COM S 514 Project: Pulse

Team 5

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1. Executive Summary:

There are times and several incidents happening when the elderly people suffer from some serious illness – can be breathing problem, cardiac arrest or something similar, but they are unable to call someone for help. They might live alone and health degradation can be sudden. But what if there is a device that will send an analyzed report of the patient's vital signs to the doctor or care- giver. That can certainly help in saving more lives with timely care and also help in taking care of people.

In this project we aim to develop an application that would be able to collect biometric readings as well as monitor those. If there is any irregularity or abnormality in any of those readings, then the device will send an analysis report automatically to a designated person(Doctor/nurse/Care-Giver) to alert them to predict risk of some serious illness, fall, injury or hospitalization etc. and notify them for urgent attention.
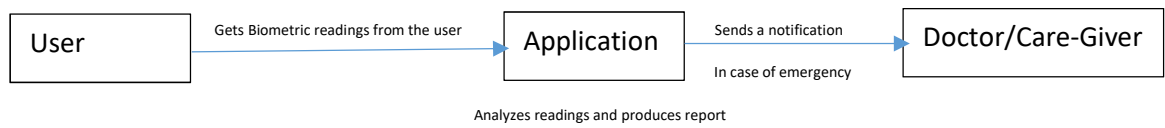
This application can make significant improvement in care giving to elderly people and prove to be very useful in critical health conditions. It will not only monitor vital signs, but will prepare a report predicting symptoms for emergency conditions as well. The application can also be an accessory during exercises monitoring vital signs and providing feedback for changes the readings. For example: if someone is working out too much continuously without taking rest affecting heart rate or breathing rate the app can send an alert.
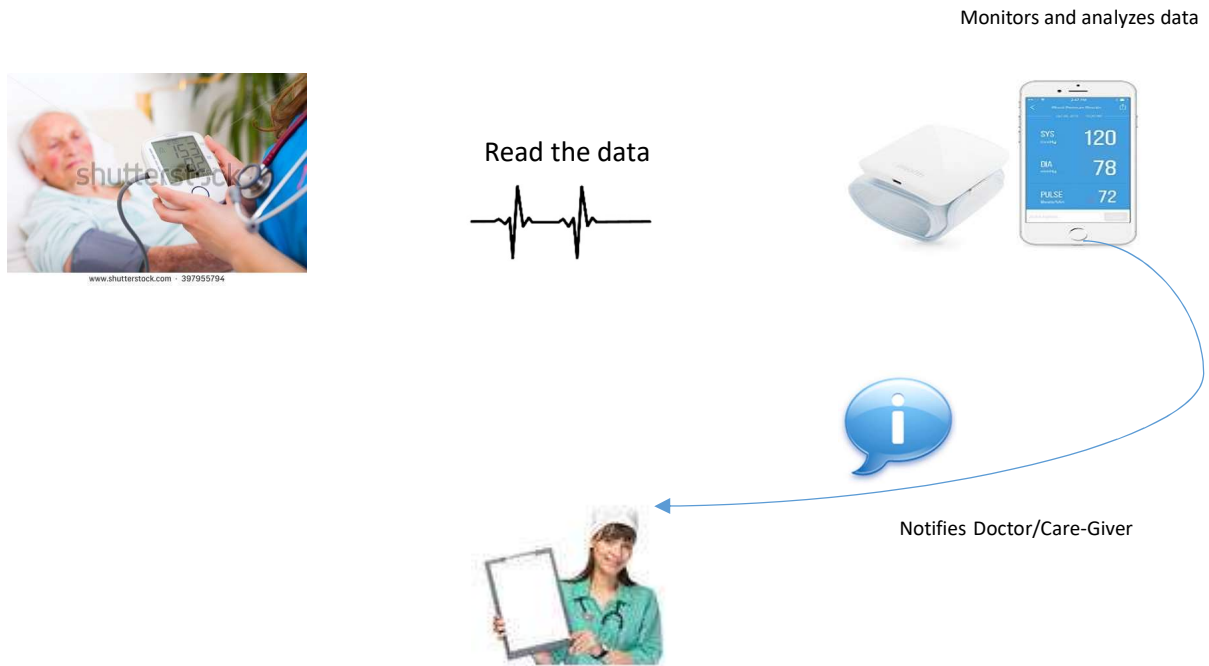
2. Usage:

The application can be specifically useful in cases where the elderly people stay at home and there is nobody to watch over them all the time, especially during the night. It is even harder for care giver to monitor them all the time. There can be even cases when a person is not able to use a Lifeline button or call someone for help when they suddenly feel unwell or suffer from serious heal breakdown. In such a scenario this application can send a notification to a pre designated person with an analyzed report on biometric readings and possible causes/symptoms of a disease and call for immediate attention. We also aim to preload the application with details about the person on which biometric readings can vary and health conditions of the person.

3. Challenges:

The first challenge in the project is to find a suitable device or sensor chips that can read the biometric data of the patient and how to transmit those data to the application with little manual effort. We also need to find correlation between different biometric readings and how we can analyze them to predict a possible cause for health degradation. We also have to optimize the accuracy of the application and sensor devices and make the response time by the application as quick as possible.

User	Gets Biometric readings from the user	Application	Sends a notification	Doctor/Care-Giver
			In case of emergency	

Analyzes readings and produces report

High level working flow chat for the application

Monitors and analyzes data

Read the data

Notifies Doctor/Care-Giver

How the application works:

4. Available devices:

Below are some devices that can detect and monitor biometric readings:

1. **Omron 7 Series Wireless Upper Arm Blood Pressure Monitor with Cuff that fits Standard and Large Arms (BP761) with Bluetooth Smart Connectivity.**
2. **Activité Steel by Withings.**
3. **iHealth Sense Wireless Wrist Blood Pressure Monitor**
4. **Masimo iSpO2 Pulse Oximeter.**
5. **Kardia Band by AliveCor.**
6. **Fitbit Surge.**
7. **Fitbit Charge.**