DRUG RECOMMENDATION SYSTEM USING MACHINE LEARNING FROM SYMPTOMS TO SOLUTIONS: AI-POWERED HEALTH ADVISOR

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ABSTRACT

The Medical Recommendation System is a web application based on artificial intelligence that assists users in determining potential diseases from their symptoms. It scans manually inputted symptoms or speech-recognized symptoms using machine learning algorithms and predicts potential diseases. It also offers necessary healthcare advice, such as descriptions of diseases, safety precautions, medication recommendations, and exercises, as well as diet plans. This study entails gathering and processing medical information, training deep learning-based predictive models, and measuring their performance against accuracy and precision. Through the incorporation of natural language processing (NLP) for symptom identification and AI-based disease prediction, the system increases healthcare accessibility. The findings illustrate the efficacy of AI in offering rapid and accurate medical insights to enable users to make informed decisions prior to seeking a doctor's advice.

Keywords: AI In Healthcare, Disease Prediction, Symptom Analysis, Machine Learning, Medical Diagnosis.

I.   INTRODUCTION

Healthcare has changed as a result of artificial intelligence (AI), which has improved precision, effectiveness, and customization. The Drug Recommendation System is a crucial tool that helps doctors and patients by making drug recommendations based on diagnosis, medical histories, and symptoms. It increases the efficacy and safety of treatment by utilizing machine learning and natural language processing. Conventional prescribing practices depend on the judgment of the doctor, which could result in mistakes. AI-powered solutions optimize therapies, reduce risks, and are especially helpful in areas with a lack of medical knowledge. This project investigates the development and deployment of a drug recommendation system that incorporates databases on drug interactions and patient-specific information. AI-powered medication recommendations improve professional judgment, enhance patient outcomes, and transform contemporary healthcare by guaranteeing the best possible therapeutic effects with the fewest possible adverse effects.

II.   LITERATURE SURVEY

Drug recommendation systems have been transformed by machine learning (ML) using data-driven decision-making. To improve accuracy, Hossain created a sentiment analysis-based system using Decision Trees, K-Nearest Neighbors (KNN), and Linear Support Vector Classifier (SVC) to assess drug evaluations. Dua and Acharya (2013) explored ML in healthcare informatics by combining Electronic Health Records (EHR) with Natural Language Processing (NLP) for objective, private prescriptions. Explainable AI (XAI) in healthcare, introduced by Pradeep and Raj (2022), emphasized openness in AI-driven recommendations. Techniques like SHAP and LIME enhance confidence. Personalized therapy is further optimized through knowledge graphs. Using Decision Trees, Support Vector Machines (SVMs), and Neural Networks, Silpa et al. created an ML-based on-the-spot drug recommendation system for emergency medication. This review highlights the accuracy, interpretability, and efficiency of ML in drug recommendation. These studies show AI-driven systems improve healthcare decision-making, ensuring individualized, efficient medicine recommendations, from sentiment analysis to XAI and real-time emergency suggestions.

III. PROPOSED SYSTEM

The AI Medicine Recommendation System grades the user on his ability to self-diagnose some pre-listed diseases based on their symptoms. After self-grading, the user is provided with medications, precautions, workouts, and advanced diets that coincide with the predefined grade. Users have a variety of options to choose from which greatly improves the user's ability to input these symptoms. Users can now use voice recognition to state their symptoms, type on the keyboard, or make use of other input methods. Using emerging medical datasets, the defined symptoms are cross-checked against a trained machine learning model to predict the possible diseases.
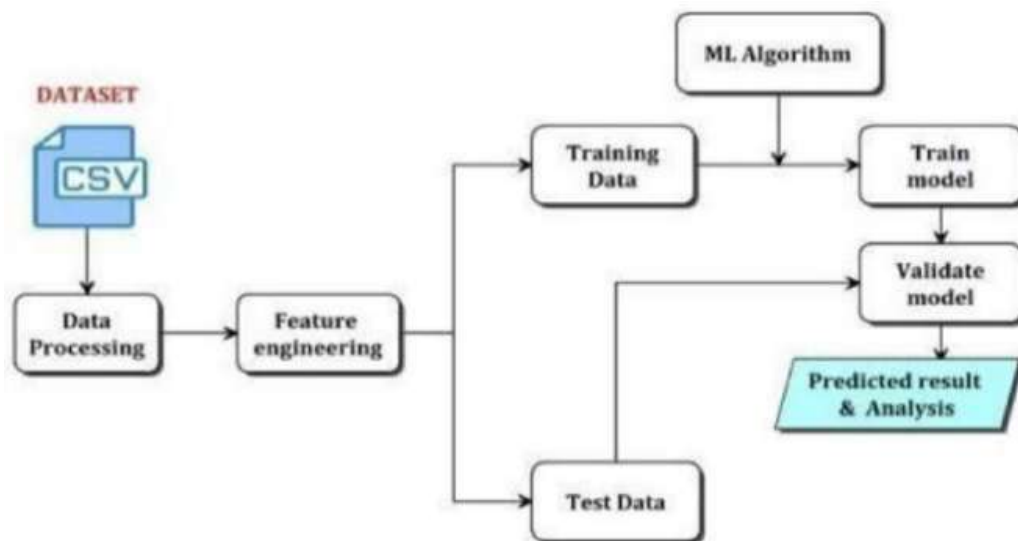

Fig 1: Proposed System Architecture

This is done using the trained model which is further fine-tuned with the Decision Trees, Random Forest, or Neural Networks supervised learning techniques. The AI integrated recommends and describes the disease in brief along with preventive measures, medications, suitable workouts, and dietary measures. The comprehensive responsive UI of the system designed is user-friendly and enables search. These measures are scalable to increases the prediction accuracy of the model with new data input. As a prognostic tool, the AI system has EHR systems, databases, and many other tools integrated into it ensuring the user has always set expectations regarding the system while enhancing their experience and satisfaction with it.

IV. RESULT

The Drug Recommendation System makes recommendations for the best drugs based on the diagnosis, medical history, and symptoms of the patient using machine learning. Drug prescription accuracy is increased by utilizing algorithms such as decision trees, random forests, or deep learning models. Better patient results are ensured by the system's increased efficiency in healthcare, decreased errors, and personalized therapies. The guidelines for precision medicine are further refined by its integration with electronic health information.
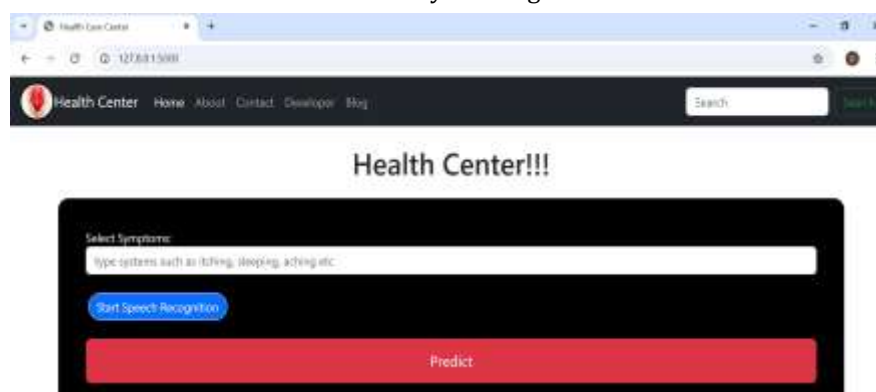
Fig 2: Drug Recommendation System

V.   CONCLUSION

Using machine learning, the Medicine Recommendation System makes precise medication recommendations depending on the symptoms of the user. It improves healthcare efficiency, lowers prescription errors, and customizes treatment programs by evaluating patient feedback. Accessibility is enhanced by features like interactive user interface and speech recognition. Better health outcomes could result from this system's ability to help patients and physicians make well-informed decisions. Deeper AI-driven insights and real-time updates are possible future improvements.

VI.   REFERENCES

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