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Neuro Friend – An application to Monitor and supervise the mentally disabled patients.

Patient Monitoring system

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Abstract — *Among the applications that Internet of Things (IoT) facilitated to the world, Healthcare applications are most important. In general, IoT has been widely used to interconnect the advanced medical resources and to offer smart and effective healthcare services to the people. The advanced sensors can be either worn or be embedded into the body of the patients, so as to continously monitor their health. The information collected in such manner, can be analzed, aggregated and mined to do the early prediction of diseases. The processing algorithms assist the physicians for the personalization of treatment and it helps to make the health care economical, at the same time, with improved outcomes. Also, in this paper, we highlight the challenges in the implementation of IoT health monitoring system in real world.*

Keywords- *provide safety alarm rise, Global Positioning System(GPS), Internet Of Things(IOT), Motion Sensor, Sending message to predefined contact, Prevention of accidents.*

I. INTRODUCTION

Now a days, the society is facing a huge problem of monitoring the mentally disabled patients who are suffering from chronic diseases such as Alzheimer, Stroke etc. Iot based monitoring system for the intellectual disabled
patients will keep watch on the patient. In this application “Neuro Friend” we can keep watch on each activity of the patient and notify to the family member if any kind of dangerous activity occurs.

All the accident-prone movements would give an alert to the family members or the nearby people, so they can approach to the location as soon as possible. In this system we will put a camera at the patients surrounding e.g. in the patient’s room. We will also build a motion sensing unit at the location which will detect all type movements done by the patients. As soon as any dangerous movement tends to occur the alarm will
rise and the family members in the other room will be warned. In case we will also set up the gps trackers in the clothes of the patients for tracking if the patient goes anywhere or lost.

Keeping attention towards the patients become easy and time relieving, Prevention of accidents of the patients, Reduction of cost for patients hospitalization or orphan aging, becomes possible with the help of this application “Neuro Friend”.

This project is accessible through both the platforms of android and website. The android application is named as “Neuro Friend” and consist of login page and all modules such as camera, sensor, alarm, gps module respectively. The website is the open source platform for the user who is unable to use android app. The user can directly login from the web and can keep watch on the patient. The website also contains the modules which are there in the application “Neuro Friend”.

For the implementation of this project we are using Internet of things(IOT) as the main domain. In that we are using Raspberry-pi 4,motion sensor, gps sensor, alarm for the construction of the system. For the database connectivity in the website Django python is used and in android the database connectivity is done with the help of java, mysqlite.

II. LITERATURE WORK

Following are the research papers we studied for Patient Monitoring system.

1. Internet Of Things(IOT) Based Health Monitoring System and Challenges.
   - M.Sathya , S.Madhan ,K.Jayanthi.
   - System returning the desired documents as per the queries provided by users.
   - IEEE international conference[2018].
2. Iot based health monitoring system for persons with intellectual disabilities.
   - Dr.Narendar Singh,Prof.Sudhir kr. Sharma,Dr.Farukh Hashmi
   - Overall health monitoring using arduino,pulse sensor and eeg sensor.
   - IEEE international conference[201].
3. IOT Patient Health Monitoring System.
   - Shola Usha Rani , Antony Ignatious , Bhava Vyasa Hari , Balavishu V J.
   - This study demonstrates how image-processing technologies can be used in combination with optical character recognition to improve recognition accuracy, efficiency of extracting text from images.
   - IEEE international conference [2019].

III. EXISTING SYSTEM

The mentally retired or the patients suffering from the disorders like Alzheimer need a lot of attention and care taking. These patients requires 24/7 attendant caretaking for their daily chores. Paying attention the whole time sometimes become hard and may lead to some mishappens like the patient leaves his place and went anywhere or some accidents may occur. In such case the family keeps 24/7 attendant for care taking of that patient. Or the patient is shifted to the orphanage.

The patient may be lost in case of there is no relative near by. The patient may also seek help while he is alone in the home. Due to lack of attention the patients may lead to accidents or some other harmful situations may occur.

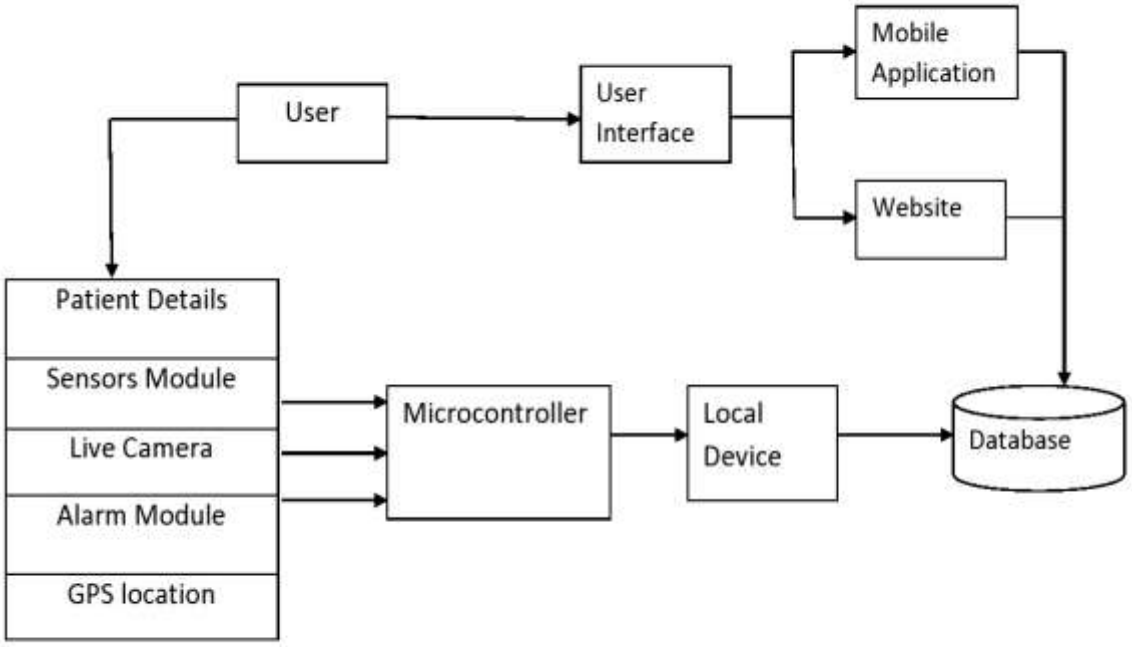
In case of a hospital, either the nurse or the doctor has to move physically from one person to another for health check, which may not be possible to monitor their conditions continuously. Thus, any critical situations cannot be found easily unless the nurse or doctor checks the person's health at that moment. This may be a strain for the doctors who have to take care of a lot number of people in the hospital. Also, when medical emergencies happen to the patient, they are often unconscious and unable to press an Emergency Alert Button.

IV. PROPOSED WORK

So, the proposed system is the smart mentally disabled patient monitoring system. In this system the patient will be fully monitored with the help of motion sensors and cameras. In the disastrous situations the motion sensor and the camera will locate the patients position or movement of the patient. As soon as any dangerous movement takes place the alarm will rise, and certain message would be given to the relative of the patient on the registered phone number.

In case of the patient leaves the house and is lost, we are attaching the gps tags on the patient's clothes for the purpose of tracking the patient's location. Due to this Keeping attention towards the patients becomes easy and time relieving. It also prevents accidents of the patients and reduce cost of patient's hospitalization as well the fees of the 24/7 attendant.

V. ARCHITECTURE DIAGRAM



Modules :

1)Login Activity – It Accepts Username and Password in textfield and matched with database.

2)Home page – It consists four buttons , camera , Alarm , Sensor , Gps. These four modules are mainly accessed.

3)Alarm – The alarm will rise if the camera and the motion sensor will detect any harmful movement of the patient.

4)Monitor Patient -In this module user can view the location of patient through camera.

5)Access Location of Patient – In this module we can access the location of the patient .

6) Database- It is used to store patient data and location.

Technologies :

1)Web Technology – Web Technology refers to the means by which computers communicate with each other using markup languages and multimedia packages. It gives us a way to interact with hosted information like websites. Web Technology involves the use of hypertext markup language (HTML) and cascading style sheets(CSS).

2)Android – Android is a mobile operating system based on a modified version of the linux kernel and other open source software designed primarily for touchscreen mobile devices such as smartphones.

3)Raspberry pi – The Raspberry Pi is a Credit sized computer that plugs into a computer monitor or tv and uses a standard keyboard and mouse .It is a capable little device that enables people of all ages to explore computing and learn how to program in languages like Scratch and Python .

4)Django – Django is high-level PYTHON web Framework that enables rapid development of secure and maintainable websites .Built by experience developers Django takes acre of much of the hassle of web development , so you can focus on writing your app without needing to reinvent the wheel .

VI. APPLICATIONS

- Hospitals
- Old Age Home.
- Residential Homes.

VII. CONCLUSION

In this application Neuro Friend we are developing patient's monitoring system using an android application , this system will be proactive towards preventing accidents mishappens related to the patients.

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