AI DIETICIAN

Prajakta Dadasaheb Jadhav, Apurva Madan Sinnarkar, Sneha Vaideswaran & Prof. Bharati.M. Narute
Department of Electronics and Telecommunication Engineering, Modern Education Society's College Of Engineering Pune, India.

Received: February 04, 2019 Accepted: March 27, 2019

ABSTRACT: *In today's world, due to hectic schedule people cannot concentrate on their health. So there is need to suggest a diet plan, so they can maintain their health. We should take proper diet for our growth. AI dietician is an artificial intelligence dietician which provides proper diet plan to the user. The already existing system considered only a particular disease [1,2]. The approach presented in this paper considers Height, Weight, BMI, Age, Gender and various diseases. In our work we have used Raspberry Pi B3+ as a main component for analyzing and computation. An Ultrasonic sensor (HC-SR04) is used for height measurement and it is interfaced with Raspberry Pi B3+. A weighing machine is used to measure weight. The evaluation parameters are Height, Weight, BMI, Age, Gender and various diseases. The obtained result is in the form of diet plan.*

Key Words: *Raspberry Pi B3+, Ultrasonic sensor, BMI*

I.INTRODUCTION

To maintain health and to have our health in good condition, everyone should take a diet. This is very important for maintaining a good health condition. Now a day's people are taking non healthy food and they got some severe diseases because of their careless behavior. These diseases are curable but health condition degrades. So every person should take proper diet for his/her own concern. People should follow dietary guidelines as well. This work exactly fulfills this requirement. This work provides a required diet plan to the user by considering different factors.

The system measures user's BMI using his or her height and weight. It provides a proper diet plan to the individual considering age, gender, height, weight, disease. We are going to develop an App in which diet plan will be displayed.

The components used are Ultrasonic Sensor, Weighing Machine, Raspberry Pi B3+ and Tkinter (Toolkit Interface) programming. The paper is organized as follows:

Sec II provides literature survey. Sec III provides methodology. Sec IV includes Implementation. Sec V includes Results. Sec VI includes Conclusion and Future scope.

II.LITERATURE SURVEY

Husain et al. [1cancer is very severe disease. It is occurring frequently now days. Some systems are available in market which suggests diet for cancer but they are not sufficient. These systems only suggest one or two food items which help to secure from disease. This system provides a complete diet plan for cancer .cancer is a disease which is not curable. It needs kemo therapy which has side effects. Therefore the one and only solution to this is to take proper diet to prevent from getting such type of disease.

Abbas Lokman and Jasni Zain [2] This work describes the diet plan for diabetic patients. This system is based on a virtual dietician concept. a chat bot is designed which works as a dietician. The history and view of chat bot is provided in this system. Diet plan for diabetic patients is given using this chat bot. this system is the interface between man and machine. chat bot concept provide interface that gives the diet plan for diabetic patients.

Barnett et al. [3] This work provides diet plan for obese people.As obesity is a major health problem proper diet is very essential. To lose weight for obese people is a very difficult task. There are certain ranges of BMI which decides normal, underweight or overweight. The BMI above30 is refer as BMI for overweight people. This paper provides a system which manages weight and provides a good diet to lose weight. There is face to face consultation between dietician and a person. Because of this dieticians get clients automatically and clients get the proper advice without wastage of time for travelling to dietician.

Carl J. Brandt et al. [4] Obesity is a major health problem .

Each and everyone should take care of his/her health and should maintain a proper health condition. This system provides a diet plan to the user to lose weight. As today's world is internet world and there is Gmail service available, this

work gives a system which uses the emailed of the user. Based on email id of user the system sends the diet plan to him/her on their respective email ids.

Talapanty Shwetha et al. [5] this work provides an intelligent agent which will give a diet plan to user.

Eating habits of different person are different therefore their diet plan should be different. Lifestyle of each person is different. The different tensions are there for different professions. Because of this stress a proper diet is essential to follow. This work gives a proper diet which is different for each person. The user has to enter the information about his lifestyle and according to that, the diet plan will be displayed.

HITESH PRUTHI et al. [6] This work describes website. This website contains all the data about various health issues and their remedies. The required all information about health maintenance is provided in the website. This website is easily accessible to all people from lower age to higher age no issues. Admin and user are two important keywords in this website. The user is a common people who want to take some information . A unique login id is given to the each user from which he/she can login to the website. the website is linked with different gyms from which gym book is taken and provided to the each user.

III. METHODOLOGY

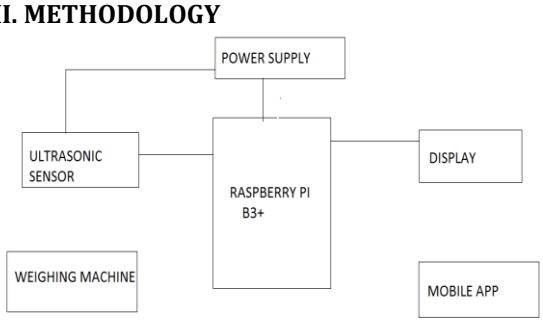


Fig. 1 Block Diagram Of AI Dietician.

A) Raspberry Pi B3+:

Fig 2. Raspberry Pi B3+

A Raspberry Pi B3+ is the latest version , it is a tiny size computer. If we add keyboard, mouse, display, power supply and micro SD card . The SD card installed with Linux, will act as a full-fledged computer which can run many applications. It is a small computer whose specifications are similar to a computer.

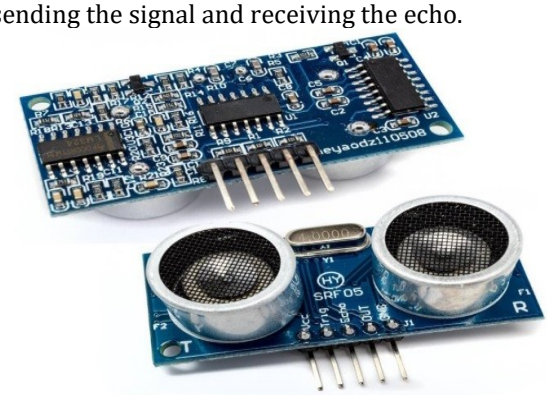
The specifications of Raspberry Pi B3+ are:

- Cortex-A53 SoC1.
- USB 2.0 ports.
- 1 size Broadcom BCM2837B0.
- USB connector.
- CSI camera

It supports HD video which is used to create a media centre.

B) Ultrasonic Sensor:

This sensor is used to calculate the separation by utilizing ultrasonic waves. The time between the sending and receiving the waves gives the Distance. It releases short, high-frequency sound pulses and if pulses hit an object, then they are reflected back as echo signals .The ultrasonic sensor calculates the distance between sending the signal and receiving the echo.



C) Fig.3 Ultrasonic Sensor

Fig 4. represents ultrasonic sensor working with waveforms. The waveforms are Trigger, 8 adjacent clock pulses and time it takes to leave and return. The Ultrasonic module2cm - 400cm ranging accuracy and can reach to 3mm which can be used for object detection. It has ultrasonic transmitters, receiver and control circuit. The basic principle is using trigger for at least 10us high level signal and then sends eight 40 kHz cycle and checks if there is a pulse signal back. The pulse gets back through high level time duration, time distance can be calculated as follows

D) Time Distance =

$$\frac{\text{velocity of sound} * \text{high level time}}{2}$$

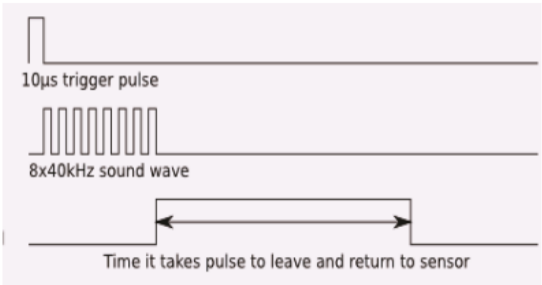


Fig.4 Ultrasonic Sensor waveforms

C) WEIGHING MACHINE

Fig.5 Weighing Machine

Specifications:-

- Starting Weight 7kg.
- Capacity -180kg.
- Display-4 digit LCD.
- Power-3V lithium battery.
- Automatic shut down-8 sec.
- Low voltage Display-"Lo".
- Error display-"Err"

IV.IMPLEMENTAION

Implementation steps of our work as follows:

- Measure height of the user using Ultrasonic sensor.
- Measure weight of the user using weighing machine.
- We should enter height in meter and weight in kg to calculate BMI.
- BMI is calculated as follows

$$BMI=\frac{weight}{(height)^2} \quad (2)$$

- Enter Age and Gender of User.
- Enter the Disease if any.
- Choose Database according to the input factors given.
- Display database on mobile app.

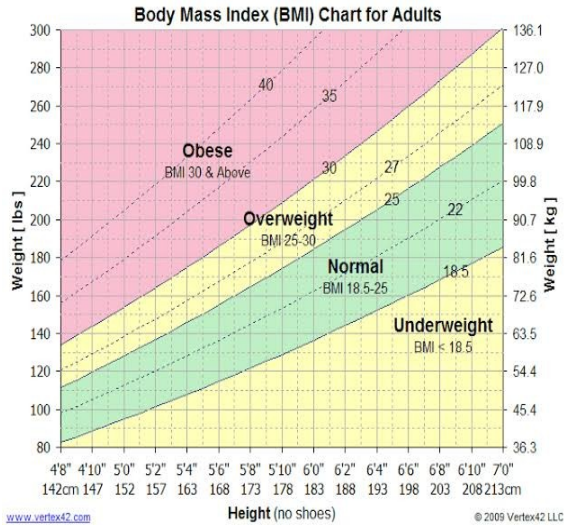


Fig.6 BMI Chart

In Our Work to suggest diet plan to user. we measure his/her Height using Ultrasonic sensor and measured data will be automatically send to raspberry pi B3+ module. In G display we enter Height, Weight , Age ,Gender and Disease if any. according to the Tkinter programming the best Database will be selected and display on the Screen till date but we are developing an mobile app on which diet plan will be suggested .

V.RESULTS

The proposed work gives following results:

1) The system gives diet plan to the users on mobile based on BMI and other factors.

2) This result represents diet plan for obese people.

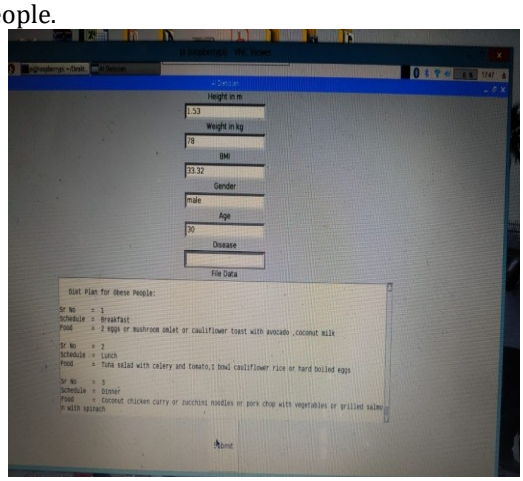


Fig.7 Diet plan for Obese People

3) This result represents diet plan for people having pcos disease.

e ISSN 2348 –1269, Print ISSN 2349-5138
Cosmos Impact Factor 4.236

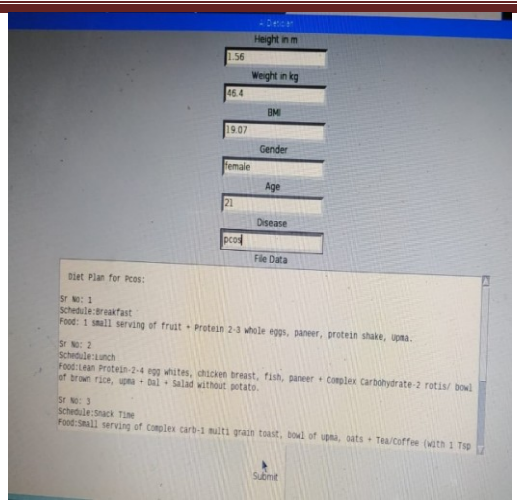


Fig.8 Diet plan for Obese People

VI. CONCLUSION & FUTURE SCOPE

This paper Conclude that the designed system is useful for common people to maintain their health by taking proper diet.

We can develop a system in which if the user is at a remote place, he/she can send details through SMS and system can send diet plan to user.

REFERENCES

1. Husain et al. " Application of Data Mining Techniques in a Personalized Diet Recommendation System for Cancer Patients" IEEE Colloquium on Humanities , Science and Engineering Research Dec 2011.
2. Abbas Lokman and JasniZain."An Architectural Design of Virtual Dietician (ViDi) for diabetic patients."
3. Barnett et al. "An Integrative Health Platform for Supporting Weight Loss and Maintenance Behaviours." IEEE Journal of Biomedical and Health Informatics, Vol.19, No.1, Jan 2015.
4. Carl J. Brandt et al." E-dietician in General Practice" Second International Conference on eHealth, Telemedicine, and Social Medicine 2010.
5. TalapantyShwetha et al. "Artificial Intelligence Dietitian Using Android". International Journal of Scientific Research in Computer Science, Engineering and Information Technology2017 IJSRCSEIT | Volume 2 | Issue 2.
6. HITESH PRUTHI et al."ARTIFICIAL INTELLIGENCE DIETICIAN". International Journal of Recent Trends in Engineering and Research.