**E-HEALTHCARE MONITORING USING MACHINE LEARNING**

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**ABSTRACT**

**The patient data is classified using the classification approach. Many researchers pioneered a wide range of healthcare techniques, from diagnostics to treatment. On the basis of an effective e-health monitoring system, therapy and prevention may be provided however, the degree of accuracy did not improve. In the sphere of portable and smart IoT devices, the healthcare sector has seen significant advancement. The analysis of huge patient data sets by clustering and classification of the data is one of the ways that has been employed to offer this E-health monitoring system a new direction. Clustering is the process of creating a comprehensive dataset of patients with a specific ailment and then analysing their various data points. The data of the patients is then classified using classification. Many strategies have been explored to enhance the E-Health monitoring system, but none of them has shown to be effective in solving the problem. Many academics are analysing a large amount of data on patients in order to remedy the problem with the health-monitoring technologies using different machine learning approaches, adequate accuracy may be reached. Machine learning techniques are significantly more efficient for patient health monitoring and provide effective performance of “feature selection, classification, and clustering of data” by sifting through a massive database of patient information.**

**INTRODUCTION**

Health monitoring system is one of the most important I set in the future for the identification and prevention of illnesses like diabetes in nations like India, which has the highest number of diabetic patients in the world, utilising big data and machine learning methods. One of the most important innovations in the healthcare business is the usage of IoT Devices, which allows patients' vitals to be measured in a cost-effective manner. There are a variety of health monitoring systems available on the market. We're going through things like "activity tracking," "SpO2 level," "heartbeat monitoring," and so on. There is a large data set in the suggested system via which it can anticipate.

The proposed system has a large data set through which it can predict the disease criteria on which the patient will fall, as well as recommend a hilly diet and rate of exercise in the patient's daily life. The goal is to make this system more and more accurate by analysing a large patient data set. The first approach is to go through with the diabetes prediction and other diseases prediction that the patient will fall into. The system will attempt to forecast the outcome with increasing accuracy in order to provide a better consumer interactive experience. Including this it will assists the patient in understanding what foods are required and what steps and diet should be followed to be healthy. The system is analyzing the data that is available and through which it can predicts the disease and what are the steps and diet should one follow to get rid of it or be that in control. The available devices that are present in the market are basically based on IOT but very of them are precise and accurate which will cost the customer’s pocket. Beside this the devices need a lot of technical and not easy to use, The Nobel approach is to make a better user-friendly E-health Monitoring system that is precise and cost effective.

**LITREATURE SURVEY**

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| **TITLE** | **AUTHOR** | **Software / Hardware Requirements** | **ALGORITHM** | **FINDING/ Achievement** | **DRAWBACK** |
| **“Smart Health Monitoring and Management Using Internet of**  **Things, Artificial Intelligence with Cloud Based Processing”** | Mr. Ravish Gupta, Dept. of Electronics and Communication Engineering | Internet of things, Cloud Platforms, Artificial Intelligence, Supervised  Convolutional Neural Networks, Sensors and Actuators, Microcontrollers and Electro-  Cardiogram. | Machine learning techniques,  Un-supervised machine learning techniques  Deep learning | The healthcare industry has been greatly impacted by the Internet of Things (IoT) and Artificial Intelligence (AI). In such burgeoning technical applications, wearable sensors are utilised to monitor human health. The use of such technology is rapidly expanding, improving the chances of early and real-time diagnosis. | Because of a lack of resources and emergency aid that should be offered when a patient is in danger, life expectancy has declined significantly as a result of the expanding population. |
| **“STUDY ON AN IOT BASED SECURE”**  **“HEALTHCARE MONITORING SYSTEM UNING** **CRYPTOGRAPHY”** | Mr. Adars  Vinayaka Mission’s  Kadakkal, Kollam, Kerala | Internet of Things ,  Sensor network , | Healthcare applications ,  Semantic Web technology, | Wireless medical sensor networks can be used to monitor patients, making healthcare applications a viable field for wireless sensor networks (WMSNs). | The disease prediction arc is so small it only recommends and predicts the activity and  the heart rate monitoring. |
| **“REAL TIME HEALTH MONITORING USING IOT WITH INTEGRATION OF MACHINE LEARNING APPROACH”** | G Sahithi , P Vinayasree , Pallati Narsimhulu | Iot-Internet of Things, Monitoring, Sensors, Anatomy, Physiology, Cardiovascular | Machine Learning approach.  Multiple Linear Regression Algorithm**.** Random Forest Algorithm.  Support Vector Machine | A healthcare monitoring system uses digital sensors and IoT devices to improve the traditional healthcare system's patient information collection. This method builds analytic models using Machine Learning algorithms. The R programming language is used to determine the likelihood of heart disease analysis. Using an Arduino, a continuous monitoring system was proposed. | Heavy computation and need of an expertise consultation needed to access this particular device. |
| **“Development of Smart Healthcare Monitoring System in IoT**  **Environment”** | Md. Milon Islam ,  Ashikur Rahaman ,  Md. Rashedul Islam1 | Internet of things · Sensors ·  ESP32,  Pulse sensor, temperature sensor, BP sensor, ECG sensor, and raspberry pi. | Creating a IOT based health monitoring device with the help  different sensors | Internet of Things (IoT) technology enables the development of healthcare from face-to-face consulting to telemedicine. In this machine, 5 sensors are used to seize the records from health center surroundings. | The major drawback of the system is that no interfaces for data Visualization are need to be develop. |
| **“Analysis on E-Healthcare Monitoring System with Iot and Big Patient Data”** | V. Deepa, K. Rajeswari | Internet of Things, telemedicine, e-health  monitoring system, prevention, artificial neural network | Use of IOT interconnected with the Artififcial nueral networks , Deep learning | Big statistics are notably utilized in healthcare technique medical doctors are without difficulty analysed the affected person circumstance in a brief time. Healthcare tracking gadget in hospitals has acting the e-healthcare tracking gadget with massive statistics. Characteristic selection, clustering and affected person category with affected person statistics. | Nueral network and deep learning need a system which can come with heavy computataion and analyzing a big dataset is not easy and always a expertise need by side. |
| **“IoT based Health Monitoring System using Machine Learning”**  **“Real Time Machine**  **Health Monitoring System Using Machine Learning and IOT”** | Srivardhan Reddy K1, Sidaarth R2, Sai Aneesh Reddy3, Dr. Rajashree Shettar 4  Tzen Ket Wong ,Hou Kit Mun, Swee King Phang, Kai Lok Lum and Wei Qiang Tan | IoT, Machine Learning  IOT Based Devices , Neural Network and virtual machine | Using of IOT devices to get the patient health diagnosis and through machine learning analyzing the data.  Iot based hardware encoded in the artififcal nueral network and by using VM ware power is given to the system | The idea of Internet of Things and Machine Learning are notably used with inside the area of scientific analysis and healthcare to be able to reveal the circumstance of a affected person.  Using of nueral anetworks and VM ware to give out a actual and better prediction. | The use of data is not much may cause malfunction in prediction.  Using of this framework make it much more hardware dependent and costly too. |