IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 12, Issue 5, May 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205230 |

A System that Suggest Medicine Based on Ayurveda

Dr. Anil Kumar C J[1], Varsha G R[2], Rajesh[3], Thrilok Kumar B J[4], Suresh N C[5]

Department of Computer Science and Engineering, ATME College of Engineering, Mysuru, India[1,2,3]

ABSTRACT: A system has been designed to suggest Ayurvedic drugs and formulations based on input symptoms. The system uses a comprehensive dataset of Ayurvedic medicines, symptoms, and their corresponding precautions. By using the Random Forest algorithm, the software effectively processes user-provided symptom data and generates predictions for suitable Ayurvedic remedies. This system not only helps with personalized medicine selection but also provides precautions associated with each remedy in Ayurvedic healthcare practices. Experimental results demonstrate the system's ability to predict appropriate Ayurvedic treatments for different symptoms. This research represents a significant step towards integrating modern technology with ancient healing traditions to improve healthcare outcomes.

KEYWORDS: Ayurveda, Symptom based, Personalized Medicine, RandomForestAlgorithm.

I. INTRODUCTION

Ayurveda, the ancient healthcare system originating from the Indian subcontinent, offers a wealth of knowledge on natural remedies and formulations. There has been a growing interest in integrating Ayurvedic principles into modern healthcare practices, particularly in the context of personalized medicine. This software system leverages the power of the Random Forest algorithm, a robust machine learning technique, to analyze a user's specific health concerns and provide symptom-based drug suggestions and formulations rooted in Ayurvedic principles. The dataset comprises formulations, precautions, and a range of symptoms. Symptoms are represented as binary indicators that are activated within the dataset upon user selection via the front-end interface. By analyzing individual symptoms and utilizing the dataset of Ayurvedic medicines, the software generates personalized recommendations for patients, promoting a patient-centric approach to healthcare. The use of the Random Forest algorithm ensures accurate predictions and reliable results. This software system represents a significant step towards merging ancient Ayurvedic healthcare solutions with modern technology, ultimately improving healthcare outcomes and offering solutions for individuals seeking personalized medicine based on Ayurvedic principles.

II. PROBLEM DESCRIPTION

A. PROBLEM STATEMENT: In rise of world, it's tough to find reliable Ayurvedic medicine advice customized to individual symptoms. Choosing the right herbal remedies can be complex and out of reach for many. To tackle this, we suggest developing a system using a dataset of symptoms, medicines, and precautions. This site will use machine learning to predict suitable Ayurvedic medicine and precautions, offering personalized recommendations. By incorporating the powerful and robust Random Forest Algorithm which will enhance the accuracy of predicting suitable ayurveda medicine and precautions. This approach aims to simplify Ayurvedic healthcare, making it more accessible and user-friendly use for everyone.

B. OBJECTIVES:

The main objectives are:

- To bridge ancient ayurveda with advance technology for healthcare.
- To develop a system suggesting Ayurvedic medicine along with precautions based on ayurvedic dataset.
- To implement supervised machine learning algorithm for better prediction of ayurveda medicine.

III. LITERATURE SURVEY

Personal Healthcare Chatbot for Medical Suggestions Using Artificial Intelligence and Machine Learning. In a 2023 publication, the method that leverages a Natural Language Processing (NLP) algorithm for disease prediction and medical suggestions. This approach integrates artificial intelligence and machine learning, employing techniques such

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205230 |

as K-Nearest Neighbors (KNN) for machine learning, NLP for artificial intelligence, and a retrieval-based algorithm. The system achieves an approximate accuracy of 82% in disease prediction, offering faster response times and accurate predictions with a confidence threshold of 80% or higher. However, the method is constrained to predefined responses and does not generate new content, which is a notable limitation[1]. Predicting Ayurveda-Based Constituent Balancing in Human Body Using Machine Learning Methods. In a 2020 publication, the use of different machine learning algorithms and methods for enhancing performance. Utilizing Python libraries such as pandas, numpy, and Scikit-Learn, they applied techniques including SVM, KNN, Naive Bayes, Decision Tree, XGBoost, CatBoost, and CatBoost with hyperparameter tuning. The study achieved various accuracy rates: SVM at 85%, KNN at 87%, Naive Bayes at 64.2%, Decision Tree at 88%, XGBoost at 90%, CatBoost at 92%, and CatBoost with hyperparameter tuning at 95%. A key advantage of this approach was the utilization of a variety of machine learning algorithms and techniques to enhance performance. However, the Naive Bayes model demonstrated a lower accuracy rate compared to the other models[2]. Service-Oriented Chatbot for Essential Oils Using Natural Language Processing In a 2020 publication,the method that is used for developing a Pythonbased chatbot using an Agile development methodology and pattern matching techniques. The tools employed include Sublime Text 3.6 IDE and an SQLite database. Techniques utilized in the development process encompass natural language processing (NLTK), machine learning (TensorFlow), and a JSON intents file as the dataset. While the accuracy of the chatbot's recommendations is not explicitly mentioned, the approach offers several advantages, including Agile development for quick iterations and a centralized platform for essential oil information. However, the system has limitations due to unquantified accuracy of recommendations and issues with repetitive responses and database constraints[3]. A Tool for Suggesting Ayurvedic Remedies In a 2018 publication, it introduce a MeSH-based text mining method for classifying clinical observations and suggesting Ayurvedic remedies. The system utilizes MySQL for the database and Python for the web interface. Key techniques include text mining, MeSH classification, and network pharmacology. The method demonstrates a specificity of 0.876 and a sensitivity of 0.838 in predicting new prebiotics. Among the advantages are efficient drug discovery support and evidence-based Ayurvedic remedy suggestions. However, the system is not intended as a diagnostic tool and relies on clinical trial reports for its suggestions, which is a notable limitation[4]. A paper on chatbot for medical diagnosis describe a method that employs Medical APIs like Infermedica, along with AIML classification and response pattern detection. The tools used include Python and various Medical APIs. While the accuracy of the system is not explicitly mentioned, it offers the advantage of providing a virtual experience akin to visiting a medical professional. However, a drawback of the new model is that it necessitates asking more questions to accurately detect probable illnesses[5].

IV. METHODOLOGY

A. PROPOSED SYSTEM:

1. Input Data : Symptoms data are collected in binary format, representing the presence or absence of specific symptoms, along with corresponding labels for ayurvedic medicines and precautionary measures.

2. Label Encoder : Utilizing label encoder to transform the categorical ayurvedic medicine labels into numerical format for compatibility with the random forest algorithm, ensuring uniform representation of the target variable.

3. Model Selection : Choose appropriate machine learning algorithms for medicine prediction. It includes Random Forests, Support Vector Machines (SVM), Ensemble Voting.

4. Splitting (Training and Testing) : The dataset is split into training and testing sets to evaluate the performance of the model. The training set is used to train the random forest algorithm on symptom data, while the testing set assesses the model's ability to generalize to unseen symptom patterns.

5. Random Forest Algorithm: Employing the random forest algorithm, a robust ensemble learning method, to build a predictive model capable of identifying patterns in symptom data and recommending ayurvedic medicines based on those patterns which extended the accuracy.

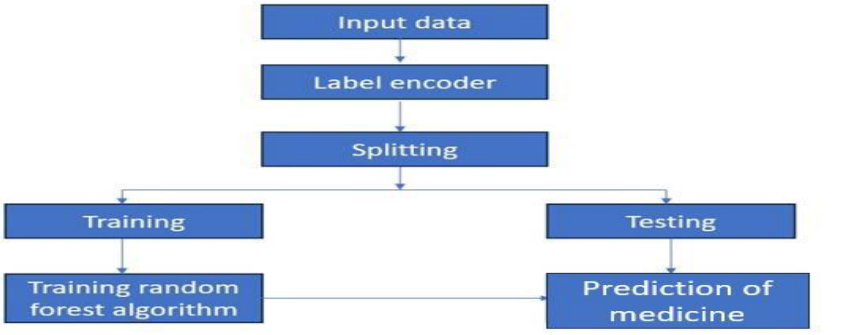
6. Prediction of Medicine : Using the trained random forest model to predict the most suitable ayurvedic medicine for a given set of symptoms, providing personalized recommendations for addressing health concerns through traditional herbal formulations.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

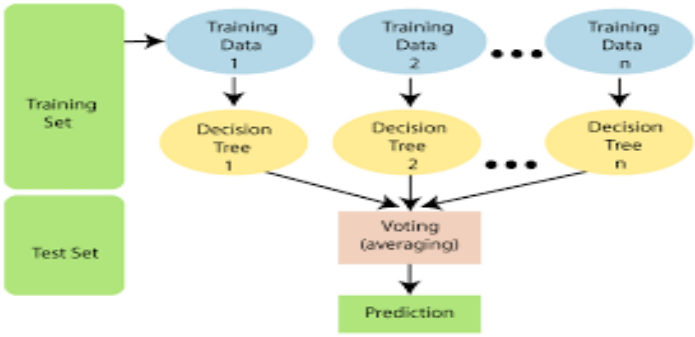
| DOI: 10.15680/IJIRCCE.2024.1205230 |

B. BLOCK DIAGRAM OF PROPOSED WORK:

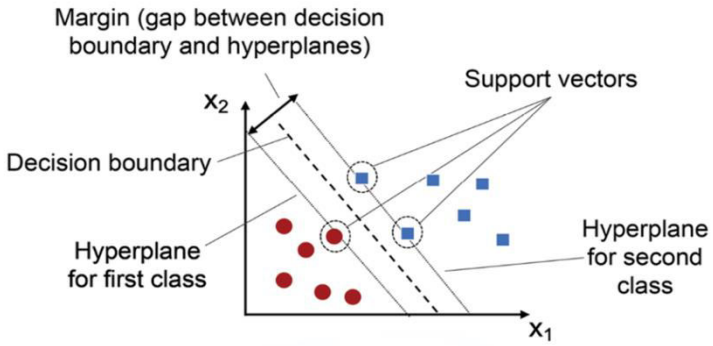


C. ALGORITHM DETAILS

1. **Random Forest Algorithm :** Builds multiple decision trees on random data subsets, combining their outputs to improve accuracy and reduce overfitting. Identifies key features impacting predictions, applicable to both classification and regression tasks for versatility.



2. **Support Vector Machine (SVM) :** Finds the optimal hyperplane to maximize the margin between classes, enhancing generalization on new data. Transforms data into higher dimensions using kernel functions, enabling effective non-linear classification.

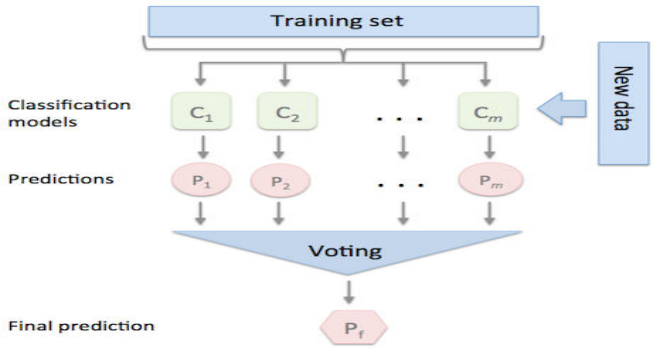


3. **Ensemble Voting Algorithm :** Aggregates predictions from multiple models to boost overall performance using majority voting or averaging methods. Utilizes model diversity to decrease overfitting, resulting in more reliable and robust predictions.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205230 |



- Python and Random Forest Algorithm, which is a Machine learning model is used in the Analysis and prediction of Ayurveda Medicine. The modules used in Python are LabelEncoder, pandas, num- py.

V. RESULTS

The data sets used in this study, and the experimental evaluations that show the value of proposed model are presented in this part.

A. DATASET DETAILS

The dataset includes medicine names, associated precautions, and a limited set of symptoms, specifically curated for predicting suitable Ayurvedic medicines.

B. RESULTS

Accuracy on train data by Random Forest Classifier: 97.8021978021978
Accuracy on test data by Random Forest Classifier: 56.52173913043478

	precision	recall	f1-score	support
0	1.00	1.00	1.00	1
5	0.00	0.00	0.00	2
6	0.00	0.00	0.00	0
7	0.00	0.00	0.00	0
14	1.00	1.00	1.00	1
16	1.00	1.00	1.00	1
18	1.00	1.00	1.00	1
26	1.00	1.00	1.00	1
27	0.00	0.00	0.00	0
28	0.00	0.00	0.00	1
31	1.00	1.00	1.00	1
32	0.00	0.00	0.00	0
34	0.50	1.00	0.67	1
35	0.00	0.00	0.00	1
38	0.33	1.00	0.50	1
40	0.00	0.00	0.00	1
42	1.00	1.00	1.00	1
43	0.00	0.00	0.00	0
45	0.00	0.00	0.00	1
47	1.00	1.00	1.00	1
53	0.00	0.00	0.00	0
56	1.00	1.00	1.00	1
58	1.00	1.00	1.00	1
62	0.00	0.00	0.00	1
63	0.00	0.00	0.00	1
66	1.00	1.00	1.00	1
69	0.00	0.00	0.00	2
accuracy			0.57	23
macro avg	0.44	0.48	0.45	23
weighted avg	0.51	0.57	0.53	23

Random Forest Algorithm

Accuracy on Test Data: 30.434782608695656%
Accuracy on Whole Data: 71.05263157894737%

	precision	recall	f1-score	support
0	1.00	1.00	1.00	1
1	0.00	0.00	0.00	0
3	0.00	0.00	0.00	0
5	0.00	0.00	0.00	2
6	0.00	0.00	0.00	0
7	0.00	0.00	0.00	0
14	0.00	0.00	0.00	1
16	0.00	0.00	0.00	1
18	1.00	1.00	1.00	1
24	0.00	0.00	0.00	0
26	0.00	0.00	0.00	1
28	0.00	0.00	0.00	1
29	0.00	0.00	0.00	0
30	0.00	0.00	0.00	0
31	1.00	1.00	1.00	1
33	0.00	0.00	0.00	0
34	0.33	1.00	0.50	1
35	0.00	0.00	0.00	1
38	0.00	0.00	0.00	1
40	0.00	0.00	0.00	1
42	1.00	1.00	1.00	1
45	0.00	0.00	0.00	1
47	0.00	0.00	0.00	1
53	0.00	0.00	0.00	0
56	0.50	1.00	0.67	1
58	1.00	1.00	1.00	1
62	0.00	0.00	0.00	1
63	0.00	0.00	0.00	1
66	0.00	0.00	0.00	1
68	0.00	0.00	0.00	0
69	0.00	0.00	0.00	2
accuracy			0.30	23
macro avg	0.19	0.23	0.20	23
weighted avg	0.25	0.30	0.27	23

Support Vector Machine (SVM)

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205230 |

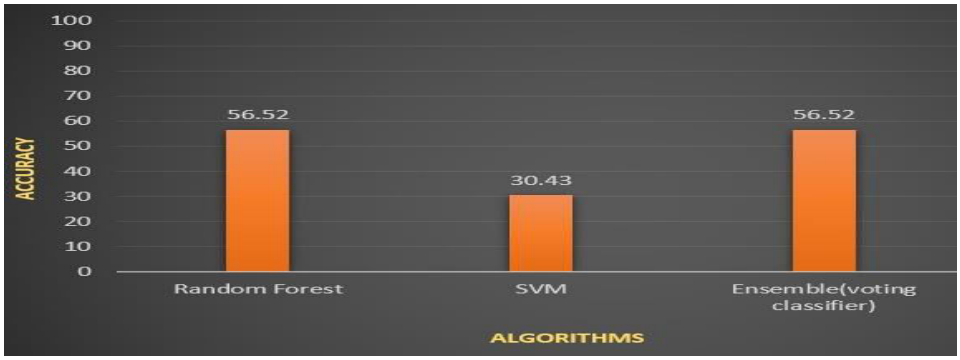
Ensemble Accuracy: 0.5652173913043478

	precision	recall	f1-score	support
0	1.00	1.00	1.00	1
5	0.00	0.00	0.00	2
6	0.00	0.00	0.00	0
14	1.00	1.00	1.00	1
16	1.00	1.00	1.00	1
18	1.00	1.00	1.00	1
26	0.33	1.00	0.50	1
27	0.00	0.00	0.00	0
28	0.00	0.00	0.00	1
31	1.00	1.00	1.00	1
32	0.00	0.00	0.00	0
34	0.50	1.00	0.67	1
35	0.00	0.00	0.00	1
38	1.00	1.00	1.00	1
40	0.00	0.00	0.00	1
42	0.50	1.00	0.67	1
45	0.00	0.00	0.00	1
47	1.00	1.00	1.00	1
53	0.00	0.00	0.00	0
54	0.00	0.00	0.00	0
56	1.00	1.00	1.00	1
58	1.00	1.00	1.00	1
62	0.00	0.00	0.00	1
63	0.00	0.00	0.00	1
66	1.00	1.00	1.00	1
69	0.00	0.00	0.00	2
accuracy			0.57	23
macro avg	0.44	0.50	0.46	23
weighted avg	0.49	0.57	0.51	23

Ensemble Voting Algorithm

5.1 Graph for comparing algorithms with accuracy

The figure graph shows the accuracy comparison of the algorithms: Random Forest at 56.52%, Support Vector Machine (SVM) at 30.95%, and Ensemble Voting classifier at 56.52%.



Accuracy of Algorithms

VI. CONCLUSION

"A System that Suggest Medicine Based on Ayurveda "successfully implements the integration of Random Forest algorithm which is a robust choice for analyzing individual symptoms and providing accurate drug suggestions and formulations rooted in Ayurvedic principles. Additionally, the comprehensive dataset comprising formulations, precautions, and symptom represented as binary indicators ensures an effective approach to personalized medicine within the software system. Each suggested formulation will be provided with a detail of precautions to ensure safety. Ultimately improving healthcare outcomes and offering solutions for individuals seeking personalized medicine based on Ayurvedic Dataset.

REFERENCES

[1]. Authors: R Jegadeesan, Dava Srinivas, N Umapathi, G Karthick, N Venkateswaran " Personal Healthcare Chatbot for Medical Suggestions Using Artificial Intelligence and Machine Learning."European Chemical Bulletin, Volume 12, Supplement 3 (2023),DOI:10.31838/ecb/2023.12.s3.670.

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 | Monthly Peer Reviewed & Referred Journal |

|| Volume 12, Issue 5, May 2024 ||

| DOI: 10.15680/IJIRCCE.2024.1205230 |

[2]. Vishu Madaan and Anjali Goyal, "Predicting Ayurveda-Based Constituent Balancing in Human Body Using Machine Learning Methods," IEEE Access, vol. 8, pp. 65062-65071, (2020

[3]. Mayur Vaishnav " SERVICE-ORIENTED CHATBOT FOR ESSENTIAL OILS USING NATURAL LANGUAGE PROCESSING " (2020).

[4]. Sariga Raj and Priya P. "A Tool for Suggesting Ayurvedic Remedies from Curated and Classified Clinical Trial Reports." International Journal of Engineering & Technology, 7 (4.5) (2018), 171-174

[5]. Ankit Garg, Rajat Jindal, Sunny Ashish, Sarita Yadav, Shafali " A PAPER ON CHATBOT FOR MEDICAL DIAGNOSIS ". Bharati Vidyapeeth's College of Engineering, New Delhi.

[6]. Manish Bali, Samahit Mohanty, Subarna Chatterjee, Manash Sarma, Rajesh Puravankara, "Diabot: A Predictive Medical Chatbot using Ensemble Learning", International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-2, July 2019.

[7]. Athulya N, Jeeshna K, S J Aadithyan, U Sreelakshmi, Hairunizha Alias Nisha Rose, "Healthcare Chatbot", © 2021 IJCRT | Volume 9, Issue 10 October 2021 | ISSN: 2320-2882.

[8]. Saurav Kumar Mishra, Dhirendra Bharti, Nidhi Mishra," Dr.Vdoc: A Medical Chatbot that Acts as a Virtual Doctor", Journal of Medical Science and Technology, Volume: 6, Issue 3,2017.

[9]. R Jegadeesan, Ishank Vasania2, Baha Ur Rehaan3, Anuj Goyal, 2021 & September, "Covid-19 Future Forecasting Using Exponential Smoothing", Strad Research, Volume 8, Issue 8, 2021, ISSN No: 00392049, page No. https://doi.org/10.37896/sr8.8/072 724-737, (UGC Care Group II Journal and Web Of Science Group).

[10]. NavidaBelgaumwala, Dr. Rajashekarappa,"Chatbot: A Virtual Medical Assistant", (IJRASET) ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177 Volume 7 Issue VI, June 2019.

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

INNO SPACE SJIF Scientific Journal Impact Factor

doi crossref

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details