanoi, Vietnam, 2014, http://www.icaeroponics.com/pressrelease.html.
18. NASA Spinoff, Innovative Partnership Program, Publications and Graphics Department NASA Center for Aerospace Information (CASI), 2006.
19. I. A. Lakhiar, J. Gao, T. N. Syed, F. A. Chandio, and N. A. Buttar, “Modern plant cultivation technologies in agriculture under controlled environment: a review on aeroponics,” Journal of Plant Interactions, vol. 13, no. 1, pp. 338–352, 2018.View at: Publisher Site | Google Scholar
20. F. Xiong and K. Qiao, “Intelligent systems and its application in agriculture,” IFAC Proceedings Volumes, vol. 32, no. 2, pp. 5597–5602, 1999.View at: Publisher Site | Google Scholar
21. Z. Zhai, J.-F. Martínez Ortega, N. Lucas Martínez, and J. Rodríguez-Molina, “A mission planning approach for precision farming systems based on multi-objective optimization,” Sensors, vol. 18, no. 6, p. 1795, 2018.View at: Publisher Site | Google Scholar
22. S. O. Petersen, C. C. Hoffmann, C. M. Schafer et al., “Annual emissions of CH_4 and N_2O, and ecosystem respiration, from eight organic soils in Western Denmark managed by agriculture,” Biogeosciences, vol. 9, no. 1, pp. 403–422, 2012.View at: Publisher Site | Google Scholar
23. S.M. Riazulislam, Daehankwak, M.H.K.M.H., Kwak, K.S.: The Internet of Things for Health Care: A Comprehensive Survey. In: IEEE Access (2015).
24. P. Rizwan, K. Suresh. Design and development of low investment smart hospital using Internet of things through innovative approaches, Biomedical Research. 28(11) (2017).