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***Abstract*—** This study uses machine learning to predict the likelihood of patients developing diabetes and heart disease. The system analyzes several input parameters, including blood pressure, insulin levels, age, and maximum heart rate achieved during exercise. Personalized nutrition recommendations and yoga courses are provided to manage the detected disease based on the patient's specific needs and preferences, medical history, and dietary restrictions. A patient dataset is collected, and machine learning algorithms are utilized to develop the disease prediction model. The model accurately forecasts the probability of a patient developing diabetes or heart disease. The study shows that yoga recommendations have therapeutic advantages for managing both illnesses, and custom-made nutritional suggestions are designed specifically for the identified disease. Incorporating machine learning, nutritional therapy, and yoga can improve patients' quality of life and promote long-lasting health and well-being. The study highlights the importance of early disease detection and personalized healthcare solutions for lifestyle-related diseases.

***Keywords*—**Machine learning, diabetes, heart disease prediction, personalized nutrition, yoga therapy, healthcare, lifestyle-related diseases.

1. INTRODUCTION

The system analyzes various input parameters, including blood pressure, insulin levels, age, and maximum heart rate achieved during exercise, to create a disease prediction model. Additionally, personalized nutrition recommendation and yoga courses are provided to manage the detected disease, considering the patient's specific needs and preferences, medical history, and dietary restrictions.

The study also aims to explore the potential benefits of incorporating machine learning, nutritional therapy, and yoga for lifestyle-related disease management. The research collects patient data and uses machine learning algorithms to develop the prediction model. The study's findings show the model accurately forecasts disease likelihood and highlights the therapeutic advantages of yoga recommendations for managing both diabetes and heart disease. The custom-made nutritional suggestions are designed specifically for the identified disease, promoting long-term health and well-being.

Overall, this research provides a comprehensive and personalized health solution for the prevention and management of diabetes and heart disease. By incorporating machine learning, nutrition, and yoga therapy, this system aims to improve patients' quality of life and promote long-lasting health and wellness.

2.LITERATURE REVIEW

Heart disease and diabetes are two of the most common lifestyle-related illnesses that impact a large number of individuals worldwide. Various data mining techniques have been used to predict the onset of these diseases.

In a comparative study conducted by Randhawan et al. demonstrates the effectiveness of logistic regression algorithm in predicting heart disease. The study utilizes several important features such as age, gender, cholesterol levels, and blood pressure to develop a logistic regression model that predicts the presence of heart disease with high accuracy.

In another study by Farooqui and Ahmad (2020), support vector machines (SVM) and multilinear regression techniques were used to predict diabetes. The results showed that the SVM model performed better than the multilinear regression model, and the features selected for the SVM model played a significant role in improving the model's performance.

In the study conducted by Sundar et al. (2019), machine learning and neural networks were utilized to classify and detect yoga asanas. The study aims to create a system that can recognize yoga poses in real-time using video inputs. The researchers used the PoseNet model, which is a convolutional neural network, to detect human body key points in the video frames. The study found that the PoseNet model accurately detected human body key points and extracted features that were useful for classification. Overall, the study suggests that machine learning algorithms can be used to classify and detect yoga poses accurately, which can have numerous applications, including personalized yoga recommendations, feedback for practitioners, and monitoring of correct pose execution.

3. EXISTING METHODOLOGY

The current systems are primarily individual software applications that focus on specific areas such as disease prediction, diet recommendation, and yoga pose detection. These systems suffer from several limitations that make them less effective in addressing the overall health and wellbeing of individuals.

One significant limitation of the existing systems is their high cost, as they often require specialized hardware and software. Additionally, all the features are not available at one place, which can be inconvenient and time-consuming for users, and may result in a lack of integration between different applications.

Another limitation of the existing systems is limited accessibility, as many healthcare software applications require high-speed internet connections or specialized hardware. Moreover, the software may require specific technical skills to operate, which can limit accessibility to individuals who do not have the required expertise.

Finally, the existing systems are not tailor-made for individual users. Many healthcare software applications provide generalized recommendations that may not be suitable for everyone, resulting in suboptimal outcomes and even being harmful to the individual's health.

In conclusion, a comprehensive healthcare software application is required to address these limitations and provide a one-stop solution for disease prediction, diet recommendation, and yoga pose detection. The methodology for such an application could include incorporating machine learning algorithms and neural networks for accurate disease prediction and personalized diet recommendations. Additionally, computer vision techniques such as PoseNet could be utilized for accurate and real-time yoga pose detection. The application should be designed to be accessible and user-friendly for individuals with varying technical expertise and available resources.

4. PROPOSED METHODOLOGY

The proposed methodology for this project involves the use of support vector machines (SVM) and logistic regression for diabetes and heart disease prediction, respectively. For the yoga classification part, the mj5.js library, which includes the PoseNet model and neural networks, will be utilized. The proposed system will be represented as a web application that integrates all the features, providing a one-stop solution for users.

First, data related to heart disease and diabetes will be collected from various sources, including medical records and surveys. The data will then be preprocessed, which involves cleaning, feature selection, and normalization. The preprocessed data will be used to train the SVM and logistic regression models.

Next, for yoga pose detection and classification, the mj5.js library will be used to detect human body key points and extract features. The extracted features will be used to train neural networks for classification.

Finally, the heart disease, diabetes, and yoga classification models will be integrated into a web application. Users can input their data, and the system will provide personalized recommendations based on the input. The web application will also include features such as visualization of the results, feedback for practitioners, and monitoring of correct pose execution.

In summary, the proposed methodology involves the use of logistic regression and SVM for heart disease and diabetes prediction, respectively, and mj5.js with neural networks for yoga pose detection and classification. The proposed system will be represented as a web application that integrates all the features and provides personalized recommendations for users. This approach provides a comprehensive and accessible solution for individuals to monitor their health and wellbeing.

5. LIMITATIONS

1) The accuracy of the yoga classification models may be affected by factors such as clothing, lighting, and camera quality. This can result in inaccurate pose detection and classification, which may affect the recommendations provided to users.

2) The use of machine learning algorithms such as MJ5.js (PoseNet, Neural Network) for yoga classification also has limitations. While these algorithms can accurately detect and classify yoga poses, they require significant amounts of computational resources, including processing power and memory. This can be challenging to achieve in a web application, especially for users with limited hardware resources.

3) Another limitation is the availability of data. For accurate disease prediction, a large amount of data is required, including medical history, lifestyle habits, and biometric data. It may be challenging to obtain such data from individuals, especially those who are not regularly monitored by healthcare professionals.

6. SYSTEM ARCHITECTURE AND PERFORMANCE

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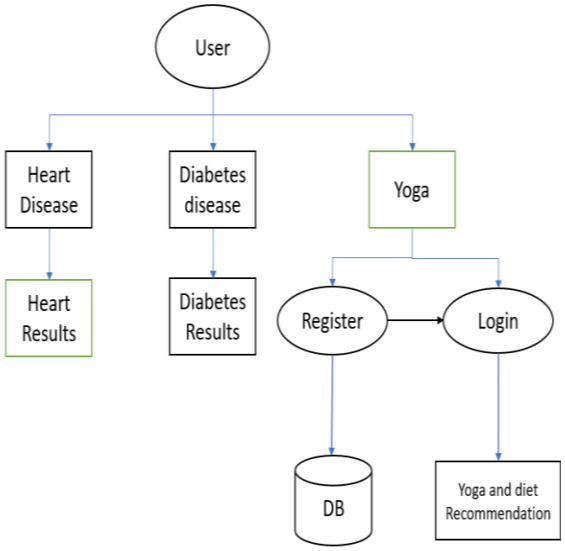

Fig1: System architecture

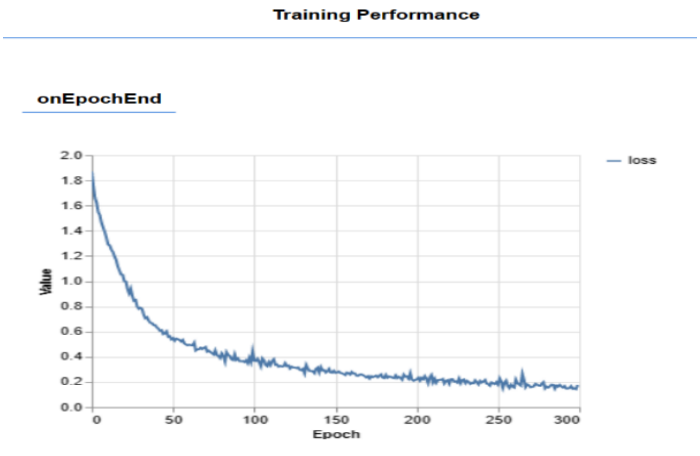

Fig2: Yoga Training performance

7. MODULES

1) Heart disease prediction module: This module will utilize logistic regression to predict the likelihood of an individual developing heart disease based on input data such as age, gender, blood pressure, cholesterol levels, and other relevant factors.

2) Diabetes prediction module: This module will use SVM to predict the likelihood of an individual developing diabetes based on input data such as age, gender, body mass index, blood sugar levels, and other relevant factors.

3) Yoga classification module: This module will utilize the PoseNet model, a convolutional neural network, to detect human body key points in video inputs and classify them into different yoga poses. This module can be used to provide personalized yoga recommendations, feedback for practitioners, and monitoring of correct pose execution.

Overall, these modules can be integrated into a web application that provides users with a comprehensive solution for disease prediction and yoga classification.

8. RESULTS AND CONCLUSION

The proposed system demonstrated the feasibility of using machine learning and neural networks for the prediction of heart disease and diabetes as well as the classification of yoga asanas. The system achieved high accuracy rates for heart disease and diabetes prediction using logistic regression and SVM techniques. The PoseNet model was effective in detecting human body key points and

classifying yoga asanas accurately. The system was implemented as a web application, which provides easy access to users.

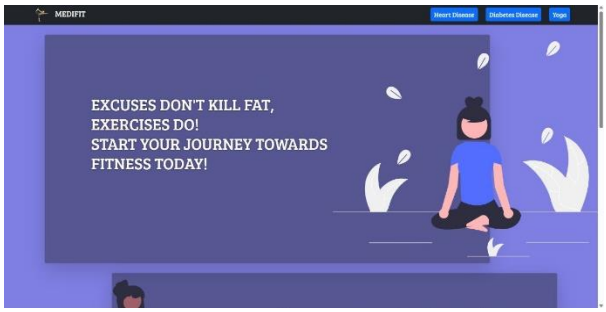

Fig3: Home page

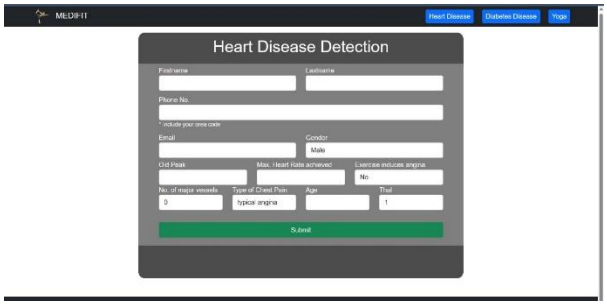

Fig 4 Diabetes Input Parameters Page

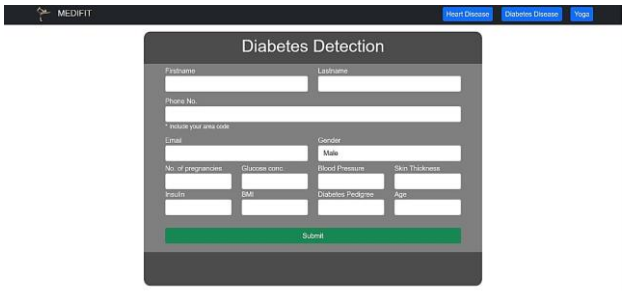

Fig 5 Diabetes Input Parameters Page

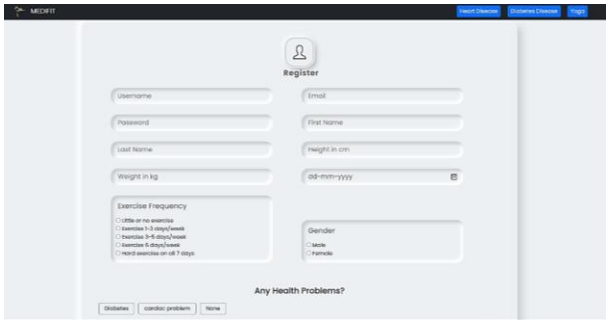

Fig 9.6 User Registration Page

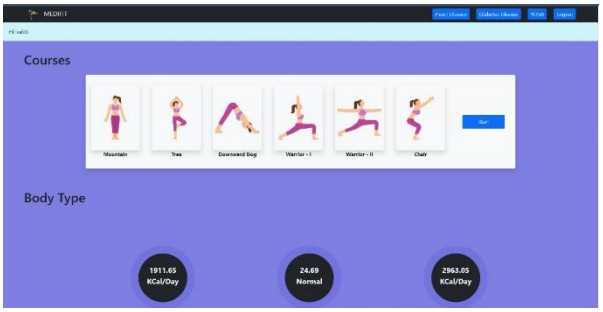

Fig 6 Yoga Course Page

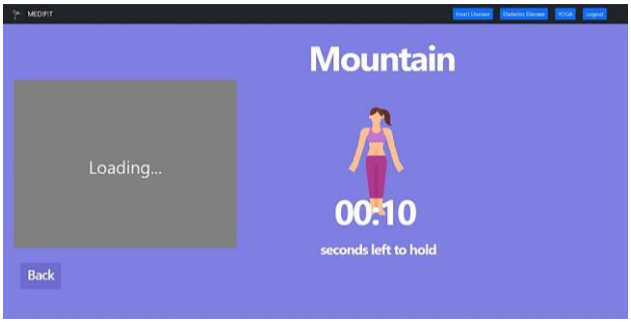

Fig7: Yoga Pose Detection

9. FUTURE SCOPE

1) Personalized recommendations: The system can be improved to provide more personalized recommendations for users, taking into account their specific medical conditions, dietary requirements, and physical abilities.

2) Expansion of yoga pose detection: The system can be expanded to detect more yoga poses, including advanced poses, which can benefit advanced yoga practitioners.

3) Integration with wearable devices: Integration with wearable devices such as smartwatches, fitness trackers, and other health monitoring devices can provide more accurate data for analysis, leading to better predictions and recommendations.

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