

HEALTH AND FITNESS ASSISTANT

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Abstract: A personal trainer is a fitness professional that provides motivation needed to reach your target. Personal Trainer plays a vital role in your fitness success. When the target is selected, the trainer will instruct appropriate workout methods and helps in overall development of his client. But all of this comes at great cost. Generally, more qualified the Trainer is, the more personal sessions will cost. This paper enables us to understand how the need for the Personal Trainer can be fulfilled in a web app, by using machine learning algorithms. This app will be able to learn about your diet and customize a diet plan according to type of workout selected. It will also be able to produce custom workout plans for the user based on their recent activities throughout the day, in the last week or the last month. Each plan will bring you closer to the body and healthy lifestyle the user want.

IndexTerms - Machine Learning algorithms, Web App

Introduction

People nowadays have got more conscious about their health. They consult a dietician or a personal trainer regularly so that to make sure they fit all the time. But visiting a dietician or a personal trainer regularly can be costly and time consuming. Moreover a dietician or a personal trainer cannot keep track of the day to day activities of the user in order to give a diet plan and workout routine. So these problems will be solved by the proposed system.

The goal of this system is to provide a personal trainer which suggests a diet plan and workout plan for a particular type of training that is selected. The personal trainer has the ability to take the workouts to an another level irrespective of the ability to remain motivated. When humans are been watched, humans have the tendency to pull, push and act amongst themselves in a better way. These workouts, exercises and training would always be at a greater level, accurate and proper, if that person training them is a professional in fitness and diet. This professional knows the correct exercises and their techniques.

Health and Fitness Assistant (HFA) is a simple to use, user friendly, free web app.

This assistant has been trained, using various machine learning algorithms, to create and implement customised workout and diet plan that are suitable for specific user. Hence this app would create a proper plan and schedule for the users diet and workout sessions according to the goals and target selected by the user using research-proven and published protocols. If the user has not completed or reached his current daily target provided by the web app, the current plan would be customised to the current schedule for the upcoming days. As a result, progress of each day would be monitored and analysed by the system and each day there will be plan and schedule according to the previous activities. Each piece of advice has one motive: to reach the user's fitness goals.

This assistance is for all your health and fitness needs. The diet and fitness section gives information about how you can control your daily diet, and how you can workout and exercise to lead a healthier, better and well-rounded lifestyle.

This system will have an overview "look" to see the improvement they have made. This system is able to learn about your diet and customize a diet plan according to type of workout selected. The app is able to produce custom workout plans for the user based on their recent activities throughout the day, in the last week or the last month Database will be updated with information like current diet consumed and exercise done. The system will have various tools to compute fitness related parameter like Daily proteins requirement, Food fat, Target heart rate, One Rep max etc.

I. Motivation

There are large amount of mobile applications for weight and diet management. Although, applications for these management are not experimented and checked in many contents as well as there is no support for accuracy. Efficiency, improvements, quality are important in their own aspects. There are handsome, less, few amount of examples of food systems and diet systems that provide to the users nutritional information about proper diet and proper workout plan. We propose HFA(Health and Fitness assistant), a recommender system to improve the quality of life of obese people, healthy people and individuals affected by chronic diet-related diseases. The proposed system is able to build a user's health profile, and provides individualized nutritional recommendation according to the health profile as well as list of exercises to be done in order to lead a healthier life.

Most people lack the knowledge on how to get a good workout. Going to gym frequently, people don't have any support and the information to get proper results. Health and Fitness Assistant, free web app, will get a customised workout with a clear focus on users goals and results. If the user wants to lose weight, tone or tighten muscles, or simply lead a better life, the HFA has a simple

philosophy. It pairs the user with a Personal Trainer that is made using machine learning along with diet and workout sessions to be carried out.

Being fit is more than just doing few and repeated set of exercises. The method of doing exercises is more important. Diet as well as living lifestyle also plays an important role. Obesity can be prevented through though changes and choices that are personal. Quality of diet can be improved by increasing the intake of dietary fibres, and by decreasing the intake of food items which contain high level of fats and sugars.

Machine learning is an important subject that deals with learning and training datasets. It is used in a scenario where achieving best performance is difficult or is not possible. Our system uses Machine Learning for customization of the schedule provided to the user. Every individual has different fitness goals and thus our exercise routines are customised as per the requirements of the user. These workout routines will help users to tone up, increase strength, muscle gain etc. Along with this, the assistant will also have facility to connect with other users through support groups and learn about workouts and healthy diet etc. These facilities will prove Health and Fitness Assistant to be significant resource to achieve healthy lifestyle. .

II. Literature Review

Machine explores the study of algorithms that learn and predict from the data which is given to them as input. These algorithms helps us to overcome strict predefined static program instructions by making predictions or decisions by using models which are created using training inputs. Machine Learning is used in various different fields ranging from detecting various deadly disease in field of medicine to predicting future values of stock in the market or the enterprise. There are many systems which provides users with with healthy diet and workout plan but most of them are not effective enough because they lack customization or don't consider the parameters with users point of view.

A healthcare application called inside me was published in a research paper,[2] according to this paper, this application, monitored various activities of the people and analysed them. It kept track of various activities of the user. Similarly we aim to implement such features in our system which will monitor daily diet plan and workout routine of the user and provide them with a new workout plan and diet plan considering the parameters like medical report, age etc. This allotment of customized diet plan and workout routine will be facilitated by using two main classification algorithms like Decision tree and Random forest. These machine learning models will be given training input data which is verified and provided by various dieticians and gym trainers. Thus the activities that will be provided to the user will be completely safe considering the health issues of the user.

It indicated various activity performed and activities that have to be performed by the user. Diabetes and other disease about the people were known using questionnaire. It also checked the various medical report of the user using the application. From these research papers, observation was focussed on algorithms such as decision tree, random forest, topic model, logistic regression ,etc and techniques used were questionnaire feedback systems, etc. These algorithms were used to get information about various activities as well as various diet people used in their daily lives .

III. Methodology

This system works using various modules listed below. Refer fig. 1.0 given below shows various modules in the system and the relationship that exists between them.

1. User - This module of the system describes the different views the system will provide. As shown in there will be two views. They are:
 - a) Registered User - This view will be provided by the system to the authenticated user who has successfully registered into the system. Only the registered user will be allowed to experience further functionality (i.e to obtain customized diet plan and workout routine) of the system. Moreover registered user can also use different health and fitness calculating tools like food fat calculator, BMI calculator, daily protein requirement calculator etc.
 - b) Guest User - This view will be provided by the system to the guest user. Guest user can use different health and fitness tools, but cannot use other important functionality of the system.

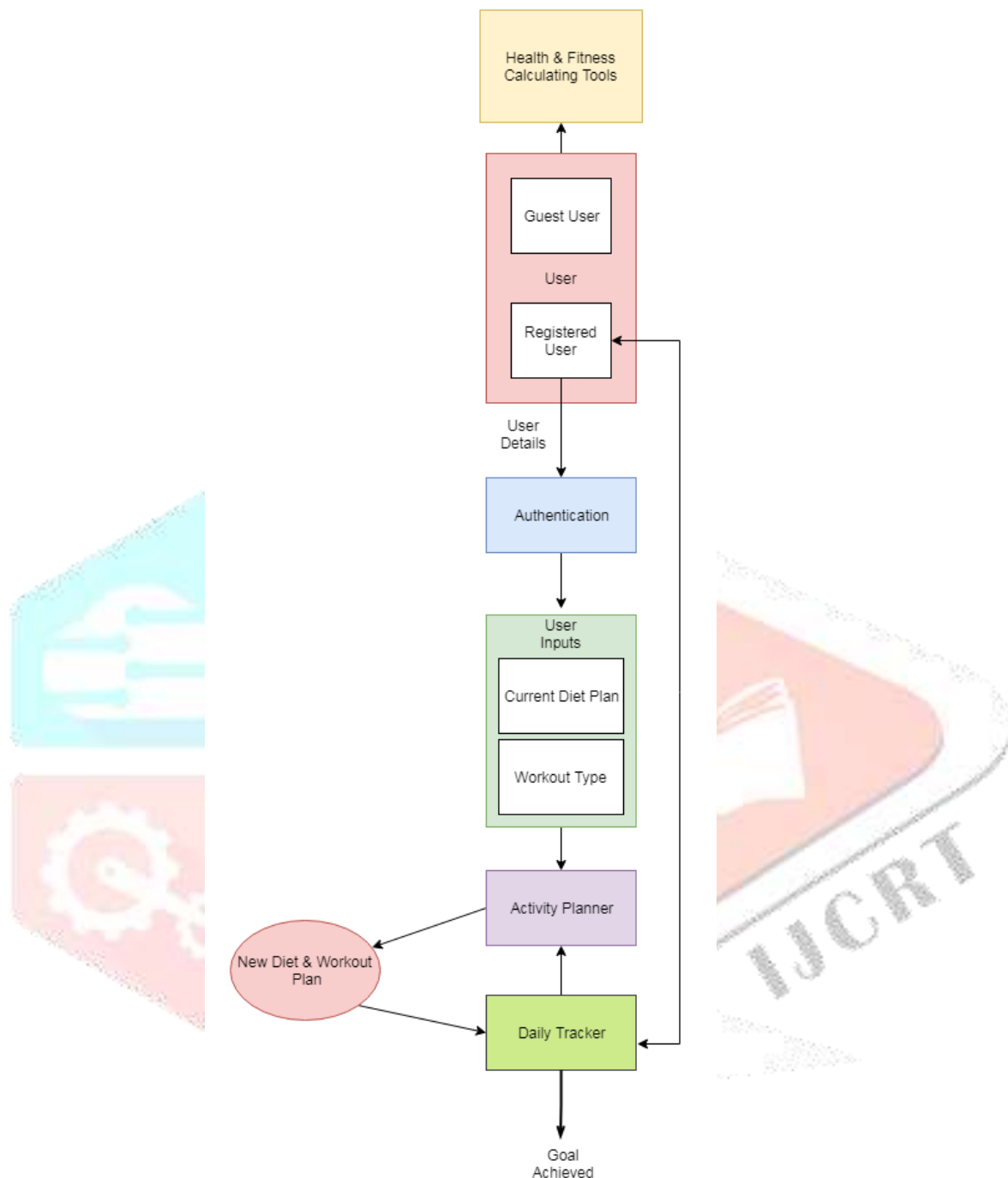


Figure 1.0 :Overall flow

2. Authentication – This module deals with authenticating and verifying whether the user is registered user or not. The user gets to use other privileges once successfully authenticated. .
3. User Input – This module of the system deals with taking inputs from the user. The users have to enter their current diet routine and the workout type they want along with some basic user information like height, weight, disease/disorder etc.
4. Activity Planner - This module receives the input from user input module. This basically comprises of machine learning algorithm which are trained using the training data provided and verified by various dieticians and gym trainers. The two classification algorithm used to implement the model are:
 - a) Decision Tree - This algorithm is used to design classification model. This algorithm consist of various nodes, each interior nodes corresponds to input variable or attribute and is divided into various children nodes and each leaf node represents a target

variable. This algorithm classifies with respect to various parameters and predicts most appropriate workout and diet plan based on inputs given by the user.

b) Random Forest - This is another classification model which classifies using answer of multiple decision trees. It not only gives high accuracy and precision but also reduces overfitting.

At the end of this step a new diet and workout plan is generated considering all the parameters given by the user. This plans are saved in database for future applications

5. Daily Tracker - This module keeps track of user activities by taking inputs from user like workouts done and diet eaten regularly, and comparing them with the original plan which was stored in the database in the above step, if there are any dissimilarities between inputs provided by the user and plan retrieved from the database then this changes are loaded back again to activity planner for creating the new plan, else system notifies users that their task is accomplished successfully.

III. Conclusion

The Health and Fitness Assistant will help each user get started on the right track by first evaluating them and determining baseline fitness levels. This information is important to better design a customized workout for each user. To create a System which will accept the parameters as mentioned in the definition, goals, methodology provided in this paper. Machine Learning algorithm will evaluate the data and it predict appropriate workout and diet plan as per the inputs provided by the user. The correct schedule is then returned to the System which is seen by the user as a workout plan and diet routine to be followed in order to achieve his goal.

IV. References

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