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COPD MONITORING SYSTEM

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ABSTRACT:

COPD (Chronic Obstructive Pulmonary Disease) is a serious lung disease which makes people hard to breathe. The leading cause of COPD is smoking, and COPD has become more prevalent during the past twenty years. It has been estimated that COPD will be the fifth severe disease all over the world by the year 2020.COPD patients require lung function examinations and perform breathing exercises on a regular basis in order to be more aware of their lung functions, get diagnosed early, and control the shortness of their breaths and the physical condition like temperature difference and over sweating. In order to help people with COPD, we develop a COPD app based on Blynk application, which is a smartphone based Android application made especially for COPD patients. COPD patients can do breathing test on COPD. The main aim is to automatically record test results and send data to doctors via the phone, assisting them in making diagnostic decisions. The experimental results show that this COPD system is a promising application for remote medical treatment of COPD .

Keyword: NodeMCU ESP8266 , Spiro meter , Flow Sensor ,Power supply ,Arduino IDE ,Blynk IOT Server

I. INTRODUCTION:

The purpose of this document is to define and describe the requirements of the project and to spell out the system's functionality and its constraints. COPD is a disease that requires continuous monitoring . Here the patient have to lift all the three balls from the spirometer by taking in their breath through that we decide the basic lung capacity of the person. This information is taken and recorded as well as updated.With help of blynk IoT we will give this updated information to patient ,his family and the doctor.The doctor may analyze and use this info to track and improve patients condition.

EXISTING SYSTEMS:

Curently, we have some similar applications like this but they lack in some features given this application.

a) COPD DM natural history of Mannino, G Watt, D Hole, C Gillis… - European …, 2006 - Eur Respiratory Soc

b) Using a COPD: a qualitative mobile health application to support self-management in study by Williams - British Journal 2014 - bjgp.org

c) Trends patients in the Veterans COPD and cardiovascular co-morbidities of System, Obstructive Pulmonary Disease, 2005 - Taylor & Francis

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are some studies and similar trials but they don't provide features like updating the information with in seconds, helping doctor to analyze ,making login accessible to family member ,giving alerts if temp is too high or breath is un even etc

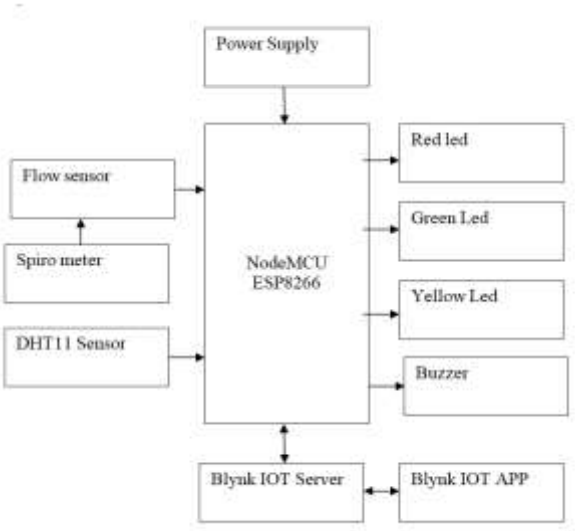
PROPOSED SYSTEMS:

- The In a hospital, either the nurse or the doctor has to move physically from one person to another for health check, which may not be possible to monitor their conditions continuously.
- Thus, any critical situations cannot be found easily unless the nurse or doctor checks the person's health at that moment.
- This may be a strain for the doctors who have to take care of a lot number of people in the hospital.
- Also, when medical emergencies happen to the patient, they are often unconscious and unable to press an Emergency Alert Button.
- One of the application protocols that are being used to transfer data is Hyper Text Transfer Protocol (HTTP) for general communication over Internet. However, when HTTP is applied to communication in IOT, protocol overhead and resulting performance degradation are a serious problem.
- Moreover, IP addressing depends on physical location, which causes the problem of complexity of network control.
- The system which we prefer to develop would not only help in monitoring the health of the COPD patient when he is in bed but also when he is out of bed.
- The main idea of the system is to transmit the information through the IOT based app to continuous monitoring of the patient over internet.
- This also helps in connecting the patient, doctor and the family from different location.
- Such a system would continually detect the important body parameters like spirometer reading temperature, Sweat and would compare it against predetermined range set and if these values cross the specific limit, it would immediately alert the doctor.

- In this system microcontroller is used to transmit the data. It is connected to IoT which provides information to doctor or caretaker.
- The data of the patients health is stored in the cloud. The doctor can easily access the patients health anytime from anywhere.
- An leds and buzzer is also connected to the microcontroller for the patients to view their health status live. In case of emergency it would automatically alert the doctor and relative of the patient via notification.
- In such case the patient will get rapid medical help and also would save time and energy of the relatives, who cannot be near the patient all the time .

IMPLEMENTATION:

The functional components are joined in some a way that utilization of device in real time is made easy i.e it has light weight components ,simple tools ,with low cost



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SYSTEM ARCHITECTURE:

- Flow sensor data,DHT11 Sensor data are connected to micro controller,altering system,updated to blynk server are connected to both micro controller and user.
- The micro controller needs SSID and password to connect with blynk sever all the direct connections are given .

APPLICATION ARCHITECTURE:

Step1: The user need to connect to the internet with blynk IOT app and login

Step2: micro controllers will read the data from sensors through patient and the data is extracted.

Step3: This extracted data is updated directly and if necessary alert is given eith lights and buzzer.

Step4: The family and doctor can access this data from app and process their medication.

- The spirometer is interfaced with the Flowsensors which indicated the level of the Breath and depends on that the micro controller will process the information and indicates the level of breathing of particular patient and also a DHT sensor for temperature and sweat Detection.
- The nodeMCU ESP8266 micro controller is enabled with Wifi and get connected to the Blynk Server via Internet.
- Blynk Server Updates the information and it can be observed on the mobile APP(COPD APP) based on blynk.
- This system holds the data of a patient and notifications are sent directly to the app when ever this spirometer is used.

BUSINESS CONTEXT:

- A large portion of the developing nations have extremely poor healthcare foundation there are not very many clinics in contrast with blasting population.
- Few of doctor's facilities are decently prepared where very less number of specialists is available.
- The basic diagnostic equipment for the diagnosis of life-threatening diseases is absent.
- In the event that this paper could fabricate an ease compact health detecting gadget, involving a few sensors, equipped for measuring the vital attributes of a human body, and can speak with the doctor's facility database, it could furnish with quality therapeutic guidance.
- The restorative administration is given after one of the authority specialists from a group of particular specialists display everywhere throughout the globe assesses those health parameters on the clinic's database.

RESULTS AND ANALYSIS:

- The proposed system was successfully working when we made a trial in most controlled manner. Based on the tests conducted and the data collected, it can suggest the best prediction one can give.And doctors are also supported and help it more easy and increases the utility.

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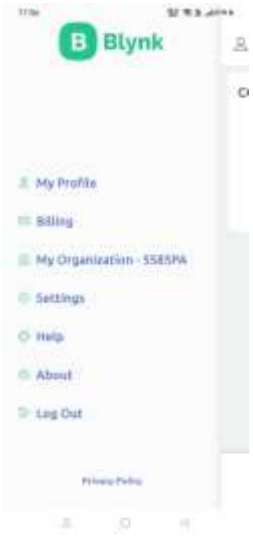
UI DESIGN	Design Description (functions, operations etc)
	After downloading Blynk IOT and giving your matching your SSID and PSWD.With the + option we will create our own patients reading notation area.
	This is the users profile after login we can access our personal info and other settings along will billings etc.We also have log out button to logout through this profile.

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This is showing our readings of temperature ,humidity as well as the breath readings .We can choose the colours of the readings and know the updated values from here.

This is how the alerts are shown to the user.

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CONCLUSION AND FUTURE SCOPE:

- COPD is now gaining more and more attention by both physicians and patients. The COPD APP lung function diagnosis and exercise system successfully combines novel airflow sensing method with smart phone based exergaming which explores a new way in long term COPD monitoring and gives out a brand new method in rehabilitation exercising with high user compliance.
- Future extensions are also possible in either remote data transferring or adding gaming features. More research will be done in the future in order to improve calibration and network data sharing.

REFERENCES

[1] D. Obaerle, P. Milka, A. Gangaemi, & M. Saboue. "System Ontologies Framework:" Aligning OWL-S to DOLCE. Proceedings of the World Wide Web Conference , 2004.

[2] C. Baellos, D. I. Fotiadis Russell and R. Andrew Rosso, "Extraction & review of functionality acquired across the system of embedded devices", 10th Internationale Conference on Information Technology and Applications in Biomedicine, Corfu, Greece, 2-5 November 2010

[3] M. Ton elli, N. Waiebe, B. Cullaeton, C. Rabbait, M. Folk, F. MacAllister&A.Priyam Garg, "Severe kidney illness & risk of death: a longitudinal study," J Am SocNephrol vol.17, pp. 2034- 2047, 2006.

APPENDIX

1.COPD-chronic pulmonary obstructive disorder

2.DHT-Digital humidity and temp sensor