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Android Application for Fitness Planning and Trend Setting (Using Machine Learning)

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Abstract:

The development and use of wireless technology to promote healthy lifestyle behavior, particularly healthy eating and weight control, has the potential to help us achieve our ultimate aim of enabling a healthy lifestyle to prevent obesity and other health-related disorders.Currently, people must travel a long distance to go to the gym, but due to distance and a lack of time in today's fast-paced world, they cannot go to the gym regularly. They require a solution that allows them to workout at home and obtain a prediction of acute diseases by providing their symptoms without incurring excessive costs.The main goal of this project is to create an online fitness app called 'fitExpert.' The app (fitEpert) will recommend you online workout subscription plans on the basis of your health information and will allow you to share your workout activities with others like you do on a social media platform. Both Android and iOS smartphones will be able to use this software.

Keywords **—obesity, recommendation, acute diseases.**

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I. INTRODUCTION

A healthy lifestyle has long been a trend, and it is only set to grow and develop in the near future. The mobile market supports the overall trend of healthy living by providing a wide range of solutions that can be customised to fit any occasion. As a result, fitness app development opens up exciting opportunities in the healthcare market.These apps have grown in popularity as a result of their large viewership. Whether or not you attend the gym, you can use fitness monitoring app development goods. As a result, users can ensure that they are getting adequate movement in their life.Mobile applications provide us with information, entertainment, and assistance in learning, sharing, communicating, and possibly doing anything else.This is because being physically well is one of the keys to living a happy life.In addition, a rising number of people have jumped on the staying fit bandwagon in recent years.

II. LITERATURE REVIEW

Title	Year	Advantages	Disadvantages
Gopinath Krishnan,Prakash Sai Lokachari(IIT Madras,India)	2021	Mobile Health Technology Enables real time monitoring and tracking of health and fitness parameters	It may not focus on a wider range of ages as it mainly focuses on youngsters

Goh Kim Nee Muhammad,syazman,Bin Abu Bakar	2012	It focuses on developing an android-based mobile phone prototype to calculate the duration of physical exercise and time for daily workout	Cannot differentiate on the basis of any prolonged diseases
Dipankar Das,ShivaMurthy Busetti, Vishal Bharti, Prakhyatkumarhegde	2017	Mobile and wearable health application benefits	Limited in scope
RuishengZang,Qi-Dong Liu,Chan-Gui	2014	Use of various ML algorithms like SVM,Decision Trees,Random forest for greater accuracy	Time Consuming

III. METHODOLOGY

A. FitExpert for Disease Prediction

1) Diseases Prediction Dataset:

To do analysis and make predictions with the needed accuracy, it is crucial to choose a trustworthy and appropriate dataset source. As a result, we obtained this dataset from Kaggle. In total, we used 3 datasets.The first dataset for model training covers symptoms and prognosis.The second collection includes descriptions of diseases.Health precautions are included in the third dataset.

2) User Input:

To register for our application, the user must enter details like age, height, weight, and gender. The user must select the symptoms they feel from the available alternatives if they wish to learn what ailment they may have and receive advised exercise regimens for it as well as descriptions and necessary precautions for the same. Real-time database storage of user input allows for effective use of the information for future research and forecasts.

3) Prediction:

We employed the SVC model for illness prediction

SVC:

Support Vector Classifier (SVC) is a type of supervised learning algorithm used for classification tasks. It is a type of Support Vector Machine (SVM), which is a popular algorithm used for both regression and classification tasks.

The SVC algorithm works by first transforming the data into a higher-dimensional space using a kernel function, such as the radial basis function (RBF) kernel. This allows the algorithm to find a non-linear decision boundary in the higher-dimensional space, which can then be projected back into the original feature space.

Once the hyperplane is determined, new data points can be classified based on which side of the hyperplane they fall on. The SVC algorithm is particularly useful for datasets with complex decision boundaries and a large number of features.

In summary, the Support Vector Classifier is a powerful machine learning algorithm used for classification tasks, particularly in cases where the decision boundary between classes is non-linear or complex.

SVC for disease prediction:

To use SVC for disease prediction, we first split our dataset into a training set and a test set. We used the training set to train the SVC model, by fitting it to the input features and their corresponding diagnosis labels. We then use the trained model to make predictions on the test set, and compare the predicted diagnosis with the actual diagnosis to evaluate the model's accuracy.

There are several important considerations when using SVC for disease prediction. One important consideration is the choice of features to include in the dataset. It is important to choose features that are relevant and informative for the disease prediction task.

Another important consideration is the choice of hyperparameters for the SVC model, such as the kernel function and regularization parameter. These hyperparameters can have a significant impact on the performance of the model, and choosing the right hyperparameters requires careful tuning and experimentation.

So, based on the user's symptoms, we used SVC to estimate the ailment that the user was most likely to have. After disease prediction, this application will offer the user workout plans that are appropriate for them based on the disease predicted.

*4) **Workout Plans:***

Users can subscribe to health plans and follow them every day. A user's subscribed plans are always accessible.

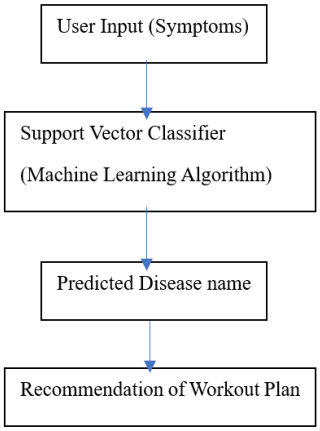

Fig. 1 Flow Diagram for Disease Prediction

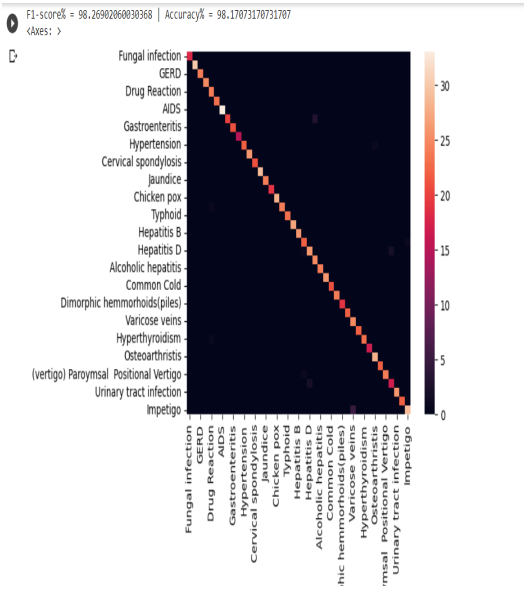

Fig. 2 Accuracy of SVC Model(98%)

B. Fit Expert as Social Media

On the application, users will be able to post and view photographs, videos, and other content related to fitness and health. Additionally, users can interact and follow other fitness enthusiasts who have user accounts on the app.

IV. RESULTS

Below are the screenshots of some of the pages of Application –"FitExpert"

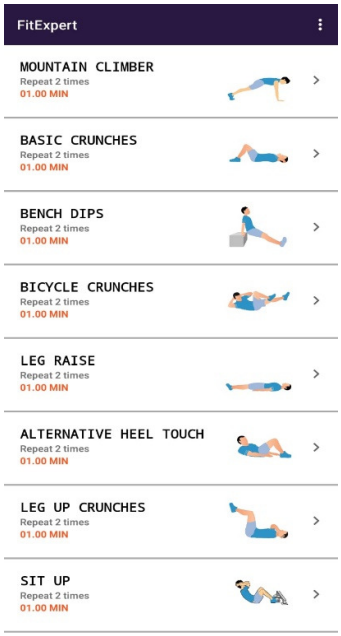

Fig. 3 Recommended Plans to follow

Fig. 4 How to do the workout plan

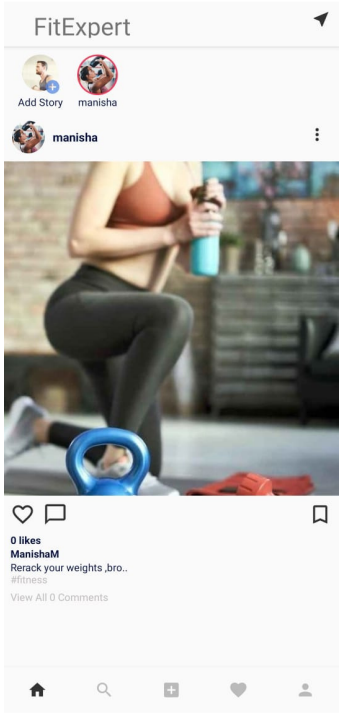

Fig. 6 Post and View fitness related contents

IV. CONCLUSION

Thus we implemented a Mobile device-based Android Application which can be used by users of all age and background who want to work out at home without spending money at the gym.This application has the capability to predict diseases and recommends the most suitable Workout plan for the same. Users can also post their fitness related contents just like social media.

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REFERENCES

[1]. "IEEE" Adoption of Health and Fitness Apps by Smartphone Users: Interactive Qualitative Analysis.
Author(s): Gopinath Krishnan, Prakash Sai Lokachari (IIT Madras, India).
IEEE: https://ieeexplore.ieee.org/document/9497190.

[2]. "IEEE" Android-based exercise application
Author(s): Goh Kim Nee, Muhammad Syazwan Bin Abu Bakar (Malaysia).
IEEE: https://ieeexplore.ieee.org/document/6297191?arnumber=6297191

[3]. "IEEE." Strength Training: A fitness Application for Indoor based Exercise Recognition and Comfort Analysis.
Author(s): Dipankar Das, Shiva Murthy Busetty, Vishal Bharti, Prakhyath Kumar Hegde
IEEE: https://ieeexplore.ieee.org/document/9350890.

[4]. "IEEE" Collaborative Filtering for Recommender Systems
Author(s): Ruisheng Zhang; Qi-dong Liu; Chun-Gui; Jia-Xuan Wei; Huiyi-Ma
IEEE: https://ieeexplore.ieee.org/document/7176109

