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Smart Diet Planner

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Abstract: India is the diabetes capital of the world, with more than 50 million of the people suffering from diabetes. There are 30 million heart patients in India, if the current trend continues by the year of 2020, the burden of cardio vascular diseases in India will surpass that of any other country in the world. 7.5 million Deaths worldwide due to raised blood pressure which causes stroke, kidney failure, dementia and heart disease. The medical profile of the patient plays a vital role in order to access the proper nutrition. In order to obtain relevant information on food intake. This system will check the data sensed by sensors and if any improvement is required in diet then accordingly the diet will get ordered from a smartphone application. All these techniques are non – invasive meaning the usage doesn't depend on taking out blood from the body but uses sensors to compute all the 4 parameters.

Keywords: Temperature , blood pressure , hemoglobin , Smart diet planner, Health monitoring.

I. INTRODUCTION

To plan a diet such that a person's health is maintained. The main aim is to reduce frequent doctor visits, reduce the risk that may include heart attacks, hypertension and hypotension caused by lack of proper nutrition, reduce the cost of health check-ups, suggest diet accordingly, reduce the use of devices that doctors use like blood pressure cuff , ECG machine and blood-glucose test. Sensors will sense the data and accordingly our diet will be scheduled. The sensed data of an individual will be sent to an application that will compare the received data with defined standard levels. If the compared results lead to any deficiency then the diet will be planned. Our application will be linked with a grocery application where the orders will be placed and user will decide if user wants to order the items or not accordingly changes in diet will be done.

II. STATE OF THE ART

[1]A Multi-Sensor Platform for Monitoring Diabetic Peripheral Neuropathy In this paper, the concept of using a multiple PPG (photoplethysmogram) and ECG (electrocardiography) based sensing platform aimed for monitoring the progress of diabetic peripheral neuropathy (DPN) is proposed. This is the first study that demonstrates the concept of using wearable PPG and ECG devices for its potential use for monitoring DPN. It explores the use of PPG sensor to capture pulse arrival time (PAT). The reflective PPG sensor can capture the pulse wave at different body locations. Based on the same principal of using Brachial-ankle pulse wave velocity (baPWV) to assess DPN, this paper proposes a platform by integrating two PPG sensors and one 2lead ECG sensor to detect the difference in PAT as a surrogate measure for evaluating the progression of DPN. PAT increases when a pressure was applied onto upper leg using a blood pressure cuff simulating arterial stiffness/DPN is shown by the preliminary result. Haptic sensation tests, imaging techniques, sensors are made into use. The results from the study has also shown that PDN (peripheral diabetic neuropathy) can potentially be quantified by measuring PAT by using the proposed platform. Haptic sensation test approach is cheap and easy diagnostic method. High specificity. Invasive technique is used. Sensors are attached to only thumb and ankle. Imaging technique is unreliable. Low sensitivity in results.

[2]Wireless Wearable Photoplethysmography Sensors for Continuous Blood Pressure Monitoring In this paper, novel PPG-based pervasive sensing platform for continuous measurements of BP is introduced. Two PPG sensors are used to measure the PATD i.e. pulse arrival time difference between the earlobe and the wrist to measure BP. The device is compared with a gold standard PPG sensor. The validation of this method is conducted with a preliminary study involving 9 healthy subjects. Results show that the mean BP and PAT difference are correlated with a 0.3 factor. This study shows the feasibility of continuous monitoring of BP using a pair of PPG placed on the ear lobe and wrist with PATD measurements is possible. In addition to continuous BP monitoring, the sensors are placed at locations that do not disturb the user or break one's work flow of daily activities .

[3]Energy-Efficient Long-term Continuous Personal Health Monitoring. In this paper, they quantify the energy and storage requirements of a health monitoring system that uses eight biomedical sensors: (1) heart rate, (2) blood pressure, (3) oxygen saturation, (4) body temperature, (5) blood glucose, (6) accelerometer, (7) electrocardiogram (ECG), and (8) electroencephalogram (EEG). The analysis suggests that there exists a significant gap between the energy and storage requirements for long-term continuous monitoring and the capabilities of current devices. To enable energy-efficient continuous health monitoring, they

proposed schemes for sample aggregation, anomaly-driven transmission, and compressive sensing to reduce the overheads of wirelessly transmitting, storing, and encrypting/authenticating the data. Compressive sampling based computation and transmission.

III.PROPOSED DIAGRAM

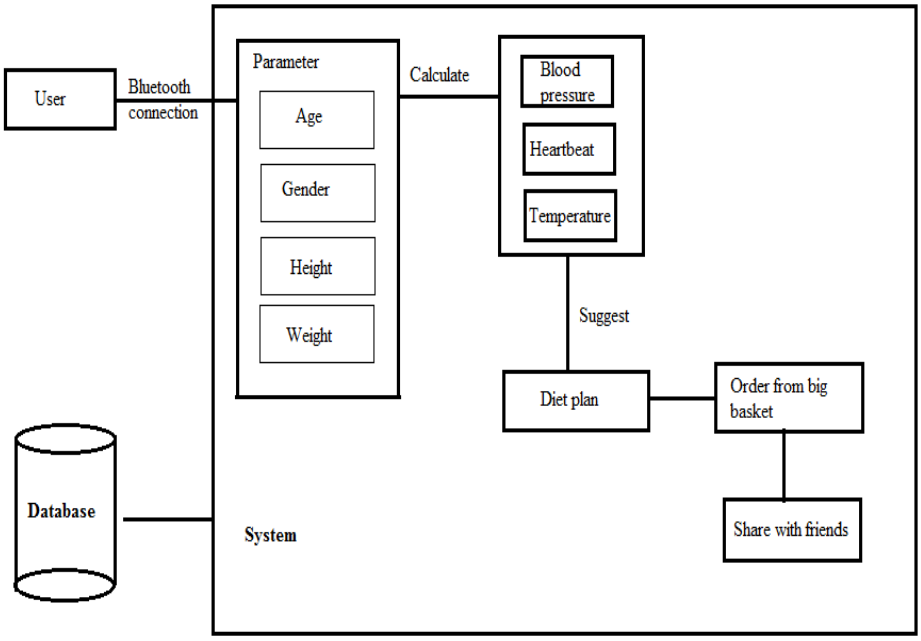

Fig.1 Architectural Diagram

The proposed system will help the healthcare domain to ease the problems related to improper diet resulting in risk. The primary goal of our system is to reduce health risk and improve health. In our system the user first login to the system then the user with the help of sensor senses the data like Blood pressure, Heart rate, Temperature and then all these sensors are connected to the arduino with the help of the breadboard and wires and then all the data is sent to cloud with the help of Bluetooth . Here HC-05 is the Bluetooth module which is used for the connection with the internet. All the user details like the Name, Height, Weight, Age, Blood Group, Health information etc. is stored inside the cloud. The Cloud performs functions like authentication, user subscription, publishing of data and comparing the observed values with the standard values. The Cloud has the dynamo DB database to store information of user.

All the data from the Cloud is then sent to the mobile application and the user gets the values compared with standard value and also gets a proper diet plan according to the sensed values and if there is any variations in range of values then the user will get a proper notification to allow or deny the order and if accepted the order is placed and if the user denies then the changes are made in the diet accordingly.

A. General Specifications

Various technological and standardization aspects have to be considered while designing a system in healthcare domain. Different key components used in designing the smart diet planner are software requirements and hardware requirements. The software that is going to be used in our system is:

1) Operating system – ArdOS
2) Compatibility – Android
3) Cloud

In the system sensors are used to get data from the user's body and then the information is sent to the cloud with the help of Arduino and then the cloud is interfaced with mobile application and then all the information is shown in mobile application and then if there is any variation in range the order is placed at the grocery website. The operating system that is used in arduino is ArdOS. The compatibility of the system will be with android systems only. The cloud our system is going to use is the cloud AWS.

B. Flow of the System

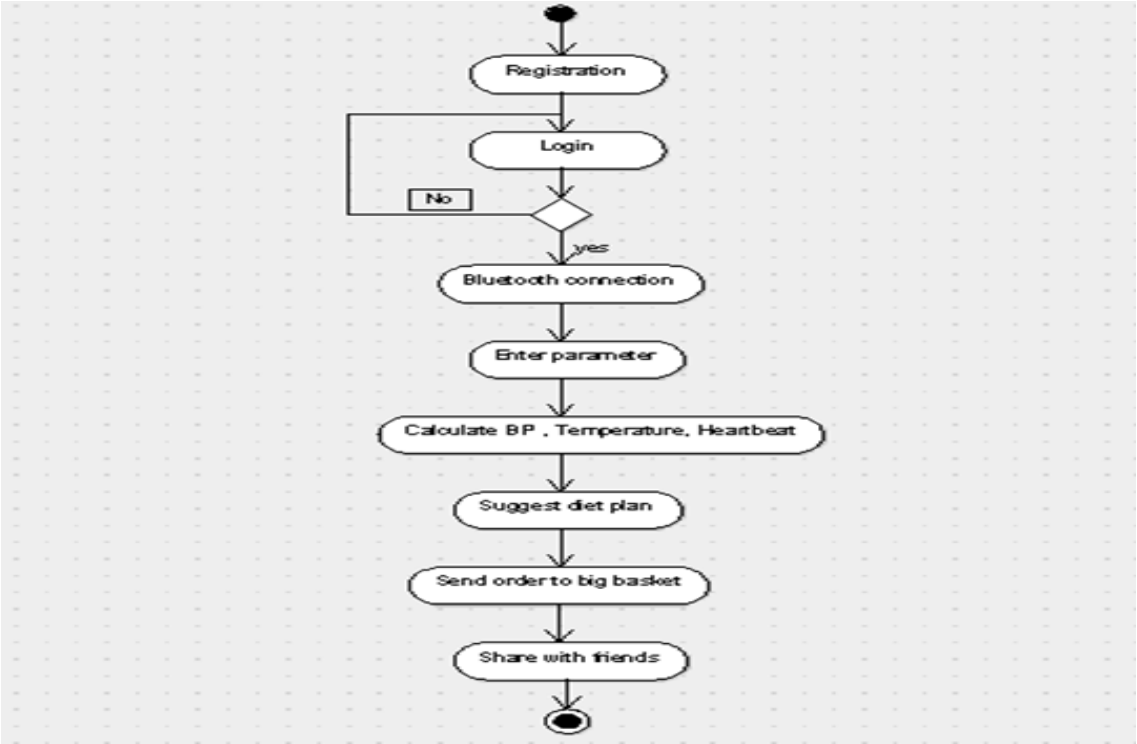

Fig .2 Flow chart

1) The activities performed by user will include register and login. While registering all the information related to user like age, weight, etc. will be filled up initially, so this becomes one time activity. 2) All the information of a user will be stored in the cloud. 3) Data from sensors will be sent to Arduino Uno. Then Arduino forwards data to cloud. 4) Then data is further transferred to mobile application. 5) Comparison between the range defined and new values takes place at cloud. 6) If the comparison shows fluctuation of values out of the range then the person is tagged as unfit. 7) So the user will receive a notification consisting of the sensed values and the diet suggested to him. Also it will ask for user's permission whether he wants to order the food continued in diet. 8) User can exit the app or he can go through the history of data stored related to his health.

IV. ADVANTAGES AND DISADVANTAGES

A. Advantages

1) Non-Invasive techniques are used.
2) Detailed diet plan provided to user Visits to doctor is reduced
3) Order for the recommended diet will be placed.

B. Disadvantages

1) Continuous network connectivity is required.
2) No portability.
3) Limited to android users.

V. CONCLUSIONS

Since continuous monitoring is growing requirement to reduce health risks, it is important to propose a system that maintains a person's daily diet. This system can be further improved by directly including required diet in the weekly grocery list. Also in future it may include checking the availability of required food in the fridge and notify the person about it.

VI. ACKNOWLEDGMENT

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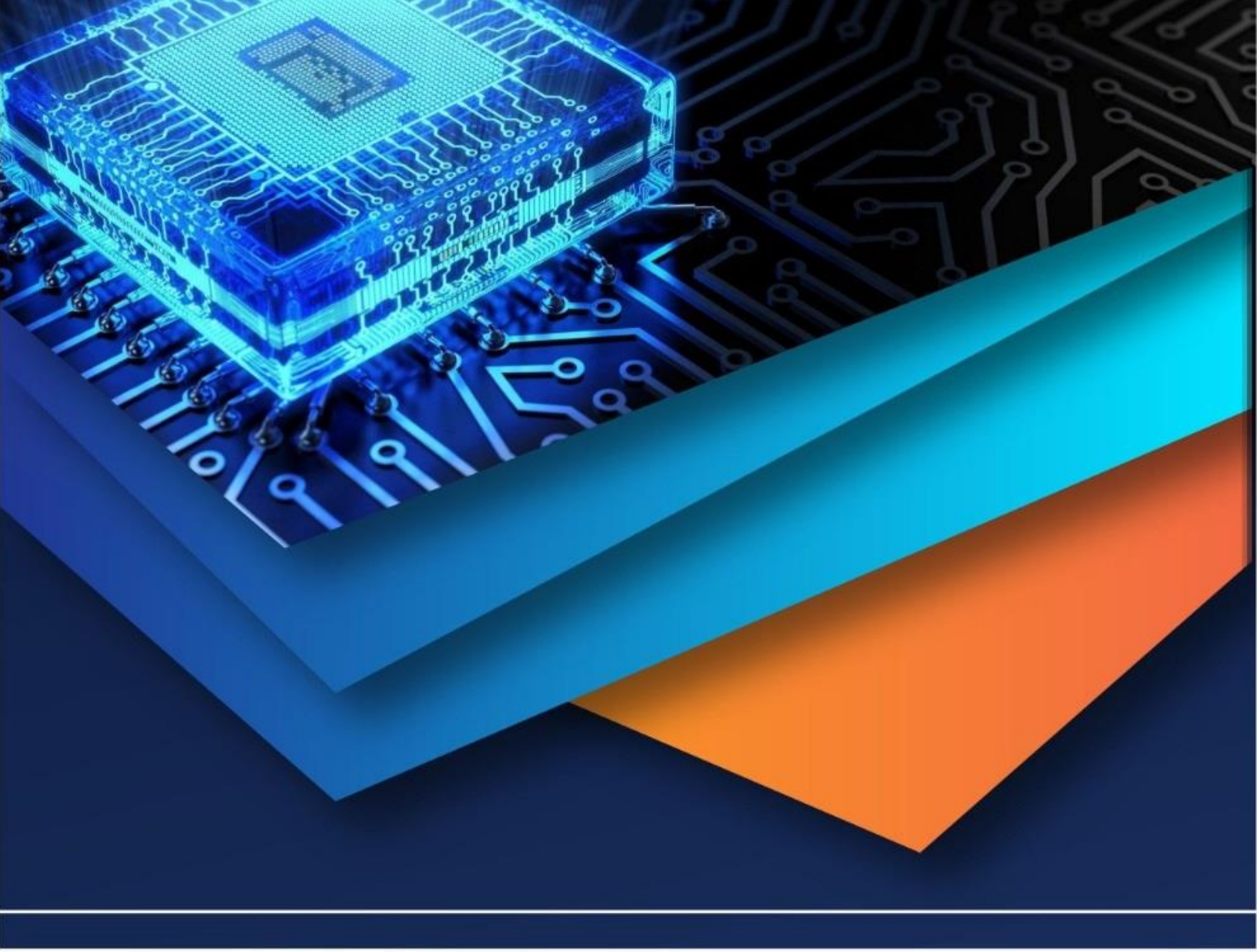

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