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Human Fitness Application

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Abstract: Everyone desires to be in good bodily and mental health. This requirement has been recognised by the developers developing fitness software. To accommodate the various needs of users, these applications offer customization and integrate diet and nutrition in addition to exercise and exercises. The apps have proven to be a huge comfort for those who don't have the time to regularly visit exercise facilities. It also provides free diet regimens and exercise recommendations. After discovering how crucial these apps are to their daily lives, many people have started utilizing them. This study aims to understand users' perceptions about mobile fitness app usage. The study basically examines the efficiency of fitness apps in terms of accessibility, time, and financial resources. It explores the advantages of mobile apps versus fitness centers as well. Primary data from 100 respondents were used to compile the necessary data on numerous related concerns. The paper offers ideas for enhancing and increasing user engagement with the apps. One of the most important benefits of using a fitness app is "motivation." Users are kept motivated by fitness app notifications and reminders that frequently remind them of their health goals. On their smartphone, users might also discover your fitness app at various times during the day. Fitness apps have simplified our lives and enable users to record their regular activities. As a result, they become more dedicated to their workouts and overall fitness.

I. INTRODUCTION

There is a problem with how much modern life encourages sedentary behavior, which has a lot of negative health effects, chief among them obesity. Furthermore, a lot of people's poor mental health contributes to their negative self-perception. The Mental Health Foundation points out that there is a link between good physical health and good mental health, therefore enhancing physical health can help with this problem. According to a US study, the rate of obesity has more than doubled since 1980. The study examines the factors contributing to the growth in global obesity and discovered a connection between it and the availability of inexpensive, convenient foods that are also much more harmful as well as an increase in the consumption of unhealthy food as a result of rising income levels. This demonstrates that obesity is a significant issue as well, and that it will probably only become worse. Not only that, but many also have erratic water consumption patterns and a poor diet. The aim of this project is to create an application that will provide information about the user's current health condition (heart rate) by collecting personal information, monitoring the user's eating and exercise routines, and sending periodic reminders to drink just a certain amount of water. The programme will try to be as user-friendly and accommodating for all age groups as feasible. It will enable individuals to actively keep an eye on their physical well-being and dietary habits. The user can follow simple rules like what to eat and drink with minimal reminders rather than completely altering their everyday lives to accommodate their aims.

II. RESEARCH METHODOLOGY

Convenient random sample methodology was used to perform the investigation. Through staff interviews and surveys, the primary data was collected from the users.Various websites and periodicals were used to gather secondary data and written works. Various research regarding best suitable features that can be added into the application has been done. Research about various techniques and algorithms that can be used to calculate the desired parameter.

III. OBJECTIVES

The various objectives of this research are

1) To get the opinions of users regarding fitness app.
2) To comprehend how a fitness application affects its consumers.
3) To evaluate the impact of a fitness programme on enhancing user fitness
4) To research how using exercise can help you make the most of your time.and price.
5) To determine whether a fitness app is favored compared to fitness centers.
6) To know why users find exercise applications popular.

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IV. SCOPE OF THE STUDY

The significance of this study lies in its contribution to the assessment of the efficacy of fitness apps in enhancing users' health. The majority of people care about their health and want to maintain their physical fitness. However, many people find it difficult to go to fitness centers due to a number of variables like cost, time, and accessibility. These apps are therefore becoming more important in today's society. This study demonstrates the rationale behind choosing these applications over physical fitness centers as well as how they improve users' health.

V. PROBLEM STATEMENT

Our sedentary lifestyles in the modern world have caused many severe health issues in our lives. Additionally, others claim that the development of technology has significantly altered today's way of life. Now, instead of meeting someone in person at a location, those who prefer to meet someone can use video calling services. As a result, it has shrunk the world. And these new developments in science and technology are capturing the attention of techies everywhere. and widely ignoring their health as a result. The following ailments have emerged as a result of the health disaster this has caused. Undoubtedly, one of the worst effects is obesity. Additionally, irregularities in blood pressure and blood sugar levels, depression, heart disease, anxiety, various cancers, and many more. Apps for fitness offer a push in the right way, They provide you fresh training regimen ideas and foster healthy competition, set attainable fitness objectives. The fitness apps have a proven track record.

VI. LITERATURE SURVEY

Evgeny Stankevich, Ilya Paramonov, Ivan Timofeev in their paper “Mobile Phone Sensors in Health Applications” reviewed a variety of recently created applications for embedded sensors in mobile phones. While some of these applications are currently in use and distributed for medical purposes, others are still research projects. Because so many people across the world currently own a mobile phone, the primary rationale for using them in the healthcare industry is to increase the quality and accessibility of healthcare services. Another benefit of using mobile phone-based healthcare solutions is that they can lower the cost of those services.

Ryan M. Alturki , Valerie Gay in their paper “A Systematic Review On What Features Should Be Supported By Fitness Apps And Wearables To Help Users Overcome Obesity” defined the elements that fitness wearables and health and fitness apps should enable in order to motivate obese people to lose weight by encouraging them to change their lifestyles, become more active, and adopt healthier habits. In order to promote physical activity, it first examines the efficacy and efficiency of popular fitness applications and fitness wearable gadget design elements. It then offers a way for assessing fitness wearables and apps as motivational tools. The findings for mobile apps show that the best aspects for motivation are goal setting, monitoring/tracking, and feedback.

Ankit Yadav, Mujib Ahamad, Md Al Amin in their paper “The Use of Smartphone Fitness App: A Systematic Review” conducted a thorough literature analysis on consumers' intentions to utilize mobile applications (Apps) linked to physical activity and fitness. The evidence from quantitative studies in the area of assessing consumer behavior toward sport applications has been critically evaluated in this systematic review. A total of 13 research papers that suggest models for assessing sport customers' intentions to use fitness applications are reviewed.

Honggang Wang, Md.Shaad Mahmud, Hua Fang, A.M.Esfar-E-Alam, in 2017.In their paper ‘A Wireless Health Monitoring System Using Mobile Phone Accessories’ The purpose of this study is to create and prototype a wireless system for health monitoring for mobile phones. They focus on real-time monitoring of the Electrocardiogram (ECG) and Heart Rate utilizing a smartphone case. With the number of cardiac patients increasing globally, this design can be employed for the early identification of heart diseases. As opposed to the majority of currently used methods, which use an optical sensor to capture heart rate, our approach measures real-time ECG using dry electrodes installed on a smartphone casing. A smartphone application allows for saving and instantaneous prognosis and diagnosis evaluation of the recorded ECG signal. The suggested hardware system utilizes a single-chip microcontroller (RFduino) that is embedded with Bluetooth low energy , which minimizes size and prolongs battery life.

C.Senthamilarasu, J.Jansi Rani, B.Vidhya , H.Aritha(2018) in their paper "A Smart Patient Health Monitoring System Using Iot" The major goal was to develop an effective IoT-based patient information so that medical staff could monitor their patients, whether they were in a hospital or at home, utilizing an integrated IoT-based healthcare system to deliver better care. The main elements of a mobile device-based wireless medical monitoring system that was created to provide real-time online information on a patient's physiological characteristics are sensors, a data gathering unit, a microcontroller (such as an Arduino), and software . Temperature, heart rate, and EEG data are tracked, displayed, saved, and sent to the doctor's smartphone via the application via the system.

Megha A. Janbandhu, Yashasvi R. Borkar, Sonal J. Dandhare, Krunal D. Thakre, Kavita Manekar(2021) in their paper "Intelligent Mobile Patient Health Monitoring System". They employ embedded technology to remotely monitor patients and give them medical input via mobile devices based on the installed sensors. A modest price can be paid for the deployed embedded technology, which makes patient monitoring simple and ongoing.

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VII. PROPOSED SYSTEM

The proposed system of the application work in following sequence

A. Sign up/Log in

1) If a user has never used this application before, they must first enter their information, establish an account, and then log in.
2) When a user already has an account. Only logging in is required.
3) The application requests a few user details, like height, weight, and other information, when you sign up.
4) Application does additional work based on user data.

If logging into a new device, the user should keep their username and password in mind.
He or she must be a legitimate system user who has registered and has a working login and password. His or her ability to log in and perform duties in accordance with the credentials provided to him or her is enabled by these prerequisites. The user is automatically directed to the below-depicted home page after login into the system.

B. Estimated Heart Rate

Using information like the user's age, height, weight, and other factors, it estimates their heart rate. To determine the estimated value, it applies the tensorflow machine learning model. Large-scale machine learning and numerical computation are both supported by the open source library TensorFlow. In deep learning, tensors are the norm for data representation. Based on a person's age, height, and weight as well as a tensorflow model that is being trained, the data estimates that person's heart rate. The heart rate is not represented in real time.

C. Step Counter

1) It will show the number of steps taken overall and how many calories were burned.
2) To compute the number of steps and calories, it will make use of the device's accelerometer and related technologies.
3) A GPS tracker or the phone's internal sensors are used to record steps. You must have your phone in your hand, in a bag, or in a pocket in order to count steps.
4) If you want to get accurate results, keep your Phone with you as the fitness app uses the accelerometer to estimate your steps and distance walked. To acquire step or distance information, you do not need to wear a tracker, so to speak.
5) The accelerometer will estimate how many calories you expended while walking by counting the steps you take and recording their pace.

Calorie calculation is also done using this formula

Metric BMR Formula

$$Women: BMR = 655 + (9.6\ x\ weight\ in\ kilos) + (1.8\ x\ height\ in\ cm) - (4.7\ x\ age\ in\ years)$$

$$Men: BMR = 66 + (13.7\ x\ weight\ in\ kilos) + (5\ x\ height\ in\ cm) - (6.8\ x\ age\ in\ years)$$

D. Consumed Calories

1) The user will be prompted to enter the name of the food they just ate and its grammes worth.
2) It will therefore show the overall number of calories consumed. The user has the option to reset the data as well.
3) The number of calories consumed is determined using the default values for food in a database that developers generated.

E. Water Notification System

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. Exercises

Exercise is very important for maintaining good health. In application there are some exercise provided with timer and instruction to do it on daily basis. There are exercises which person can do by staying at home also like Push ups,Plank,Side Lunge,etc

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G. Medical Advice

A few well-known doctors' contact information is also supplied at the end so that users can get in touch with them quickly if they have any health issues. Information about the doctor is tailored to the user's city of residence. On the sign-up page, when a user enters their city, the doctor's contact information will be shown in accordance with that information.Or may be filtered for cities also provided on the consultation page.

VIII. RESULTS DISCUSSION

The APK of the proposed system is working properly on all the preferred devices. All the features of the application work perfectly and efficiently. Step counter and calories tracker values are almost accurate up to 95%.Water notification system is working perfectly. All the exercises provided in application are running efficiently. Estimated heart rate calculation is also up to mark. Compatibility of the application is also checked on all the preferred ios and Android devices

IX. SUGGESTIONS

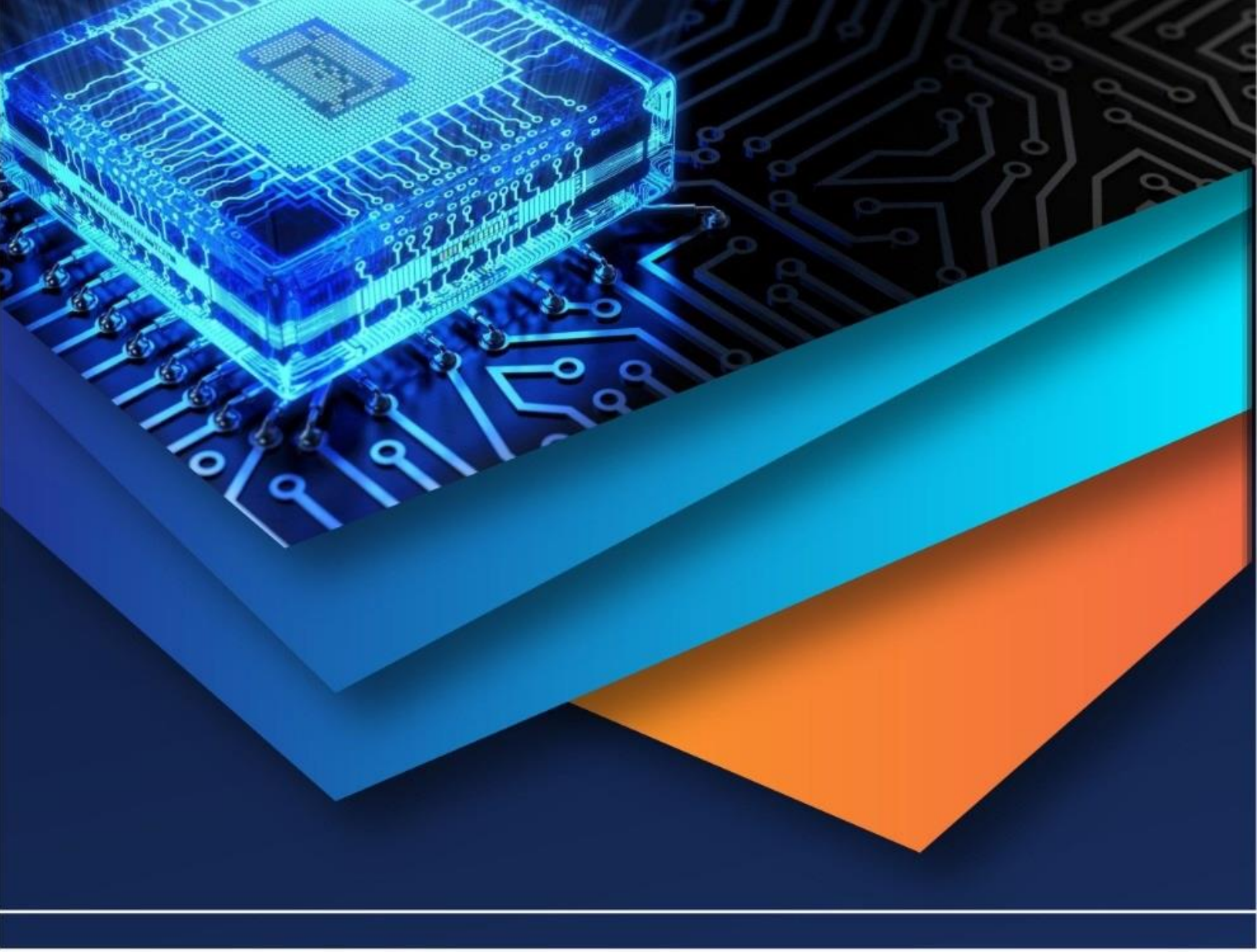
1) The need for further education campaigns must be addressed using these applications.
2) advertisements across a variety of social media platforms to be done in order to boost app popularity.user encouragement through daily success notifications
3) Having fitness-related tales or quotes can encourage frequent usage of the apps.
4) Free or affordable app distribution can gain more users.
5) There needs to be consistent updating of increases its use's effectiveness through exercises.
6) Another is offering video tutorials and advice for exercising.a means of improving its effectiveness.
7) Increased adaptability applications for activity tracking that are automatic as well defined characteristics.

X. CONCLUSION

This workout app's primary goal is to promote health. Additionally, it offers a variety of features like a step tracker, calorie counter, drink meter, and heart rate monitor all in one application. This fitness programme is really good at giving users the tools they need to reach their fitness goals quickly, affordably, and easily. When used frequently, the apps will have a stronger beneficial effect on the users' health. As happy users recommend the apps to others, this favorable outcome might also increase the app's popularity. We have also thought about timely app feature updates to help users adjust and give them access to the greatest resources.

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