Heart Disease Detection using Wireless Sensors
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Abstract:
As per World Health cardiovascular disease happen similarly in men and ladies, it is the principal driving reason for death in high and low pay countries. According to a current review by the Indian Council of Medical Research (ICMR) and the Registrar General of India (RGI), around 25% of passings between age gathering of 25-69 years happen in light of various heart related problems. So that we have a go at building up a module which can foresee the potential outcomes of danger of having heart infections with least number of attributes. Hence, we utilized the blend of data mining technique with wireless sensor network for the same.

Keywords: WSN, Sensors, coronary illness

I. INTRODUCTION
Heart is the critical piece of our body and its productive working is important to direct alternate parts of human body, for example, kidney, brain and so on. Henceforth to live long and sound life legitimate think and sharpness about this disease is fundamental. The principal address more often than not emerges as a primary concern which is the most straightforward and quickest system for this? So, the appropriate response is customary registration and legitimate wellbeing diet. Yet, this is not adequate for care and sharpness. In the advanced world, as the cardiovascular disease are the most noteworthy flying disease, so we ought to likewise have hop on a few procedures and techniques utilized for sharpness and care. For this reason we build up a decision support (Computer based) based data framework which will encourage the right conclusion with diminished cost. This coordination of existing medicinal decision support system with various information mining procedures requires the correlation of a few digging systems for separating the reasonable information for said work. Here we built up a module which predicts the likelihood of danger of having heart illnesses utilizing Data Mining method with Wireless Sensor Network (WSN).

II. RELATED WORKS
[1] Author proposed different information digging procedures for coronary illness determination utilizing single information mining methods. The altogether examination in illness conclusion demonstrating the most elevated amount of precision and for getting improved outcome, will hybridize more than one procedures. In the wake of looking at both the procedures on the Cleveland coronary illness database, cross breed demonstrates the preferable exactness over single strategy. [2] Author presents a naïve bayes classification approach for coronary illness prediction. The proposed system will categorise the restorative information into various classifications like no, low, accurate, high & high and predicts the class name of obscure example. For result analysis, two essential capacities to be specific training and testing will be performed. Precise prediction will rely on upon calculation connected on databases. [3] Author has been done a research work on information mining methods, gives a survey on current knowledge discovery based information mining procedure which helps the therapeutic experts for taking viable choice. Prediction will base on least number of attributes with three classifier like naive bayes, J48 decision tree bagging algorithm. Coronary illness forecast can be further upgraded and extended by giving access of WSN framework with Data Mining method in light of the fact that, as per research work has been done on WSN framework will helps the ceaseless checking and distinguishing the sicknesses in a heart patients at remote regions. [4] Author gives inquire about article which demonstrates a constant WSN framework for expectation of up and coming cardiovascular infection. The framework has capacity to screen different patients at once and diagnose the patient with medicine; likewise gives cautioning signs to specialists and relatives as well. We can utilize the above model with use of information digging method for getting all the more constant informational indexes and precision in identification of danger of having different cardiovascular ailments.

III. HEART DISEASE DETECTION SYSTEM
Heart disease detection framework comprises of hardware and software module.

Hardware Module Module (Wireless Sensor Network):
We can likewise call hardware module as a remote sensor network on the grounds that it will detect the information utilizing distinctive sensors and transmit information remotely to the framework. Along these lines we can shape WSN utilizing blend of sensor framework with remote module. This module comprise of sensors which can gather the ongoing estimation of our body and send these heap of information to microcontroller, after receiving these information microcontroller will transmit this to coronary illness recognition framework through remote module. Presently let us portray the WSN in detail.it comprise of three sensors, for example,

1. Temperature and Humidity sensor
The DHT11 Temperature and Humidity sensor highlight a temperature and humidity sensor complex with a calibrated
digital signal output. This sensor incorporates a NTC temperature estimation part and resistive-type humidity measurement component and connects with a superior 8-bit microcontroller. This both value can be appeared on prediction system as a ratio of temperature to humidity values called slope.

2. PPG sensor

A PPG is often obtained by using a pulse oximeter which illuminates the skin and measures changes in light absorption. A conventional pulse oximeter monitors the perfusion of blood to the dermis and subcutaneous tissue of the skin. With each cardiac cycle the heart pumps blood to the periphery. Even though this pressure pulse is somewhat damped by the time it reaches the skin, it is enough to distend the arteries and arterioles in the subcutaneous tissue. If the pulse oximeter is attached without compressing the skin, a pressure pulse can also be seen from the venous plexus, as a small secondary peak. By utilizing above sensor we can detect the genuine – time estimations of a patient at whatever point we want, it relies on upon criticality of a patient. As indicated by study on cardiovascular illnesses and different ascribes identified with cardiovascular problems in the specific circumstance where cardiovascular working is inappropriate may happen the sudden changes in circulatory strain, temperature, moistness and heartbeat beat esteem may likewise vary, so every one of these parameters are touchy and variation. In this manner for giving constant qualities we will accomplish precision in illness forecast and genuine – time perception likewise accommodating for specialists to think about the patient’s present condition. Consequently in our module we can take these characteristics esteem utilizing sensor and give this information to illness expectation framework utilizing remote module.

Software Module:
Possibilities of having heart diseases can be detected using sophisticated data mining technique. For this, firstly we collect the large quantities of significant datasets and maintain the record. Then apply the comparison technique on entered attributes and 3 real-time receiving attributes with the large database record.

Implementation of comparison:
1. We use comparison method in order to predict the possibility of heart disease. Here each attribute value is compared with the values of a normal person.

2. If there is a abnormality found then the same attributes will be compared with the attribute values of a disease affected person.

3. The the percentage of risk will be calculated and also will predict the chance of having the disease.

4. The result can be viewed by both the patient as well as the doctor.

IV. EXPERIMENTAL RESULT

Hence, we can successfully able to identify the possibility of risk of having heart diseases in a cardiac patient in terms of different class labels. From this analysis patient comes to know their cardiac condition. It is a very efficient method which gives the result with almost accuracy.

V. CONCLUSION AND FUTURE WORK

The system can be used for providing enhance healthcare services and early diagnosis of disease detection may reduce the chances of death in a cardiac patients. In future it is possible that we will provide all extracted attributes value in a real-time via different sensor system and identify the class labels by applying data mining. In that case no need to maintain separate records for extracted attributes. If the number of nodes increases with one prediction system doctors will able to monitor several patients cardiac condition in minimum time with good accuracy.

VI. REFERENCES


