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Mobile Fitness Application

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Abstract: ***Online technologies that enable self-tracking as well as exercise are fitness apps. Certain app features, such as normalized step objectives, indicate controlling circumstances that might influence controlled vs. autonomous motivation and, therefore, encourage regular exercise. This research sought to determine how using a fitness app for self-tracking and setting a normalized step goal affected several elements of desire and regular exercise. Fitness applications have taken over the country with the launch of the mobile Web and have significantly changed how individuals behave while exercising. One can install a tonne of fitness applications from the web. Applications present in the current app stores does not have to many features like water-in-take or calories burnt, step counter all in one. Either the application has only one of two feature .With just a few applications having all the required features but are very costly and accessible to the majority of the people.***

I. INTRODUCTION

Fitness has the annoying quality that results take time to manifest; it might take months or even years to see the desired effects. Therefore, among the worrying issues in today's culture is that people have inadequate tracking skills, making it challenging to keep count of basic workout data like calories burned, distance covered, pace, and steps done. Due to a number of factors, including a lack of measurement instruments and the self-discipline to continuously do the exercise, it is almost difficult to comfortably keep track of all these numbers, which will ultimately cause them to quit. Due to the fact that exercising is entirely optional, some of them also struggle greatly to stay motivated and continue doing so. In addition, individuals should not overlook the role that nutrition plays in leading a healthy lifestyle. However, maintaining a strict diet plan that accounts for what and how much a person consumes each day may be challenging. As a result, this project was created in order to address all of the aforementioned issues. By creating the Mobile Fitness Application, people can monitor their own overall calorie intake and expenditure facts and alter their exercise regimens accordingly. The app will serve as the user's tutor by transmitting content including such health articles, nutrients consumed, social network feeds, and other related details.

So the main purpose of the project is to provide the user with data of the amount of calories consumed by them while intaking food.This application also informs the user about the water consumption with a notification at regular intervals. It also has a step counting feature and calories burnt due to that.

II.RESEARCH METHODOLOGY

We first took a look at the already available application in the market for the people. Then we noted down the problems available in the present application that can be improved. We gathered the information through various applications and websites and even consulted various research papers and people for the additional requirements of the features that can be added into our application regarding best suitable features that can be added into the application. We even researched the different algorithm for the better implementation and working of the application.

III. OBJECTIVES

1) The app's primary goal is to daily alert the user about their health. Every person aspires to be physically and psychologically fit.

2) These applications personalize the experience and include food and nutrition advice in addition to exercise and routines to meet the varied demands of users. The software updates users on their daily water intake, calorie intake, and steps taken. The software also analyzes photos to identify a user's mood.

3) The applications have been a huge relief for folks who don't have the time to frequently visit fitness centers. It provides free diet regimens and exercise recommendations. Additionally, it looks at the advantages of mobile apps over physical fitness centers. "Motivation" is one of the key advantages of utilizing a fitness app.

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IV. PROBLEM STATEMENT

Kids and adults alike are obsessed with fitness. The survey clearly demonstrates this since young people make up the bulk of app users. The majority of those surveyed believe in using fitness applications may help people achieve overall fitness objectives more quickly, cheaply, and conveniently.

But people's demands for app performance have grown over the years. Therefore, users rarely ever accept apps that fall short of their requirements.

In fact,20 percent of the people uninstall the application after using it just once. Fitness app design flaws are one of the most often occurring causes of this.

The fitness apps available in the market are either high in cost making it unaffordable to the middle class and lower class people. If not costly then the app lacks the features that fulfills the requirements of the people.

With the increase in the working hours of the people , many cannot give themself time to go to the gym and work out. In this type of situation the fitness applications could be of great help. The apps even have a great history and a good track record.

V. LITERATURE SURVEY

TITLE :- A Fitness App to Fit Everybody's Schedule
Hoshang Kolivand, Edward Green and Shiva Asadianfam
IEEE 2021

The primary goals of this initiative are to research the employ this knowledge in the areas of exercise and inactivity using my own data collection and expertise to create a smartphone application focused on fitness to help users becoming more active physically.

The application must be created to suit schedules of as many individuals as feasible, enabling user-customizable customization Also, it will adhere to the user's current exercise level and their equipment accessibility. The primary goals are to just research the current market.

You search for comparable applications, determine if any of this caliber already exist, and so as to determine whether my concept have a distinctive quality. data after Through questionnaires and surveys. Users would demand this kind of software, therefore developers created it. Then create it in accordance with these guidelines, then test it and, hopefully, submitting it for usage to the app store.

TITLE :-A Wireless Health Monitoring System Using Mobile Phone Accessories
Md.Shaad Mahmud, Honggang Wang, A.M.Esfar-E-Alam, Hua Fang
IEEE 2017

In this study, a wireless health monitoring system employing mobile phone accessories is designed and prototyped. We concentrate on employing a smartphone cover to measure real-time Electrocardiogram (ECG) and Heart rate monitoring. This design may be utilized for the early diagnosis of heart illnesses given the rising number of cardiac patients throughout the globe. Our method uses dry electrodes mounted on a smartphone cover to measure real-time ECG, in contrast to the majority of current techniques that employ an optical sensor to record heart rate. Through a smartphone application, the recorded ECG signal may be saved and instantly evaluated for prognosis and diagnosis. The suggested hardware design uses a Bluetooth low energy (BLE)-embedded single-chip microcontroller (RFduino), which reduces size and increases battery life. In a lab setting, the "Smart Case" system has undergone testing. We also created a 3D-printed smartphone cover to test the system's viability. The results showed that the suggested system may be on par with equipment of a high caliber medical nature.

TITLE:-Physical Fitness and health Management
Jingjing Chen, Kewei Yu,Yinglin Pan,Junying Wu
IEEE 2021

This article examines and analyzes the construction of sports fitness and health management majors from the viewpoint of societal demand in order to boost the impact of undergraduate talents on health big data and improve the training effect of sports talents in colleges and universities. Prior to putting up this major, the challenges it would provide are examined, as well as its statistical viability. Using this information as a foundation, the linked system of sports fitness and health management is built as reference information in the fitness industry.

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TITLE:-Strength Training: A Fitness Application for Indoor Based Exercise Recognition and Comfort Analysis
Dipanka Das, Shiva Murthy Busetty, Vishal Bharti, Prakhyath Kumar Hegde
IEEE 2017
Since sensor data fluctuations are so rare, indoor exercise equipment presents some particularly challenging sensor analytics problems. To increase the repeat count accuracy, a thorough examination of sensor data using methods like threshold adapters is needed. With the strategies used, we could attain accuracy of over 99% for exercise count and 95% for exercise identification. When a user deliberately alters the pace of exercise motions, our comfort factor calculating algorithm does not function very well, and as a result, the accuracy of comfort prediction is only around 75%.

VI. STATED SYSTEM

The stated system of the application work are as follows

A. Signup and Login Page

1) The new user (coming for the first time on the application) needs to enter its required details and make an account for himself that can be used for login later .
2) The new user has to use an email address and password for the signup and has to provide some details
3) If the user is not new and he already has an account then he simply needs to login in with his credentials i.e username and password .
4) The application asks the user for a few details that would be used by the application or and will be displayed later on the profile page.
5) The required details are age, height ,sex and weight.

If the user has to change the device then the user has to remember the password and the mail id.

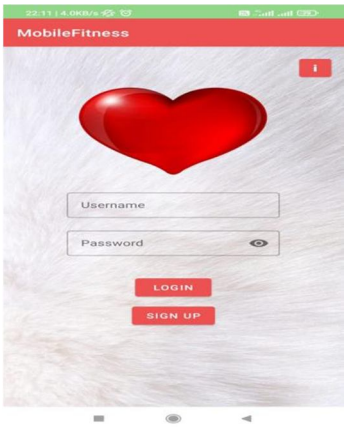


Fig .1 Login page

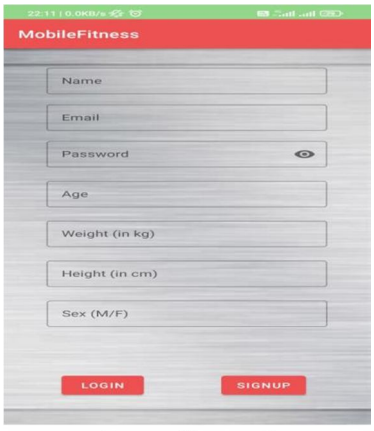


Fig .2 Sign up page

B. Profile Page

After logging into the application, the user first interacts with the profile page, where all of the user's information is displayed and from which the user can log out if he wants. Details like the person's name, email id , and demographic data like their age, sex, weight, height etc. Will be displayed. The Optimal calories, calories burnt, heart rate etc will also be shown

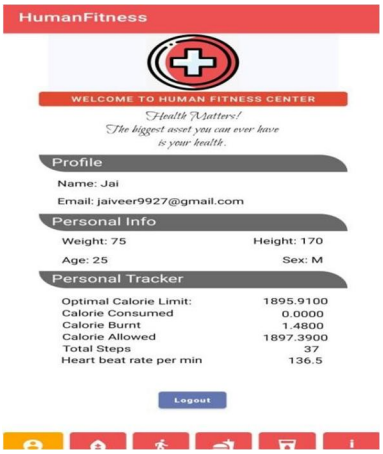


Fig .3 Profile page

C. Heart Rate

While signing up to the application the user has provided its details like age, weight, height and gender. Using the age and the gender of the user we determine the Heart Rate. The application uses TensorFlow model to find out the heart rate of the person with the help of its age. It uses machine learning for the data provided which has been taken from Google and then it is trained to find the accurate Heart Rate.

D. Counting Moves and Burnt Calories

This feature of the application shows the total number of steps walked or moved. For this feature the application is connected with the GPS to track the movement of the user.A three-axis accelerometer in the GPS device continually detects the motions of the person. As long as the device is switched on and with the user, data is continuously being gathered, allowing the device to determine if the person is moving ahead, running quickly, or even just standing motionless.

With the movement of the user the amount of calories burnt is calculated with the formula provided.

Total calories burned = Duration of physical activity in minutes × (MET × 3.5 × your weight in kg) / 200

E. Food Eaten

This section of the applications helps the user to keep track of the food consumed.The user can select the food items that he has eaten and the application will tell the calories consumed from the food eaten using the set of data already provided by the developers. The data provided are the verified data from the scholars and the experts on these subjects . Each food has its own unique calories set that is added to total calories consumed by the user.

User can also reset the Calories intake whenever he needs to(Suggested every 24 hours).

Users will be reminded to drink water by receiving notifications every hour based on their preferences. It will enable the user to add the amount of water that was consumed or to add the recommended amount of water per glass by tapping on the glass button. The user can adjust the reminder's start and stop times to suit their needs.

F. Water Intake

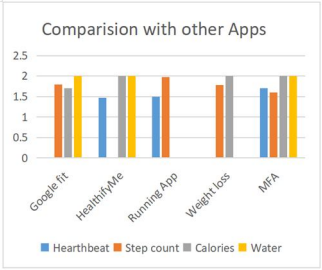
This feature of the application reminds the user of the intake of water every set of hours. The amount of water to be taken by the user is determined by his/her age and weight.

Your weight X 0.5 = oz. of water per day

The user can add the amount of water he consumes manually.He/She has to consume the minimum amount of water required for him/her. The user will be notified for the drinking of water if he/she decides to set a reminder. This reminder will notify the user every hour for the intaking of water.

VII. COMPARISON

Here is a little comparison of our application (Mobile Fitness Application) with the already present application of fitness.



Grf 1.0

This comparison is between Google fit, HealthifyMe, Running App, Weight loss and MFA.
The above graph shows the features available in the application and its accuracy.

VIII. RESULTS DISCUSSION

The proposed application is working fine on all the adequate devices. All the features and functioning of the application is fine. The heart rate counter is giving an accuracy of 90-97%. The move counter has an accuracy of 95% approx. Calories addition and burning functioning is good. The water alert system is fully functional.
The application's compatibility with all popular iOS and Android devices is also verified.

IX. FUTURE UPDATES

A. The accuracy of the step count can be improved further.
B. More features can be added in the applications like timely exercise notifier, morning yoga alert and so on.
C. Premium membership can be launched, giving some additional benefits to the user and using the capital for further improvements.
D. The application could be promoted among the people especially students and older people.
E. The Heart Rate teller could be modified to Heart rate Checker with the use of some sensors and IOT.
F. More security can be added in the application to keep the user data safe .

X. CONCLUSION

The main objective of this fitness application is to promate best health for the people by providing an application with a variety of features for the user. The application is unique in its own way having different aspects all in like calories count , water in take reminder , step counter and heart rate teller. All these features are easy to use for all the user age and are free of cost making it affordable to all the people. This fitness application will help people to meet the desired goal of being fit easily,quickly and which they can afford without any issues. With proper use of the application for a longer period of time, it will show very healthy improvement signs. This will ultimately help the promotion of the application as happy user of the application would surely recommend the app to their friends and family. Timely updates and improvement will also be made to make the application more and more user friendly and effective.

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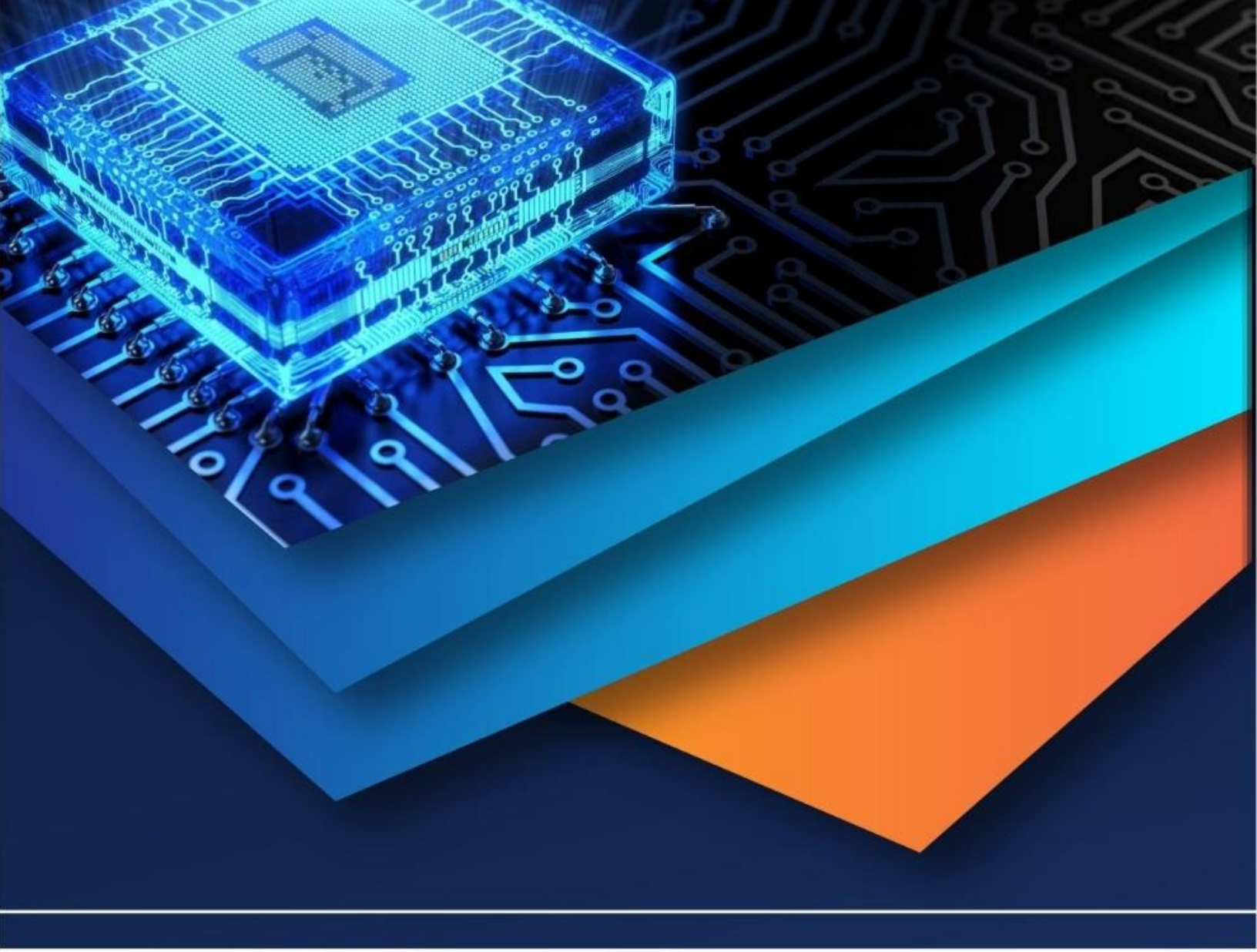

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