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Prakriti Bot-Intelligent Prakriti Analysis Chatbot for Personalized Ayurvedic Suggestions

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***Abstract* - The ancient Indian medicinal system, Ayurveda classifies persons into three Prakriti types Vata, Pitta, and Kapha which determine their well-being both physically and mentally as well as emotionally. The traditional assessment of Prakriti is rarely a lengthy process and quite subjective that requires the consultation of an expert, Ayurvedic practitioner. This paper explores the amalgamation of Deep Learning (DL) with Natural Language Processing (NLP) to conceive the notion of Prakriti Bot, an AI-enabled chatbot designed for tailored Ayurvedic assessments. Prakriti Bot has an interactive questionnaire for the users and analyzes the answers through Deep Learning algorithms to find out their Prakriti. The chatbot offers customized health recommendations, including dietary guidelines, lifestyle modifications, and wellness tips based on Ayurvedic principles. The research emphasizes the convergence of traditional Ayurvedic principles and modern artificial intelligence, showcasing the potential of chatbot-based assessments to facilitate Prakriti evaluation thereby enhancing the correctness of diagnosis and promoting comprehensive well-being. Through better accessibility, scalability, and personalization of Ayurveda, this study opens new avenues for further development in AI-driven personalized medicine.**

Keywords: Ayurveda, Prakriti, Chatbot, Natural Language Processing (NLP), Deep Learning, Personalized Healthcare.

I. INTRODUCTION

An ancient Indian healing practice called Ayurveda focuses on self-awareness and balance through one's constitution. It revolves around the unique spin to health and well-being known as Tridosha, which embodies the three abilities humans have, Vata, Pitta, and Kapha. The illness arises from imbalance, leading to the need of an Ayurvedic consultation that utilizes treatments such as dietary, herbolistic, and lifestyle adjustments. This ensures that balance between the mind, body, and nature is achieved, resulting in personalized health care.[1] Prakrit Bot combines Ayurveda and AI in healthcare by leveraging Deep Learning and NLP to provide personalized health insights according to an individual's Prakriti, Dosha, and medical history. Their integration of technology and Ayurvedic systems transforms holistic wellness practices through innovation.[2] Prakriti's chatbot uses Deep Learning to simplify Ayurvedic evaluations, helping to make individual health information more efficient. It uses dosha compositions to generate specific recommendations for diet, therapy, and other activities.[3]. This study delves into the intersection of Ayurveda and AI by creating a chatbot that determines Prakriti using Natural Language Processing and Deep Learning. It automated health customization through analysis of dosha traits for better holistic health.[4] This study delves into AI-based chatbot incorporation for Prakriti evaluation in Ayurveda, upgrading individualized care by bridging conventional boundaries. It explores advantages, issues, and future scope in combining age-old wisdom with contemporary technology. [5] simplifies Prakriti testing, with custom Ayurvedic health guidance. It empowers diagnosis, treatment, and lifestyle advice while ensuring traditional expertise, by connecting Ayurveda and AI.[6] Combining Ayurveda and NLP could be the transformation of traditional medicine through improved diagnosis, personalized treatment, and investigation [7].

II. MATERIALS AND METHODS

In this section, the methods used to build the "Prakriti Bot-Intelligent Prakriti Analysis Chatbot for Personalized Ayurvedic Suggestions" and datasets are presented. This includes the NLP techniques, Deep Learning models and the datasets utilized for training and testing.

2.1 Datasets:

In this study, the dataset related to the prakriti assessment collected from GitHub [8]. The dataset consists of three csv files: prakriti.csv, diet.csv and videos.csv.

Prakriti.csv:

This file contains essential information for Prakriti assessment, classifying individuals into Vata, Pitta, or Kapha

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types based on their physiological and physical attributes. This file consists of 1200 samples and 21 features. The features are listed in Table 1

Table 1: Features of prakriti.csv

Feature names	Feature names
1.Body Size	12. Eyelashes
2.Body Weight	13. Blinking of Eyes
3.Height	14. Cheeks
4. Bone Structure	15.Nose
5. Complexion	16.Teeth and gums
6. General feel of skin	17.Lips
7.Texture of Skin	18.Nails
8. Hair Color	19. Appetite
9. Appearance of Hair	20. Liking tastes
10. Shape of face	21. Dosha
11. Eyes	

The dataset includes various attributes related to an individual's body characteristics, dietary habits, and lifestyle, which influence their dominant dosha type.

Diet.csv:

This file provides dietary, and lifestyle recommendations tailored to different Prakriti types. It contains Ayurvedic dietary guidelines that help maintain a balanced dosha constitution. This dataset consists of 6 samples and 4 features. They have only 6 samples because they have only 6 types of doshas. The features are listed in Table 2.

Table 2: Features of diet.csv

Feature names
1.Doshas
2. Diets to Consume
3. Diets to Avoid
4. Lifestyle

Videos.csv:

This dataset includes video recommendations for users based on their Prakriti type. This dataset consists of 21 samples and 3 features. The features are listed in Table 3.

Table 3: Features of Videos.csv

Dosha Types
1. Vata
2.Pitta
3.Kapha
4. Vata+Pitta
5. Pitta+Kapha
6. Vata+Kapha

2.2 Feedforward Neural Network (FNN):

The proposed architecture employs a Feedforward Neural Network (FNN) model to classify an individual's Prakriti based on a personalized questionnaire and corresponding user responses.

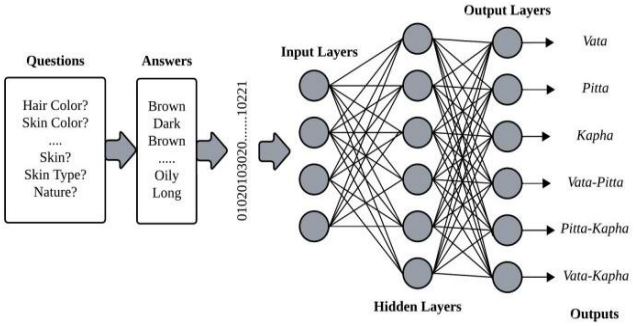

Figure 1: FNN architecture

The process follows these structured steps [9]:

Input Layer: The input layer receives encoded data from the user's answers to a set of predefined questions about physical attributes (e.g., hair color, skin type, nature). Each categorical response is converted into numerical representations using tokenization and one-hot encoding techniques, forming the input vector.

Hidden Layers: Multiple hidden layers process the input data by applying weighted sums followed by activation functions (such as ReLU) to capture complex relationships between the features. Dropout layers are incorporated to prevent overfitting, ensuring the model generalizes well to unseen data.

Output Layer: The output layer uses a softmax activation function to classify the user's Prakriti into one of six categories: Vata, Pitta, Kapha, Vata-Pitta, Pitta-Kapha, and Vata-Kapha. Each neuron in the output layer represents a specific Prakriti type, with the final classification determined by the neuron with the highest activation score.

Loss Function and Optimization: The categorical cross-entropy loss function is used to compute the error between predicted and actual labels. The model is optimized using the Adam optimizer, with an adaptive learning rate to balance convergence speed and accuracy.

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2.3 NLP techniques:

In this study to process the user input and to generate human like responses NLP techniques like Tokenization, Lemmatization and Bag of Words are used [10].

Tokenization:

When the user interacts with the chatbot, the user input will be tokenized first for further processing. Tokenization is the process of break down the user input into smaller components for analysis. Example of tokenization is presented below for better understanding

```
Sentence Tokenization:
['I have dry skin.', 'I love eating spicy food.']

Word Tokenization:
['I', 'have', 'dry', 'skin', '.', 'I', 'love', 'eating', 'spicy', 'food', '.']

Filtered Words (No Punctuation):
['I', 'have', 'dry', 'skin', 'I', 'love', 'eating', 'spicy', 'food']
```

Figure 2: Sample of Tokenization

Lemmatization:

Lemmatization is a crucial NLP technique used to ensure the accurate text processing and intent recognition. For the prakriti chatbot precise language understanding is necessary to assess the prakriti. It is the process of reducing the words to its base form. Example of Lemmatization is presented in the below figure.

```
Original Words:
['I', 'am', 'feeling', 'anxious', 'frequently', '.']

Lemmatized Words:
['i', 'am', 'feeling', 'anxious', 'frequently']
```

Figure 3: Sample of Lemmatization

Bag of Words:

Bag of words (BoW) is a model that converts text into numerical feature vector. It is will helpful to recognize the patterns. The example of BoW is presented in the below figure.

```
Vocabulary: ['anger', 'anxiety', 'calm', 'cold', 'cough', 'digestion', 'dry', 'excess', 'gain', 'hand', 'heat',

Bag of Words Vector: [0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 1 1 0 0 0 0 0]
```

Figure 4: Sample of BoW

III. PROPOSED METHODOLOGY

The proposed methodology for Prakriti Bot-Intelligent Prakriti Analysis Chatbot for Personalized Ayurvedic Suggestions is presented in this section. The pictorial representation is presented in the figure 5.

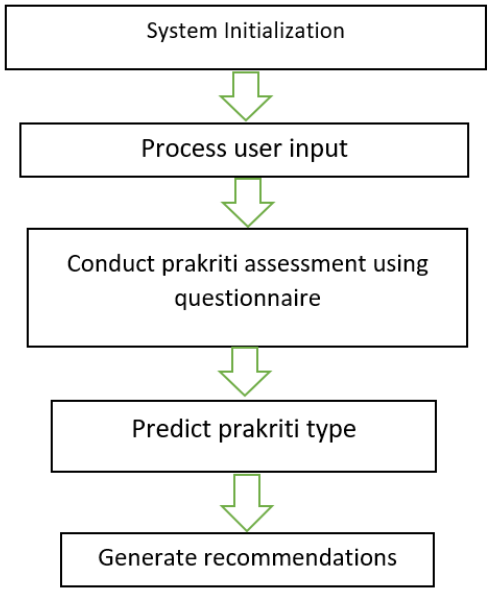

Figure 5: Proposed Methodology

Initially the system will be initialized by starting the Fast API server and establish a WebSocket connection. Initialize the database to store the chats and logs. The pretrained NLP model and Deep Learning Model are loaded in the system initialization phase. In the second stage, once the connection established the user provides input to the chatbot. The inputs are processed using NLP techniques to generate correct responses. Later the user will be provided with 20 Questionnaire to assess the user prakriti type. The 20 questions are multiple choice questions. The sample questionary is presented in figure 6.

Figure 6: Sample Questionary for prakriti assessment

The user has to select the option based on their symptoms. The responses of the questions will be stored for further processing. Based on the stored responses the prakriti

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type of the user will be predicted. The sample output is presented in the figure 7.

Figure 7: Prakriti Prediction screen

Based the predicted dosha type the diet recommendations will be generated. In that recommendations diet to be followed for the dosha and diet not be followed along with life style recommendations will be there. Along with diet recommendations, videos related to the dosha type are also generated. The sample output is presented in the figure 8.

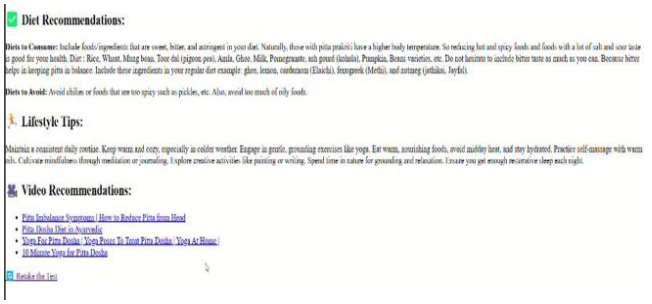

Figure 8: Sample output of recommendations

IV. RESULTS AND DISCUSSIONS

To predict the prakriti type in this study, we experimented the data with three models such as Feed Neural Network (FNN), Support Vector Machine (SVM) and Navies Bayes. Among the three models FNN model given highest accuracy. Hence, in this study FNN model is consider for the prakriti type classification. The structure of the FNN model is presented below.

Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 19)	399
dense_1 (Dense)	(None, 300)	6,000
dense_2 (Dense)	(None, 250)	75,250
dense_3 (Dense)	(None, 200)	50,200
dense_4 (Dense)	(None, 150)	30,150
dense_5 (Dense)	(None, 100)	15,100
dense_6 (Dense)	(None, 50)	5,050
dense_7 (Dense)	(None, 45)	2,295
dense_8 (Dense)	(None, 30)	1,380
dense_9 (Dense)	(None, 20)	620
dense_10 (Dense)	(None, 15)	315
dense_11 (Dense)	(None, 6)	96

Total params: 186,855 (729.90 KB)
Trainable params: 186,855 (729.90 KB)
Non-trainable params: 0 (0.00 B)

Figure 9: FNN Model summary

The FNN model is trained with prakriti dataset and tested. The performance of FNN model in terms of confusion matrix, model accuracy and model loss are presented in figure 10, 11 and 12.

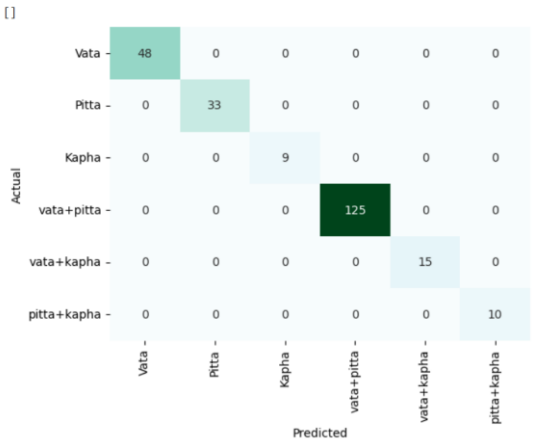

Figure 10: Confusion Matrix

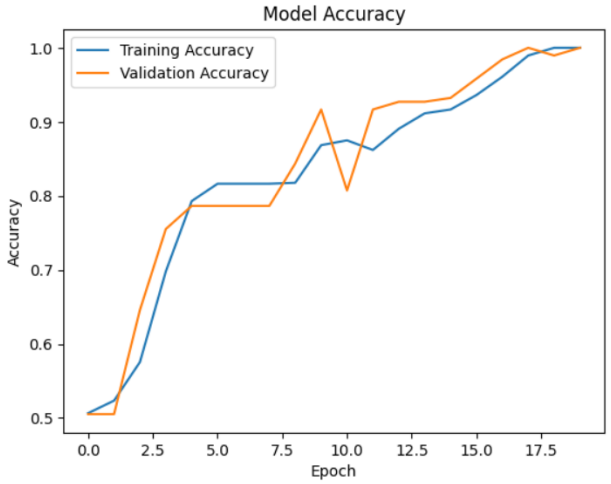

Figure 11: FNN Model Accuracy

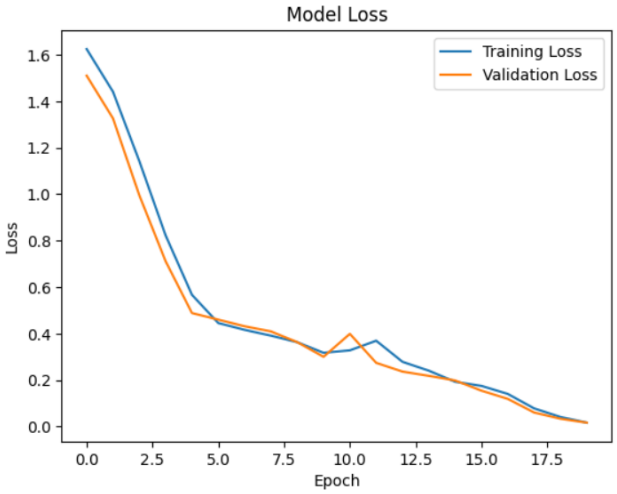

Figure 12: FNN Model Loss

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The three models' performances are analyzed and summarized in the table 4.

Table 4: Performance Measures of the three models

Model	Accuracy	Precision	Recall	F1-Score
Feedforward Neural Network	1.00 (100%)	1.00	1.00	1.00
Naive Bayes	0.81 (81%)	0.80	0.71	0.72
Support Vector Machine	0.92 (92%)	0.83	0.80	0.82

By analyzing the above content, it is clear that among the three models FNN model perform out well with 100% accuracy and other parameters like Precision, Recall and F1-Score. V. CONCLUSION The study successfully integrates Artificial Intelligence (AI) and Ayurveda through the development of Prakriti Bot, an intelligent chatbot that offers personalized Ayurvedic recommendations. By leveraging Deep Learning (FNN Model) and Natural Language Processing (NLP). The chatbot effectively determines a user's Prakriti (Vata, Pitta, Kapha, or combinations) based on their responses. The results indicate that the Feedforward Neural Network (FNN) model outperformed other models, achieving 100% accuracy, making it the most reliable approach for Prakriti classification. The chatbot provides customized diet plans, lifestyle recommendations, and video resources, enhancing accessibility and personalization in Ayurvedic healthcare. This research highlights the potential of AI-driven solutions in traditional medicine, bridging ancient wisdom with modern technology. Future work can explore more extensive datasets, real-time learning capabilities, and integration with wearable health devices to further refine and improve Ayurvedic health assessments.

REFERENCES

[1] R. Pradhan, J. Shukla, and M. Bansal, "„K-Bot" Knowledge Enabled Personalized Healthcare Chatbot," IOP Conf. Ser.: Mater. Sci. Eng., vol. 1116, 2021, doi: 10.1088/1757-899X/1116/1/012185.

[2] Jagan M, S. Kumar, V. S., and S. Nivedha, "Chatbot to Know Individual Prakriti (Phenotype)," Int. J. Novel Res. Dev., vol. 9, no. 5, 2024, doi: www.ijnrd.org.

[3] U. S. Gatkul, S. N. Kairamkonda, S. S. Salunkhe, M. V. Rakale, and U. S. Sonawane, "AI-Powered Chatbot for Individual"s Prakriti (Phenotype).

[4] Assessment in Ayurveda," Int. Res. J. Mod. Eng. Tech. Sci., vol. 6, no. 5, 2024, doi: www.irjmets.com.

[5] B. P. S. Chundawat, D. Chouhan, A. Kumar, M. Bhatt, and M. Patel, "Utilizing Chatbots for Individual Prakriti in Ayurveda: A Modern Approach to Personalized Healthcare," Int. Adv. Res. J. Sci. Eng. Tech., vol. 11, no. 2, 2024, doi: www.iarjset.com.

[6] D. Shanthi et al., "AYURZEN – Nurturing Mental Wellness with Ayurvedic Bot," Int. Res. J. Mod. Eng. Tech. Sci., vol. 6, no. 4, 2024, doi: 10.56726/IRJMETS52221.

[7] A.P. Mangaonkar, S. Noronha, S. Rajgoli, O. Kallekar, and P. Arkasali, "AI-Powered Ayurvedic Doshas Assessment Tool: Health and Nutrition for All," Foundry Journal, vol. 27, no. 5, p. 90, 2024.

[8] Dr. Aneesh M S, "Ayurveda Meets AI: How NLP is Shaping the Future of Holistic Medicine," JETIR, vol. 11, no. 6, 2024, doi: www.jetir.org.

[9] https://github.com/PrathameshDhande22/Prakriti-Determine

[10] Lim, J., Sung, K. (2007). FNN (Feedforward Neural Network) Training Method Based on Robust Recursive Least Square Method. In: Liu, D., Fei, S., Hou, Z., Zhang, H., Sun, C. (eds) Advances in Neural Networks – ISNN 2007. ISNN 2007. Lecture Notes in Computer Science, vol 4492. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-540-72393-6_48.

[11] Sonit Singh," Natural Language Processing for Information Extraction", arXiv:1807.02383v1 [cs.CL] 6 Jul 2018.

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