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Using of IoT Sensors and Application for Healthcare Industry

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Abstract: Now-a-days, the COVID-19 Pandemic has surpassed every possible boundary. So now by using the Internet of Things we can provide a monitoring system during this pandemic. This is an interconnected network which along with other technologies like cloud & Artificial Intelligence can do wonders.
In this Paper I have discussed a kit which helps doctors to diagnose COVID-19.

Keywords: IOT, Internet of Things, Innovation, COVID-19, IOT application, pandemic.

I. INTRODUCTION

Internet of Things is a new innovative technology which includes a bunch of interconnected devices which transmits data without any involvement of humans. IoT is already used in smart homes, such as automatic light or electronic devices which are automatic and easily controllable from a distance using smart speakers or smart phones. This paper is aiming to give awareness of this innovation and its significant application for this content of the disease. As we know that this technology does not use human interaction and it itself collects the data and sends it automatically, it will become the perfect tool for the effective exchange of data. Currently many problems are arising because of the non-reachability to the patients but now IoT can solve this problem.

II. LITERATURE STUDY

The IoT integrated cloud medical system platform Contains The basic functions of the IoT and has a core graphics processing unit (GPU). Cloud computing systems connected to existing electronic medical records- image archiving and communication can better assist in deep mine and intelligent diagnosis. These are the following ten functions of IoT are considered beneficial for assistance, supervision and control of medical quality according to (5, 6, 7, 8).

Ten Function of the nCapp diagnosis and treatment system for COVID-19 based on the Internet of Things.

A. Online Monitoring

Significance of diagnosis and treatment of COVID-19

Best for online monitoring identifying COVID-19, and guiding graded diagnosis and.

B. Location Tracking

Significance of diagnosis and treatment of COVID-19

This can be used to locate patients diagnosed with COVID-19 and guide treatment when problems are found.

C. Alarm Linkage

Significance of diagnosis and treatment of COVID-19

Can provide alarms to monitor the probability of COVID_19 and provide a three-linkage response function to guide graded diagnosis and treatment.

D. Command and Control

Significance of diagnosis and treatment of COVID-19

This can facilitates the graded diagnosis and consultation of patients with COVID-19.

E. Plan Management

Significance of diagnosis and treatment of COVID-19

Presets management criteria for the graded diagnosis and treatment of patients with COVID-19 that can be set in advance for the graded management and timely treatment of confirmed, suspected and suspicious cases.

F. Security and Privacy

Significance of diagnosis and treatment of COVID-19

Conducive to providing a corresponding safety guarantee mechanism for the graded diagnosis and treatment of patients with COVID-19.

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G. Remote maintenance

Significance of diagnosis and treatment of COVID-19

Network services used for graded diagnosis and treatment of patients with COVID-19.

H. Online upgrade

Significance of diagnosis and treatment of COVID-19

Ensure the normal operation of the graded diagnosis and treatment of patients with COVID-19 and provide automatic medical service.

I. Command management

Significance of diagnosis and treatment of COVID-19

Considered beneficial for experts or managers to deeply investigate or expand the diagnosis and treatment functions based on the massive information collected and Guides how to better prevent and control COVID-19.

J. Statistical decision

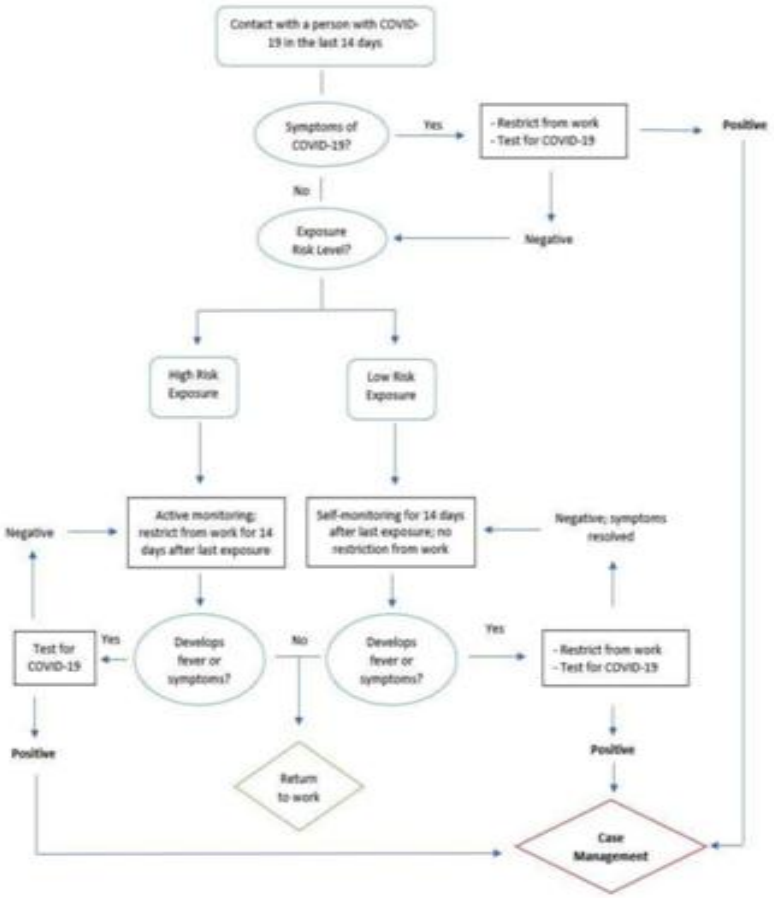
Significance of diagnosis and treatment of COVID-19

Considered beneficial for experts or managers in performing statistical analysis based on the data of the graded diagnosis and treatment of patients with COVID-19.

Summarizes experiences, identifies problems, and proposes solutions.

According to [9] if we compare the previous generations of mobile network 5G networks are the best among all and hence these should be used for better results. As given in [4], [9], [20] the diagnosis and recommendation are automatically generated and sent to doctors. "The comprehensive perception -> reliable transmission -> intelligent processing" of the IOT technology assists the GPU to manage the app assisted 3 level cloud platforms. Medicos and researchers can use the Smartphone and this software to participate in this three-linkage IOT cloud plus platform according to their needs.

III. CORONA SYMPTOMS



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The corona symptoms include fever, cough, loss of smell and taste, breathing difficulties, pulse rate, tiredness and muscle pain.

So, all these can be tested at home by using body temperature sensors, respiratory rate sensor, pulse sensor and muscle sensor respectively. We can use these sensors to create a network and send the data from the safety of homes to the hospitals.

IV. IOT KITS

The Kit include:
1. Body temperature sensor.
2. Respiratory rate sensor.
3. Pulse sensor
4. Muscle sensor

All these sensors are to be connected to a mobile android application which will test for these daily and send the data to the hospital regularly regarding the same. The doctor can check the data and then can tell whether to collect swab for further tests or not. This quarantine period everyone needs a proper monitoring system which the IOT kit will provide right from home. All the high-risk patients having BP or sugar can be monitored remotely using IOT.

V. APPLICATIONS

These are nine different application of IOT for healthcare:
1. Online monitoring – It is the best possible way to monitor.
2. Location tracing with notification to other users in nearby areas to stay alert.
3. Statistical decision – The precise and well-informed forecasting will be possible due to rapid real time information.
4. It will help to identify innovative solutions.
5. Wireless healthcare network to identify possible patients.
6. Telehealth consultations and automated treatment process.
7. The transparent COVID-19 treatment will ensure that no patient gets discriminated against on any basis.
8. The future scope of this kit will include a drone which collects swab from your home only and you will get reports from the safety of your homes.
9. Remote maintenance.

VI. ISSUES AND FUTURE SCOPES

The main problem of implementing IOT in the present pandemic is the security. The privacy of the patient's data needs to be taken care of as it can be easily misused if gone into wrong hands. Along with it the data – integration also needs to be taken care of because if any patient's data mixed with another it is going to be a huge blunder. The future scope of this project will take it up to the block chain level.

VII. CONCLUSION

IoT is an integrated and connected network for healthcare to fight COVID-19. As all devices are connected to the internet, if any critical situation arises for the patient immediately the massage gets sent to the doctors and nurses. This technology helps a lot to capture real time data of the infected patient, and then massage the data virtually, so that the follow up on that report also gets relatively easier. In remote places also by using IOT we can easily handle infected cases if a well-connected device is present. IOT appears to be the best way to detect and diagnose the infected patient as well as monitor. And in research he real – time data is going to be very important.

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BIOGRAPHY

My name is **Mohammad Tanzil Idrisi**. In 2020, I graduated from senior high school Rani Laxmi Bai and am currently planning to attend college and choose computer science as my major in undergraduate. I have also worked as a freelancer and software developer in Eulercod Technologies & Ematron Pvt. Ltd. company. I have also been instructor at three different E-learning company, where I have guided young students to learn program and solve some of the real-life problems.
I am an author, and penned down three books till now. I am also a founder of a non-profit organization called Nisha Organization, which works on improving life. I am an AI and ML enthusiast. Area of Interest: Iot, Robotics, AI, App development, Web development, raspberry pi and etc. My ambition is to work in NASA as a scientist.