IoT Based Heart Monitoring System Using ECG

CS578 IoT Hardware Poject
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I. Objective

The fundamental objective of this project is to bulid an IoT Based Heart Monitoring System Using ECG. ECG sensor is associated with a micro-controller, NodeMCU to gather information. after gathering information, the information is sent to server utilizing Wi-Fi. A patient can know his/her wellbeing status by utilizing a portable application associating with server by means of internet.A LCD will also be associated with the server for showing patient's health data. Moreover, doctors can see the health status of the clients' utilizing Internet. Aside from this, the framework ought to remind its client to take his/her medication on schedule, when the medication course is going to complete, and when the doctors visiting date shows up.Also when patient's health crumbles pointedly, system alerts doctor and patient.

II. Implemented Attributes

The main implemented attributes of the projects are:

- NodeMcu sends data from ECG sensor to server in real time.
- Data can be visualized in a form of graph just like real ECG monitor.
- Health information can be viewed on LCD display connected to system.
- Health information can also be viewed from anywhere using internet.
- I also designed an android application where user or doctor can easily view health information of patient including real time ECG graph.
- It also alerts when medicine is about to finish and when there is a appointment of doctor.
- When health status is not normal, server sends an alert message to doctor and patient.

For cloud storage and sending alerts,"Ubidots", a IoT Development Platform has used.

III. Configuration Diagram

The system consists of ECG sensor, NodeMcu, Laptop, IoT Cloud, and Applications. Data is collected using ECG sensor attached to body. NodeMCU sends this data to IoT cloud through internet using Laptop as gateway. This data is also used to show health information on LCD display attached to system. Server sends this data to web and android application with the help of Internet, where doctor and patient can view their health information using any of these platform. Server sends text message alert if health of patient is not normal, or starts deteriorating. The basic configuration diagram is shown here.

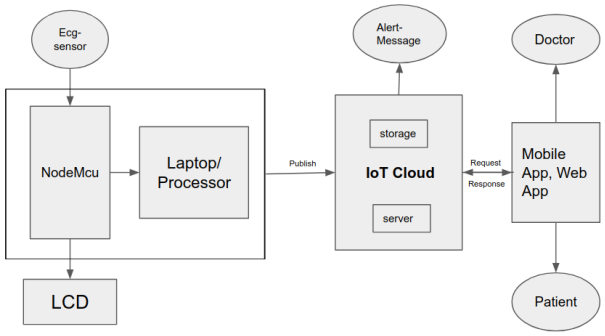

Fig. 1. Configuration block diagram of system, IoT Based Heart Monitoring System Using ECG

The ASM flow chart of system can be visualized as follow:

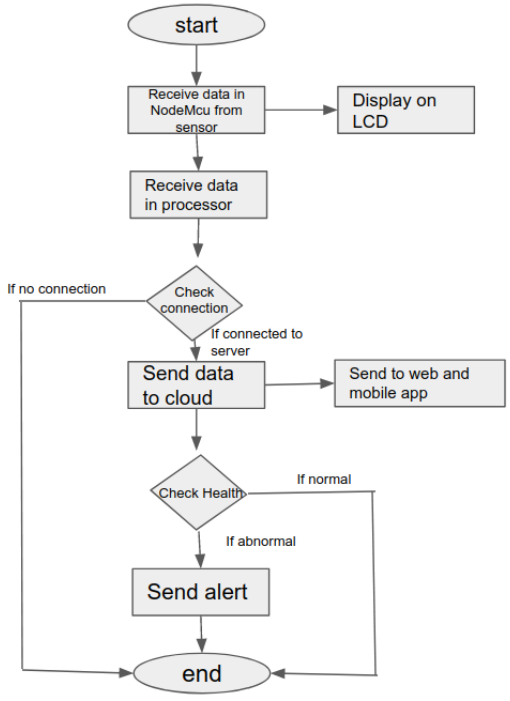

Fig. 2. Flow Chart of Data in IoT Based Heart Monitoring System Using ECG

The Physical appearance of the system is also shown on next page.

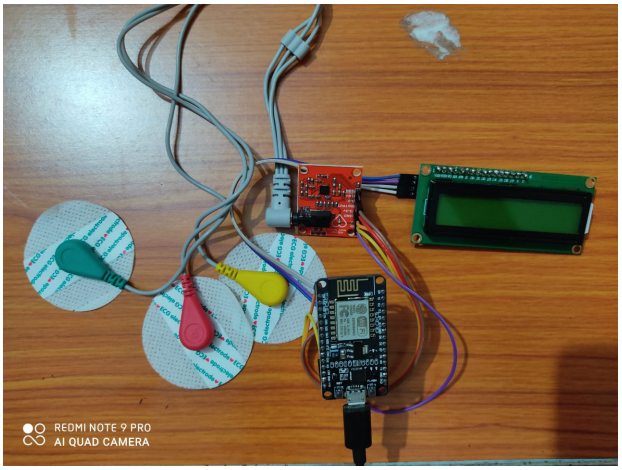

Fig. 3. The physical appearance of system, IoT Based Heart Monitoring System Using ECG

IV. Sample Outputs

On LCD display connected to see, health status is shown.

Fig. 4. Sample Output: Health status is shown on LCD display

We can see the graph as real ECG monitor

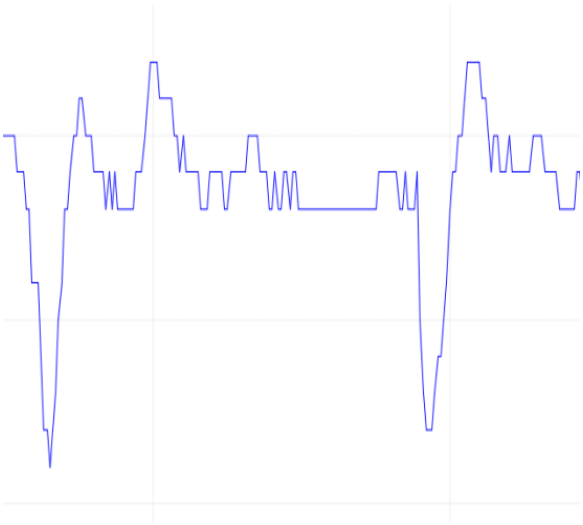

Fig. 5. Sample Output: Sensor Data displayed as graph

In app , we can check health status and monitor it.

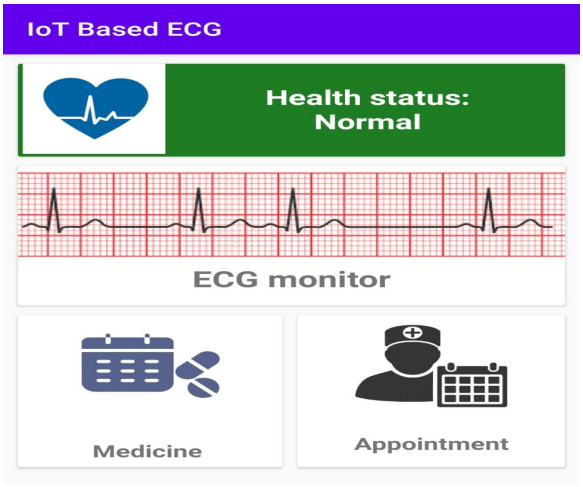

Fig. 6. Sample Output: Android Application

V. Codes

Source codes is available on my github repository:

- Complete code of project, that is uploaded in NodeMcu
- Source Code of Android Application .
  Source Code:GitHub

VI. User Manual

To use this project with your system follow instructions:

- Download source code from given link.
- Set connection by updating Wifi SSID and password of your network.
- Update the code in NodeMCU
- Place the sensor on the body as shown in fig.

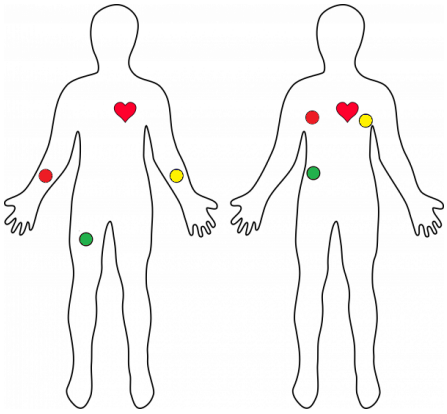

Fig. 7. Sensor position on body

- Now *visit here* to view health information on web
- One can also use the android application and check the health status there.
- Update medicine and doctor appointment information to get alert about them.

VII. Demo Video

A short demo video of the working project can be viewed here: *Demo Video*