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VAIDYAH

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Abstract: *Vaidyah is a smart healthcare assistant web application built using Flask and machine learning models. It allows users to register with personal and medical information, predicts possible illnesses based on past conditions, and recommends appropriate medications. The system integrates machine learning techniques such as decision tree classifiers and ensures user-friendly interaction with secure authentication and role-based access. Medication suggestions are supported with links to verified e-pharmacy sources. This system aims to provide a quick preliminary analysis to assist patients and healthcare providers*

Keywords: Healthcare Assistant, Flask, Machine Learning, Disease Prediction, Medication Recommendation

I. INTRODUCTION

In healthcare, effective medication management is essential for ensuring patient safety, optimizing treatment outcomes, and improving overall healthcare quality. However, medication errors and non-adherence remain serious challenges, leading to adverse effects, increased medical costs, and compromised patient well-being. To address these concerns, integrating **machine learning** into medication management has emerged as a powerful and innovative solution.

The **Vaidyah System** is a cutting-edge medication management platform that utilizes **machine learning** to revolutionize how medications are prescribed, monitored, and optimized. By analyzing vast amounts of data through advanced algorithms, Vaidyah enhances **patient safety, improves medication adherence, and empowers healthcare professionals** with actionable insights for better decision-making.

Traditional medication management systems rely on manual data entry, subjective decisionmaking, and limited patient information, which often lead to medication errors, adverse drug interactions, and ineffective treatment plans. Vaidyah overcomes these challenges by using predictive modeling, pattern recognition, and natural language processing to detect risks, identifies optimal treatment strategies, and provide intelligent recommendations. By seamlessly integrating into healthcare systems, Vaidyah ensures a smarter, safer, and more efficient approach to medication management...

II. LITERATURE SURVEY

The development of machine learning (ml) techniques has brought sig-indicant advancements to various domains, including healthcare. In the context of medication management, ml-based systems have shown great potential in enhancing patient safety, improving medication ad-hence, and optimizing healthcare delivery. This literature survey aims to explore the existing research and applications of ml-based medication systems, specifically focusing on web-based applications.

2.1 A COMPUTER-BASED DISEASE PREDICTION AND MEDICINE RECOMMENDATION SYSTEM USING MACHINE LEARN-ING APPROACH

In this work, we are trying to analyse and explore the suitable medicine for a disease recommended by our system. Our research is to build a machine learning [1]-based system that can recommend the medicine based on the disease symptoms. We have seen that there are many diseases that share common medicines for treatment if symptoms are common between the disease. In addition to this, it can find the closest chemical composition for making the new drug

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for any novel diseases. First list of existence diseases with their symptoms are prepared. Then, corresponds to the listed diseases, the medicines and their compositions are analysed. This symptom-based disease prediction techniques may help doctors to prescribed the medicine with more accuracy.

2.2 MEDICINE RECOMMENDATION SYSTEM

Medicine Recommender System" it will also help chemist or nurses to recommend a medicine in the absence of doctor. The basic aim of Medicine Recommendation [2] System is to design an effective and accurate system for predicting proper medication for patients. As large amount of historical data is available, our system aims to exploit this data and make it useful for society. Our system will analyze the data and aim to provide accurate predictions of medicines.

2.3 THE PERSONALIZED TRADITIONAL MEDICINE RECOMMENDATION SYSTEM USING ONTOLOGY AND RULE INFERENCE APPROACH

The purpose of this research was to solve the complication associated with the recommendation of traditional herbal medicines, concerning the fact that an appropriate use of traditional herbal medicines entails contemplation of personal HEALTH [3] information that include age, body temperature, pregnancy, lactation, chronic diseases, and medicines taken on a regular basis. Likewise, some traditional herbal medicines cannot be taken by patients with certain health conditions. Accordingly, this research proposed a system that provides recommendations of traditional herbal medicines according to each patient's health information by applying an ontology-based knowledge representation technique that employs Web Ontology Language (OWL) to process and describe data in the ontology. Rules were expressed in the form of a rule language so as to enable the computer to infer and provide recommendations of traditional herbal medicines and their contraindications in a similar manner to a medical specialist.

2.4 A FRAMEWORK OF HYBRID RECOMMENDER SYSTEM FOR PERSONALIZED CLINICAL PRESCRIPTION

General practitioners are faced with a great challenge of clinical pre- scription owing to the increase of new drugs and their complex functions to different diseases. A personalized recommender system can help practitioners discover mass of medical knowledge hidden in his- tory medical records to deal with information overload problem in prescription [4]. To support practitioner's decision making in prescription, this paper proposes a framework of a hybrid recommender system which integrates artificial neural network and case-based reasoning. Three issues are considered in this system framework: (1) to define a patient's need by giving his/her symptom, (2) to mine features from free text in medical records and (3) to analyze temporal efficiency of drugs. The proposed recommender system is expected to help general practitioners to improve their efficiency and reduce risks of making errors in daily clinical consultation with patients.

2.5 AN INTELLIGENT MEDICINE RECOMMENDER SYSTEM FRAMEWORK

Technologies as data mining and recommender technologies provide possibilities to explore potential knowledge from diagnosis history records and help doctors to prescribe medication correctly to decrease medication error effectively [5]. In this paper, we design and implement a universal medicine recommender system framework that applies data mining technologies to the recommendation system. The medicine recommender system consists of database system module, data preparation module, recommendation model module, model evaluation, and data visualization module. We investigate the medicine recommendation algorithms of the SVM (Support Vector Machine), BP neural network algorithm and ID3 decision tree algorithm based on the diagnosis data.

2.6 A LITERATURE REVIEW ON MEDICINE RECOMMENDER SYSTEMS

In this paper, we review the existing medicine recommendation system solutions [6], and compare them based on various features. The goal is to demonstrate the existing solutions for the healthcare providers in order to improve the medicine selection process and select an ap- propriate medication for the patients. Thus, it is crucial to understand the state-of-the-art developments of these systems, their advantages and disadvantages as well as areas which require more

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research. In this paper, we conduct a literature review on the existing solutions for medicine recommender systems, describe and compare them based on various features, and present future research directions.

2.7 DRUG RECOMMENDATION SYSTEM BASED ON SENTIMENT ANALYSIS OF DRUG REVIEWS USING MACHINE LEARNING

This paper intends to present a drug recommender system that can drastically reduce specialist's heap. In this research, we build a medicine recommendation system [7] that uses patient reviews to predict the sentiment using various vectorization processes like Bow, TF-IDF, Word2Vec, and Manual Feature Analysis, which can help recommend the top drug for a given disease by different classification algorithms. The predicted sentiments were evaluated by precision, recall, f1score, accuracy, and AUC score. The results show that classifier Linear SVC using TF-IDF vectorization outperforms all other models with 93.

III. METHODOLGY

The proposed system, **Vaidyah**, is a web-based medical assistance platform that leverages machine learning for preliminary disease diagnosis and medicine recommendation. The methodology involves four main phases:

A. System Architecture

The system is built using the Flask web framework and follows a modular architecture:

Frontend: HTML templates rendered via Flask with form-based user input.

- **Backend**: Flask handles routing, form validation (using Flask-WTF), and user authentication (via Flask-Login).
- **Database**: User and session data are stored in a SQLite database using SQL Alchemy ORM.

B. Machine Learning Models

Three pre-trained models are integrated:

- **Decision Tree Classifier**: Predicts disease based on symptoms using a .sav model file.
- **Random Forest / Other Classifier**: Additional models stored as pkl files (drugTree.pkl, model_N.pkl) are used for advanced diagnosis or validation.

Models are loaded using Python's pickle module, and predictions are made using NumPy arrays formed from user input symptoms.

C. User Workflow

Registration/Login: Users create accounts or log in.

- **Symptom Input**: The user inputs symptoms through structured form fields.
- **Disease Prediction**: The input is processed by the Decision Tree model.
- **Medicine Recommendation**: Based on predicted disease, relevant medications are fetched from predefined dictionaries and recommended via links to trusted sources.
- **Doctor or Medical Services**: Navigation options allow users to access additional services, such as consulting a doctor or learning about diseases.

D. Tools and Technologies

Technology	Purpose
Flask	Web framework
SQLite	Database
Scikit-learn	Model training and prediction
Pickle	Model serialization

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HTML/CSS	Frontend
Flask-Login	User authentication
Flask-WTF	Form handling

IV. CONCLUSION

A machine learning-powered medication system has the potential to transform medication management, improving patient outcomes and assisting healthcare professionals in making informed decisions. By utilizing advanced algorithms and data analysis**,** such a system can provide personalized medication recommendations and predictive insights, ensuring safer and more effective treatments.

Through integrated machine learning models and decision support tools, healthcare providers gain access to real-time, data-driven insights that enhance prescribing accuracy. The system can identify potential drug interactions, optimize dosages based on patient-specific factors, and track treatment progress, leading to fewer medication errors, improved patient safety, and better therapeutic outcomes.

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REFERENCES

[1]. Jay Prakash Gupta, Ashutosh Singh, and Ravi Kant Kumar. A computer-based disease prediction and medicine recommendation system using machine learning approach. *Int J Adv Res Eng Technol (IJARET)*, 12(3):673–683, 2021.

[2]. Varun A Goyal, Dilip J Parmar, Namaskar I Joshi, and Komal Champanerkar. Medicine recommendation system. *Medicine (Baltimore)*, 7(03), 2020.

[3]. Ananya Promkot, Somjit Arch-int, and Ngamnij Arch-int. The personalized traditional medicine recommendation system using ontology and rule inference approach. In *2019 IEEE 4th International Conference on Computer and Communication Systems (ICCCS)*, pages 96–104. IEEE, 2019.

[4]. Qian Zhang, Guangquan Zhang, Jie Lu, and Dianshuang Wu. A framework of hybrid recommender system for personalized clinical prescription. In *2015 10Th international conference on intelligent systems and knowledge engineering (ISKE)*, pages 189–195. IEEE, 2015.

[5]. Youjun Bao and Xiaohong Jiang. An intelligent medicine recommender system frame- work. In *2016 IEEE 11Th conference on industrial electronics and applications (ICIEA)*, pages 1383– 1388. IEEE, 2016.

[6]. Benjamin Stark, Constanze Knahl, Mert Aydin, and Karim Elish. A literature review on medicine recommender systems. *International journal of advanced computer science and applications*, 10(8), 2019.

[7]. Satvik Garg. Drug recommendation system based on sentiment analysis of drug reviews using machine learning. In *2021 11th International Conference on Cloud Computing, Data Science & Engineering (Confluence)*, pages 175–181. IEEE, 2021.