FETUS FEGE MONITORING SYTEM

[1] P.Christopher, [2]A.K.Ayesha Shereen, [3]R.Karishma
[1]Assistant Professor,
Department of CSE,M.I.E.T Engineering College,Trichy-07
[2,3]Final Year ,
Department of CSE,M.I.E.T Engineering College, Trichy
[1]pchrisweb@gmail.com, [2]ayeshashereen45@gmail.com, [3]karishma06raj@gmail.com

ABSTRACT

Promoting healthy pregnancy and safe childbirth is a goal of all Indian health care systems. Despite significant improvements in recent decades, mothers and their babies are still at risk during the prenatal period, which covers pregnancy, delivery, and the postpartum. Babies born too early are more likely to die than those born at term. To improve prenatal health, we need the right tools to assess problems and their causes. We also need to monitor the impact of policy initiatives over time. Maternal healthcare in rural India has never thrown up impressive numbers in the past, but technology is now reaching the remote corners of India to aid young women who require prenatal and antenatal care constantly. Research revealed that pregnant women in India, especially in rural areas, fail to monitor the various health parameters necessary for their well-being during pregnancy. This could be attributed to a variety of factors such as lack of adequate healthcare centers in rural India and awareness surrounding the need for regular prenatal check-ups among other factors. We have proposed an fetus fege monitoring is an IOT based maternal health care solution that promises to effectively address the malady of poor maternal healthcare in the remote regions of India. The IoT allows objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit.

Index Terms—Feto Maternal Care Unit(FMCU), photoplethysmogram (PPG) and phonocardiogram (PCG). National Instruments (NI).

I. INTRODUCTION

Human resources like India, rural areas are more when compared to the cities. People in rural areas are not really concerned about their health, because of unavailability of hospitals in the nearby areas and also, they need to travel long distance even for small injuries and routine checkups. Pregnant women from rural areas don't do their regular checkups at the early stage of pregnancy. Routine checkups can avoid birth of handicapped children and also helps in reducing fetal mortality rate to a very large extent. This paper presents a non-invasive, multi-parameter and real-time data acquisition system for reliable bio-telemonitoring of pregnant women for the assessment of feto-maternal wellbeing during pregnancy and labor. The working hardware prototype named Feto Maternal Care Unit (FMCU) is developed which consists of several biomedical sensors attached to the mother's body which collects bio-physiological signals like maternal respiration rate, maternal body temperature, abdominal ECG, fetal movement, photoplethysmogram (PPG) and phonocardiogram (PCG). National Instruments (NI) myRIO is employed for data acquisition and transmission of the acquired physiological signals wirelessly to centralized server.

II. PROBLEM DESCRIPTION

In today's social insurance framework for pregnant women who stays in home in rural ares during post operational days checking is

done either via overseer/ medical caretaker. Perpetual observing may not be proficient by this system, on the grounds that anything can change in wellbeing parameter inside of part of seconds and in the midst of that time if guardian/attendant is not available in the premise causes more remarkable harm. So, with this improvement created epoch where web administers the world gives a thought to add to another intense health awareness framework where time to time constant checking of the pregnant women is accomplished.

III. THE PROSPECTIVE SYSTEM

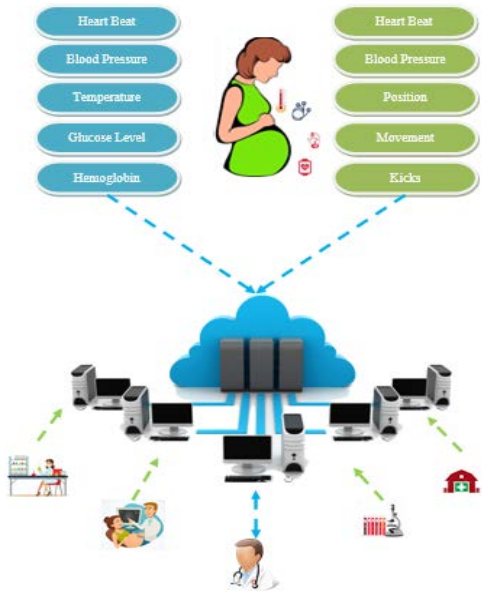
Convolutional neural network helps to process the data more accurately ,it is a deep learning algorithm which takes an input image and can differentiate it from one another. The preprocessing required is lower and has the ability to learn filters , but it needs an effort to learn things precisely before working with it. Support vector machines are implemented to separate the classes of data. Use of machine learning and artificial intelligence can help women to monitor from home itself but it is unsuitable to process high one dimensional data. Multi layer perceptron classifies non linear models and support multi-class classification and maps and input to output based on previous examples of input-output pairs. MLP makes use of supervised learning and implements back propagation techniques. But a great deal of knowledge is required to handle such systems which may be difficult for the rural women.

Mobile application automatically record pregnant women mobility and the facility of Image processing to read the weight of the scale and it uses a technique called mobile smart birth monitoring application to monitor the pregnant women in rural areas ,which is remotely accessible. This application primarily considers the weight of the pregnant women to predict the condition of fetus and their growth.

Focused on the obstetric medical care called (Emcdh) Electric maternal, child and doctor Handbook as personal data storage for disaster preparedness. which manages location information, medical information of pregnant women and their fetuses, which proves to be useful in disaster time, based on personal data storage where every individual store their personal data in the cloud. Makes uses of the pilot system and conducted experiment on shelter assessment drill. Disaster medical co-ordinators can see the location of all pregnant women using emcdh on digital map. Highly secure certification system is also used [J-alert].

Mobile based health care monitoring system , where the application proposed to monitor the pregnant women using a mobile device. From the date of registration the app will schedule the next checkup, details of tests to be taken, date of collecting reports and the scan to be taken. From app messages are generated. Which requires a basic model phone and periodically counsel the pregnant ladies through messaging services in their native language. But the results obtained may not be accurate sensors are not used anywhere explicitly.

SYSTEM ARCHITECTURE



ARCHITECTURE DESCRIPTION

1.Wireless Body Sensor

A body area network (BAN), also referred to as a wireless body area network (WBAN) or a body sensor network (BSN) or a medical body area network (MBAN), is a wireless network of wearable computing devices. BAN devices may be embedded inside the body as implants, may be surface-mounted on the body in a fixed position (wearable technology), or may be accompanied devices which humans can carry in different positions, such as in clothes pockets, by hand, or in various bags.

1.1. Pregnant woman

The sensor can be wearing and the details have to be sent to doctor through cloud.

1.2. Fetus

The sensor can also attach to the fetus. It can be monitor and detected the heath condition.

2.IoT Integration

The physical devices or hardware components can be interconnected through the Internet of Things (IOT). It can be control and monitor from the long distance and easy to access.

3**. Health Monitoring Control Panel**

The health can be continuously monitored and it provides the control measures.

3.1Rural Health Center

The rural centers have centralized one. It has the data about patients and it findout number of primary centers around there.

3.2Hospital

It has the hospital details including inspection from head. It contains patient details.

3.3 Doctor

It includes the information about the considered doctor is available or not.

3.4 Test Center

The primary health center has all type of test in this device. It includes baby movement and position can be identified through the device.

3.5 Scan Center

This device including the scanning the baby's movement and the position.

3.6 Guardian

The details of guardian can be entered. If any abnormal condition is occur and the notification can be sends to the guardian.

3.7 Admin

Admin can be login in to the application. Admin can view the status.

4.Health Data Analysis

The data can be continuously fetched and it clusters to separate the mean value.

5. Forecasting

The patient's data and to know the doctor's performance by inspecting there

6.Notification

The notification can be sends to the doctor, nurse and guardian or patient

V. CONCLUSION

A secure Internet of Things -based pregnant women and Fetus healthcare monitoring system in rural area health center, which operates with the Wi-Fi module interface. To accomplish system competence and robustness of communication, we utilize user entry secure authentication in a web page to retrieve or view the data. Moreover, the implementation of the proposed health care monitoring system with Arduino platform to augment the achievability and practicability of the proposed mechanisms. The scope of this system will include the intelligent system which will take the decisions or actions according to the conditions prevailing. So that the doctor's interaction with the system will be minimized this will lead to less human efforts for the monitoring. This will allow farer to vilipend the nominal warnings as system will take care of it, which will be a lucrative deal for the end user.

It can be further enhanced as follows the project is very essential in order to make the design system more advanced. In the intended system the enrichment would be involving more sensors to internet that measures a variety of other health parameters of pregnant women and fetus and would be advantageous for Fetus and pregnant women monitoring i.e. linking all the objects to internet for rapid and effortless access. Establishing a Wi-Fi mesh type network would help to increase the communication range.

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