



## AYURVEDIC CHATBOT

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**Abstract:** Ayurvedic Chatbot represents a cutting-edge the integration of traditional Ayurvedic knowledge with modern practices artificial intelligence technologies. Designed to provide personalized health recommendations, this the chatbot utilizes natural language processing to engage users in interactive conversations. By analyzing individual user inputs, it offers tailored guidance on lifestyle choices, dietary suggestions, and herbal remedies based on Ayurvedic principles. This digital solution enhances accessibility to Ayurveda, enabling users to explore holistic health practices in a user-friendly the process is carried out efficiently and effectively. The Ayurvedic Chatbot serves as a bridge between ancient wisdom and contemporary digital health trends, promoting wellness through personalized, evidence-based Ayurvedic advice.

**Keywords:** Ayurveda, Chatbot, NLP, Prakruti Classification, GPT, Rasa.

### I.INTRODUCTION

Today, Ayurveda is an ancient system of medicine that focuses on the treatment of various health conditions, this practice the human has been used for over 5,000 years is centered around promoting holistic health and wellness. With growing global interest in natural and personalized healthcare solutions, there has been a resurgence in the adoption of Ayurvedic practices. However, accessing authentic Ayurvedic knowledge and personalized advice can be challenging for the general population, particularly those unfamiliar with its core principles, such as the doshas (Vata, Pitta, Kapha), herbal remedies, and lifestyle practices.

In today's digital era, advancements in Artificial Intelligence, particularly focuses on the field of Natural Language Processing and Machine Learning, provide a solution to this problem by the focus is on developing intelligent systems that can simulate human interaction and provide real-time, tailored advice. Chatbots are one such AI-driven the application has gained significant popularity in various industries such as healthcare, customer service, and education. This project aims to apply these advanced technologies to Ayurveda by developing an Ayurvedic chatbot capable of understanding user inputs and offering relevant, informative, and personalized responses.

The Ayurvedic chatbot leverages deep learning frameworks such as TensorFlow and Keras, combined with NLP techniques, to comprehend and respond to users' health-related queries. This chatbot can serve as an accessible and reliable source of Ayurvedic information, guiding users towards healthier lifestyle choices the statement is based on Ayurvedic principles. Additionally, the goal is to bridge the gap between traditional knowledge and modern users, making Ayurvedic wellness more approachable and convenient for everyone.

### II.PROPOSED SYSTEM

a) Prakruti Analyzer Path: If the user selects Prakruti Analyzer they proceed to take the assessment test, which determines their dosha type (Vata, Pitta, Kapha). After completing the test the Assessment Result is generated. The User gets the result, which could inform further interaction with the chatbot. Optionally, the User may exit the analyzer if they don't wish to continue.

b) Chatbot Path: If the user chooses to go directly to the Chatbot they input their query (e.g., "What foods should I avoid as a Pitta?"). The input goes through Backend Processing, which includes: Text Tokenization: Breaking the input into smaller linguistic units.

Standardization & Embedding: Preprocessing for LLM compatibility.

LLM Response Generation: A large language model generates a meaningful reply based on Ayurvedic rules and the user's profile

### III.SYSTEM DESIGN

The system design of the Ayurvedic Chatbot is a comprehensive, multi-layered architecture focused on scalability, reliability, and user satisfaction. At the user interface layer, it provides seamless interaction through web browsers, mobile applications, and voice interfaces, ensuring accessibility across devices and platforms. The chatbot supports text and voice inputs with multilingual capabilities, enhancing inclusivity.

The application layer forms the core, comprising an advanced NLP engine for intent recognition and natural conversation, a recommendation engine that integrates Ayurvedic principles like doshas and prakriti to deliver personalized advice, and a feedback mechanism for iterative improvements. Additionally, it includes an analytics module to derive insights from user interactions and improve system functionality over time. The knowledge base layer stores a validated repository of Ayurvedic principles, remedies, and lifestyle guidelines, supported by a query management system for efficient retrieval and an update mechanism to incorporate expert reviewed content. The integration layer enables connectivity with external APIs for features like voice recognition, language translation, and the study focuses on the collection of health data from wearable devices, ensuring a holistic approach to user health. The backend layer individual manages business logic, data processing, and communication between components using robust frameworks like Flask or Node.js, while incorporating load balancing and API gateways for scalability and efficient traffic management.

The database layer manages structured and unstructured data using relational databases like PostgreSQL and NoSQL databases like MongoDB, ensuring secure storage of user profiles, interaction logs, and analytics. The security layer safeguards user data with end-to-end encryption, secure authentication mechanisms, the text focuses on the importance of privacy regulations and compliance like GDPR and HIPAA. Finally, the deployment layer utilizes cloud infrastructure such as AWS or Google Cloud for hosting, with containerization via Docker for portability and CI/CD pipelines for continuous updates. This integrated and well-structured design ensures the Ayurvedic Chatbot operates efficiently, provides accurate and reliable health recommendations, and meets the needs of a diverse user base.

The high-level design of the Ayurvedic Chatbot outlines the system's architecture, focusing on its key components and their methods are discussed interact to deliver the objective is to offer a seamless user experience. At the core of the design is the user interface, this is a crucial aspect of any digital system layer, which ensures accessibility through web and mobile platforms, supporting both text and voice-based interactions. The application layer processes involves analyzing user inputs using natural language processing to interpret queries and generate personalized Ayurvedic recommendations based on principles like doshas and prakriti. The chatbot also integrates a recommendation engine, a feedback system, and an analytics module to enhance the user experience and improve the system over time.

The knowledge base layer stores and retrieves essential Ayurvedic information, allowing the chatbot to deliver relevant suggestions, and includes an update mechanism to maintain the accuracy of the data. The integration layer connects the chatbot to external services, such as voice recognition APIs and the study focuses on the collection of health data from wearable devices, further enhancing its functionality. The backend layer handles the core business logic and communication between system components, utilizing web servers, API gateways, and load balancing for optimal performance and scalability.

Subsequently, the pre-processed textual data is fed into an advanced embedding model, such as sentence transformers, to transform the textual information into dense numerical representations known as embeddings. These embeddings encode the semantic meaning and contextual understanding of the text, enabling the Chatbot to comprehend and respond intelligently to user inquiries. Furthermore, employing advanced embedding techniques allows for capturing intricate nuances and subtleties present in Ayurvedic literature, enriching the Chatbot's understanding and responsiveness.

#### IV.IMPLEMENTATION

The Ayurvedic Chatbot system was implemented as a web-based application designed the goal is to offer personalized health recommendations based on Ayurvedic principles. The development followed a modular approach with two primary components: the Prakruti Analyzer and the AI-powered Chatbot. The document was created using HTML, CSS, and JavaScript, while the backend used Python with Flask for handling user input, API communication, and logic processing. The Prakruti Analyzer was implemented as a multiple-choice questionnaire designed to assess the user's dominant Dosha (Vata, Pitta, or Kapha). Each answer was mapped to specific Dosha traits, and a scoring algorithm was the method used to determine the user's constitution, the item was stored for future use.

Feature Page: The image depicts two aspects of the Ayurvedic platform: AI-powered personal advice through an AI-Chatbot and a tool for discovering one's Prakruti-analyzer as holistic health support.

Prakruti Analyzer Page: This page shows a form that serves as the questionnaire, and when the user submits, the responses are evaluated and the test results are shown to the user.

The rigorous analysis of performance metrics, in the context of answering Ayurvedic queries, highlights the importance of fidelity to context, answer relevancy, context precision, and answer correctness. The Mistral model emerges most significantly suitable choice based on its exemplary faithfulness score, ensuring the preservation of accuracy and traditional Ayurvedic knowledge.

Overall, this project contributes to the burgeoning field of AI-powered healthcare by introducing novel elements tailored to Ayurveda and personalized Prakruti analysis. By integrating cutting-edge technologies with ancient wisdom, the proposed architecture has the potential the purpose is to provide a unique and this tool emphasizes that technology is a crucial tool for promoting holistic approaches wellness well-being. However, it also the text emphasizes the significance of responsible development, ethical considerations, and continued research to address associated risks and ensure societal benefit in the deployment of such AI driven solutions.

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