

Veda Voice - Ayurvedic Chatbot

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Abstract - The Veda Voice project is an AI-based Ayurvedic assistant that provides natural healthcare guidance using NLP and voice recognition. It bridges traditional Ayurveda with modern AI, allowing users to input symptoms and receive herbal remedies, diet plans, and lifestyle suggestions. The system improves accessibility and promotes preventive healthcare. The oral tradition of Vedic chanting is one of the oldest knowledge transmission systems. However, its preservation faces challenges due to modernization and declining practitioners. This paper presents Veda Voice, an Artificial Intelligence-based system designed to recognize and analyze Vedic chants using speech processing and deep learning techniques.

Keywords: Artificial Intelligence (AI), Ayurveda, Natural Language Processing (NLP), Voice Assistant, Speech Recognition, Healthcare Chatbot, Machine Learning, Ayurvedic Remedies, Digital Healthcare, Preventive Healthcare, Text-to-Speech (TTS), Speech-to-Text (STT), Personalized Medicine, Traditional Medicine, Human-Computer Interaction

I. INTRODUCTION

Artificial Intelligence has significantly transformed modern healthcare by enabling intelligent diagnosis, virtual assistants, and personalized treatment systems. However, most existing AI-based solutions primarily focus on allopathic medicine, leaving traditional healthcare systems like Ayurveda underrepresented in digital platforms. Ayurveda, an ancient Indian system of medicine, emphasizes holistic healing through natural remedies, balanced diet, and lifestyle practices. Despite its importance, access to Ayurvedic knowledge remains limited due to complex terminology and lack of awareness. To address this gap, the Veda Voice system is designed as an AI-powered assistant that integrates modern technologies with traditional Ayurvedic principles.

The Veda Voice system aims to provide accessible and personalized healthcare guidance using Natural Language Processing and voice interaction technologies. It allows users to input symptoms through text or speech and receive relevant Ayurvedic recommendations, including herbal remedies and lifestyle suggestions. By combining AI with traditional knowledge, the system enhances user engagement and promotes preventive healthcare practices.

Recent studies on Ayurvedic chatbots have demonstrated the feasibility of integrating AI with traditional medicine to provide personalized health guidance. These systems use Natural Language Processing to understand user queries and generate responses.

1.1 Project Aims and Objectives

The development of an AI-powered Ayurvedic assistant requires a clear set of objectives to ensure scalability, usability, and effective healthcare delivery. This project aims to address the limitations of traditional Ayurvedic knowledge access by integrating symptom analysis, voice interaction, personalized recommendations, and knowledge management into a single intelligent platform.

Objectives and Aims:

- 2 To develop a scalable AI-based platform for Ayurvedic health assistance
- 3 To enable multi-user support with personalized profiles and interaction history
- 4 To integrate Speech-to-Text (STT) and Text-to-Speech (TTS) for seamless voice interaction
- 5 To provide role-based access control for secure user and admin operations
- 6 To implement real-time response generation for instant healthcare guidance
- 7 To streamline knowledge retrieval using structured Ayurvedic datasets and chatbot interaction
- 8 To support personalized recommendations including remedies, diet plans, and lifestyle suggestions
- 9 To ensure high performance and scalability using modern frameworks like React.js, Node.js, and optimized backend architecture
- 10 To enable seamless management of Ayurvedic knowledge including herbs, books, and treatment techniques
- 11 To provide customized dashboards for users with health insights and interaction history
- 12 To implement a secure and extensible architecture that supports future integration with healthcare systems and third-party services

12.1 System Objectives:

The system should accurately analyze user inputs (text) using Artificial Intelligence and Natural Language Processing techniques to identify health-related symptoms. The system must generate relevant and reliable Ayurvedic solutions, including herbal remedies, dietary suggestions, and lifestyle modifications based on the identified symptoms

Performance optimization is achieved through modern technologies like React.js and efficient backend processing, enabling fast response generation and smooth data handling. Security is a key priority, with robust authentication mechanisms and secure handling of user health data. Additionally, the system emphasizes usability by providing a clean, intuitive, and responsive user interface, ensuring a seamless experience across all devices.

Furthermore, the system is designed to maintain high availability and reliability by ensuring minimal downtime and consistent healthcare assistance delivery. It incorporates efficient data management practices to handle large volumes of Ayurvedic knowledge, including herbs, remedies, and classical texts, with accuracy and speed. The architecture also supports real-time response generation, enabling users to receive instant health recommendations through both text and voice interaction.

In addition, the platform is built with extensibility and integration capabilities in mind, allowing seamless connectivity with third-party services such as speech processing APIs, healthcare systems, and analytics tools. This flexibility ensures that the system can adapt to future advancements in Artificial Intelligence and digital healthcare technologies. Overall, the system objectives aim to deliver a robust, scalable, and future-ready AI-powered Ayurvedic assistant that enhances accessibility, promotes preventive healthcare, and improves the overall user experience.

12.2 Background of Project

In recent years, the rapid advancement of Artificial Intelligence and digital healthcare technologies has significantly increased the demand for accessible and efficient health assistance systems. Traditional approaches to healthcare, especially in Ayurveda, often require direct consultation with practitioners, making it time-consuming, costly, and less accessible for many users. Additionally, Ayurvedic knowledge is scattered across books and experts, leading to difficulties in understanding and applying it effectively. Individuals, particularly in remote areas, struggle to access reliable healthcare guidance while maintaining convenience and affordability.

Existing digital healthcare solutions and chatbot systems often focus primarily on modern allopathic medicine and lack integration with traditional systems like Ayurveda. These platforms generally do not provide personalized recommendations based on natural remedies, nor do they effectively support voice-based interaction for ease of use. Furthermore, the absence of a centralized system that combines symptom analysis, Ayurvedic knowledge, and real-time response generation.

To address these challenges, this project proposes the development of Veda Voice, an AI-powered Ayurvedic assistant integrated with Natural Language Processing, voice interaction, and a structured knowledge base of herbs, remedies, and classical texts. The system aims to provide a centralized, scalable, and user-friendly solution that enables users to input symptoms, receive personalized Ayurvedic recommendations, and access healthcare guidance through both text and voice. By leveraging modern technologies and a modular architecture, the system enhances accessibility, promotes preventive healthcare, and supports future scalability and innovation in digital health solutions.

II. COMPONENTS

The proposed Veda Voice system is composed of several software and system components that work together to deliver a scalable, secure, and efficient AI-based healthcare solution. Each component plays a vital role in enabling smooth system functionality, effective Ayurvedic knowledge management, and seamless user interaction.

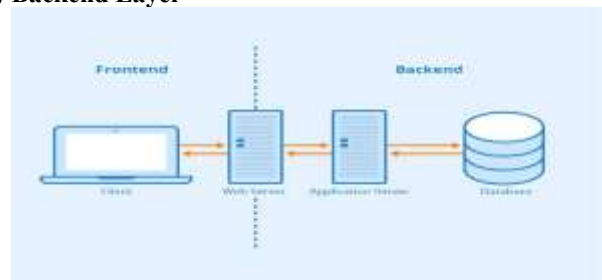
2.1 Software components for processing the system

i) Frontend Layer:

The frontend layer is responsible for delivering an interactive and user-friendly interface for the Veda Voice system. It is developed using modern technologies such as React.js and Next.js, which enable fast rendering and efficient navigation. The user interface is styled using Tailwind CSS, ensuring a clean and responsive design across various devices. This layer allows users to interact with the system through text and voice inputs, access Ayurvedic recommendations, and seamlessly navigate features such as chatbot interaction, herbal information, and personalized health guidance.

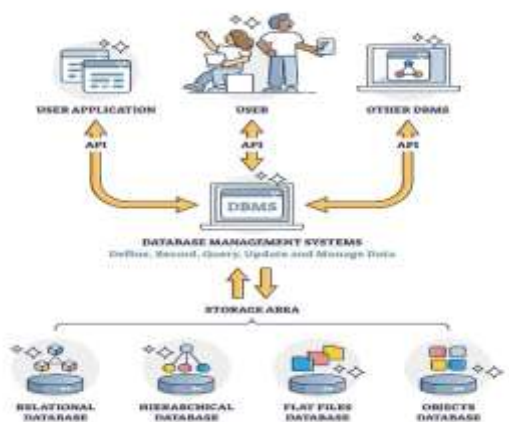


ii) Backend Layer



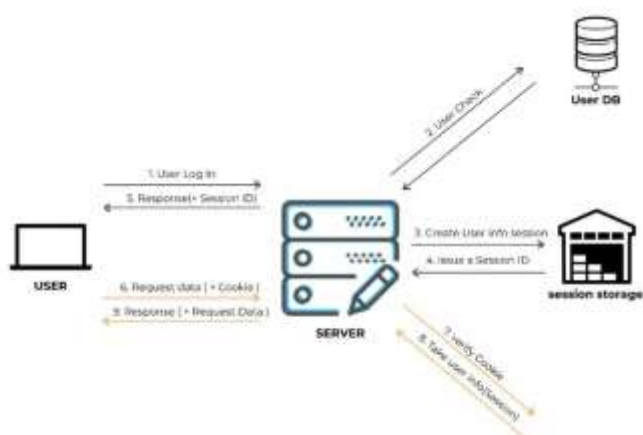
The backend layer acts as the core processing unit of the Veda Voice system, managing all business logic and server-side operations. It is built using Node.js, which provides high performance and efficient execution. This layer handles authentication, authorization, API requests, and communication between the frontend and the database. It ensures secure processing of user data, including sensitive health-related information, while maintaining scalability. Additionally, it supports modular development, making it easier to integrate new features such as advanced AI models, voice processing capabilities, and enhanced knowledge-based recommendations without affecting existing components.

iii) Database Layer



The database system is responsible for storing and managing all Veda Voice application data in a structured and efficient manner. It utilizes MySQL as the relational database, combined with efficient data handling techniques for simplified interactions and schema management. The system stores critical data such as user profiles, health queries, herbal knowledge, Ayurvedic books, and generated recommendations. It ensures data integrity, consistency, and fast query performance, even with large datasets.

iv) Authentication and Authorization Module



The authentication and authorization module ensures secure access control within the Veda Voice system. It implements role-based access control (RBAC), allowing different levels of access for users and administrators. This module manages user login, session handling, and permission validation to prevent unauthorized access. It protects sensitive user data, including health-related information, and ensures that users can only perform actions permitted by their roles. By incorporating secure authentication mechanisms, the system maintains data privacy and enhances overall platform security.

v) User Interaction and Health Management Module



The user interaction and health management module designed to manage user queries and streamline the overall interaction process within the Veda Voice system. It provides features for tracking user health inputs, managing interaction history, and handling communication between the user and the AI assistant. The inclusion of structured workflows allows the system to organize queries, monitor responses, and improve the accuracy of recommendations over time. This module centralizes all user-related data, making it easier to manage interactions and deliver personalized Ayurvedic guidance. It enhances system efficiency by integrating user interaction, data management, and response generation into a unified platform.

III. METHODOLOGY

The development of the proposed Veda Voice AI-based Ayurvedic assistant follows a structured and systematic methodology to ensure efficiency, scalability, and reliability. The methodology includes multiple stages such as requirement analysis, system design, development, database integration, testing, deployment, and maintenance. Each phase is carefully planned to ensure that the final system provides accurate Ayurvedic recommendations and performs effectively in real-world scenarios.

1. Requirement Analysis: The first step involves gathering and analyzing system requirements from users, healthcare perspectives. This includes identifying such as chatbot-based interaction, symbol analysis and herbal recommendation system

User roles such as general users and administrators are defined along with their access permissions. Functional and non-functional requirements such as scalability, usability, accuracy, and data security are also analyzed. This phase ensures a clear understanding of system objectives before development begins.

2. **Design:** In this phase, the overall system architecture is designed, including frontend, backend, and data layers. The frontend is planned using React.js/Next.js for an interactive chatbot interface, while the backend is structured using Node.js to handle API requests and processing logic. Data structures are designed to store Ayurvedic knowledge such as herbs, remedies, and classical texts. API endpoints and data flow between modules such as chat processing, herbs retrieval, and knowledge access are also defined. This stage acts as a blueprint for the development process.
3. **Development:** The development phase involves implementing the system using modern technologies such as React.js and Next.js for the frontend and Node.js for the backend. Core features such as chatbot functionality, symptom analysis, herbal recommendation engine, and knowledge retrieval from Ayurvedic datasets are developed. Controllers like chat-Controller and herbs-Controller are implemented to handle user queries and data processing. Modular coding practices are followed to ensure scalability and maintainability. This phase converts design concepts into a fully functional AI assistant.
4. **Database Integration:** This phase focuses on integrating structured Ayurvedic datasets with the backend system to enable efficient data storage and retrieval. The system uses organized data files containing herbs, Ayurvedic books, and treatment techniques. These datasets are accessed through backend controllers and APIs to generate relevant recommendations. Efficient data handling ensures quick response generation and accurate mapping between user symptoms and Ayurvedic remedies.
5. **Testing:** Testing is conducted to ensure the system functions correctly and meets quality standards. Various testing methods such as unit testing, integration, and system testing are performed. The chatbot is tested with different health-related queries such as headache, cold, and digestion issues to verify accuracy. Voice interaction features are also tested to ensure proper conversion between speech and text.
6. **Deployment:** In this stage, the system is deployed to a production environment where users can access it. The frontend and backend are hosted using modern deployment platforms, enabling real-time interaction. APIs are configured to handle user requests efficiently, and the system is made accessible through a web interface. This phase ensures that the Veda Voice system is available and operational for end users.

7. **Maintenance:** The final phase involves maintaining and updating the system to ensure long-term performance and reliability. Regular updates are made to improve chatbot responses, enhance datasets, and fix bugs. System performance is monitored continuously to ensure smooth operation. User feedback is also considered to improve accuracy and usability. This phase ensures that the system remains effective and adaptable to future advancements in AI and digital healthcare.

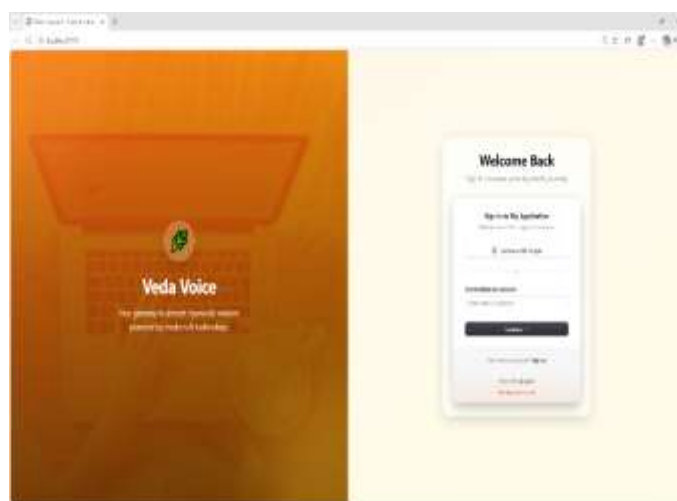
IV. RESULT

The Veda Voice system successfully delivers accurate Ayurvedic recommendations based on user symptoms through an interactive chatbot interface. It effectively integrates herbal data and classical knowledge to provide meaningful health insights. The system demonstrates smooth performance with quick response time and reliable voice interaction features.

4.1 Sign In and Authentication Page

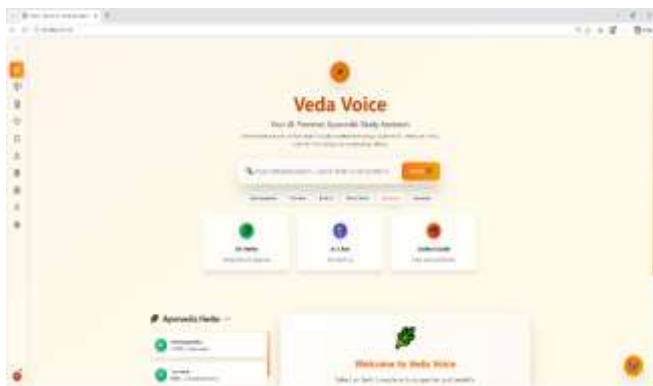
The Veda Voice system follows a structured user access mechanism centered around secure sign-in functionality. A user refers to any individual accessing the platform, where authentication ensures that only authorized users can interact with the system. The sign-in process validates user credentials and establishes a secure session for further interactions.

Once authenticated, users gain access to the system's features such as chatbot interaction, Ayurvedic knowledge resources, and personalized sections. The system maintains a clear separation of user data and sessions to ensure privacy and security. This structured access approach enables efficient user management, protects sensitive information, and provides a seamless and secure experience across the platform.



4.2 Home Page and Dashboard Access

Users access the Veda Voice platform through a secure sign-in process supported by Clerk-based authentication, which manages user login and session handling. After successful authentication, users are directed to the main home page, where they can begin interacting with the system. This login flow ensures that only authorized users can enter the platform and use its Ayurvedic assistant features safely and smoothly.



The dashboard acts as the central interface of the system and provides easy navigation to the main modules of Veda Voice. From the home page, users can access the chatbot page, Ayurvedic book library, Ayurvedic AI quiz hub, and user profile section. This organized layout improves usability, supports a clean user experience, and makes it simple for users to explore the platform's health guidance and knowledge resources.

4.3 Chatbot Page and Working

The Chatbot Page is the core interactive component of the Veda Voice system, designed to provide users with intelligent Ayurvedic guidance through a simple and user-friendly interface. It allows users to enter their symptoms or health-related queries in natural language, without requiring any technical knowledge. The chatbot interface is clean and responsive, ensuring smooth communication between the user and the system.

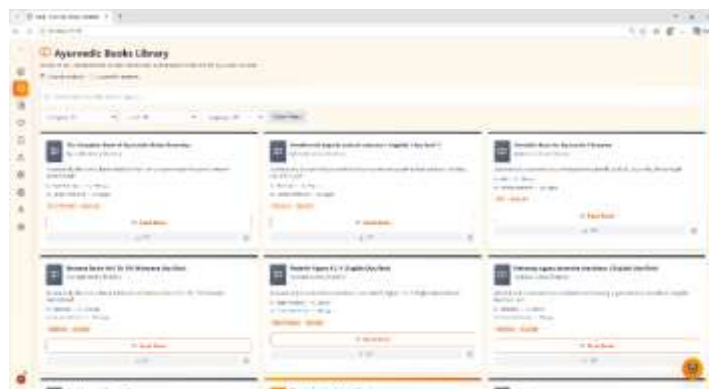
The working of the chatbot involves processing user input using Natural Language Processing (NLP) techniques. Once a query is submitted, it is handled by the backend (Node.js) through modules such as the chat controller, which analyzes the input and retrieves relevant information from Ayurvedic datasets, including herbs, remedies, and traditional knowledge sources. The system then generates appropriate responses such as herbal suggestions, diet recommendations, and lifestyle advice. This real-time interaction ensures accurate, fast, and meaningful responses, making the chatbot an effective digital Ayurvedic assistant.



4.4 Ayurvedic Book Library

The Ayurvedic Book Library module is designed to store, organize, and provide access to traditional Ayurvedic knowledge in a centralized manner. It contains a collection of classical texts, remedies, and wellness practices that serve as a reliable knowledge base for users. This module helps users explore detailed information about herbs, treatments, and Ayurvedic principles, enhancing their understanding of natural healthcare.

The workflow begins when users navigate to the library section from the main dashboard. They can browse or search for specific topics, herbs, or remedies based on their needs. The system retrieves relevant information from structured datasets and presents it in an easy-to-read format. This module not only supports user learning but also strengthens the chatbot's response accuracy by providing a strong foundation of authentic Ayurvedic knowledge.



In addition to knowledge access, the Ayurvedic Book Library enhances the overall user experience by presenting information in a structured and user-friendly manner. It allows users to seamlessly navigate between different categories such as herbs, treatments, and wellness practices. The integration of this module with other components of the system ensures consistency in information delivery. By combining traditional Ayurvedic wisdom with modern digital access, the library plays a crucial role in making healthcare knowledge more accessible and practical for everyday

4.5 Kanban Board

The Ayurvedic AI Quiz Hub is designed to enhance user engagement and promote learning through interactive quizzes based on Ayurvedic concepts. It provides a structured environment where users can test their knowledge about herbs, remedies, and wellness practices. Each quiz consists of multiple questions that help users understand traditional Ayurvedic principles in a simple and engaging way, making the learning process more effective.

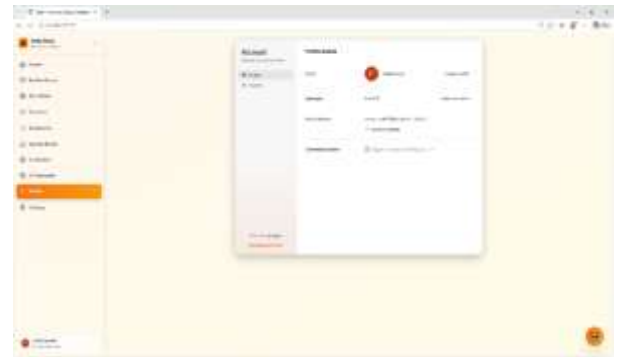
The workflow begins when users access the quiz section from the main dashboard and select a quiz topic. The system presents questions sequentially, and users can answer them to evaluate their understanding. Based on their responses, the system may provide feedback or correct answers, helping users improve their knowledge. This module not only makes the platform more interactive but also encourages continuous learning while complementing the chatbot and knowledge library features.



4.6 Stripe Integration & Payments

The User Profile Information module allows users to manage and store their personal details within the Veda Voice system. It ensures that each user has a dedicated profile where essential information is securely maintained. This module supports personalization by enabling the system to provide more relevant responses and a customized experience based on user interactions and preferences.

The process begins when a user logs into the platform and accesses the profile section from the dashboard. Users can view and update their details as required, while the system securely maintains their data and interaction history. This information can be utilized to improve chatbot responses and overall usability. By maintaining organized and secure user data, this module enhances user experience, ensures data privacy, and supports efficient system functionality.



V. Conclusion

- In conclusion, the Veda Voice system effectively utilizes modern web technologies and AI-based processing to build a comprehensive, efficient, and user-friendly digital healthcare platform. By integrating features such as chatbot interaction, Ayurvedic knowledge access, quiz-based learning, and user profile management into a single interface, it simplifies the process of accessing traditional healthcare guidance and improves overall user experience.
- The intuitive design ensures that even non-technical users can easily interact with the system, making Ayurvedic knowledge more accessible to a wider audience. Additionally, the modular architecture of the platform supports scalability and flexibility, allowing future enhancements such as improved AI models, expanded datasets, and advanced personalization features without affecting existing functionality.
- Overall, Veda Voice provides a complete and integrated solution that combines traditional Ayurvedic wisdom with modern technology. It supports users in understanding symptoms, exploring remedies, and improving their lifestyle, making it a reliable and future-ready digital health assistant.

VI. FUTURE SCOPE

1. Advanced AI Integration: Incorporating more advanced AI and machine learning models to enhance the chatbot's ability to provide highly accurate and personalized Ayurvedic recommendations. Features such as intelligent symptom prediction, adaptive responses based on user history, and smart health insights can significantly improve decision-making and user experience.

2. Enhanced Analytics & Insights: Introducing analytics dashboards to track user interactions, common health queries, and system performance. This can help in understanding user behavior, improving recommendation accuracy, and providing data-driven insights for continuous system enhancement.

3.Third-Party Integrations Expansion: Expanding integrations with external platform such as healthcare APIs, fitness apps, wearable device, and cloud-based services. This will allow real-time health data collection and improve the system ability to deliver more relevant and dynamic.

4. Automation & Workflow Builder: Implementing automation features such as personalized health reminders, follow-up suggestions, and automated response improvements. This will reduce manual effort and ensure continuous user engagement while enhancing the overall efficiency of the Veda Voice platform.

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REFERENCES

- [1] K. Hemalatha, G. Vinay, S. Bhavya Sree R, Y. S, and T. K, "Prakriti Bot – Intelligent Prakriti Analysis Chatbot for Personalized Ayurvedic Suggestions," *International Research Journal of Innovations in Engineering and Technology (IRJIET)*, vol. 9, Special Issue INSPIRE'25, pp. 337–342, Apr. 2025
- [2] M. V. Gunaga, M. Manvith, P. Preethesh, S. A. V, and K. Kiran, "Ayurvedic Chatbot," *Journal of Emerging Technologies and Innovative Research (JETIR)*, vol. 12, no. 7, pp. 802–803, Jul. 2025.
- [3] S. Mohan Vamsi and S. Noortaj, "Ayurveda Plant Identification and Medicare Chatbot Assistant," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, vol. 11, no. 7, pp. 576–581, May–Jun. 2025.
- [4] 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," *International Advanced Research Journal in Science, Engineering and Technology (IARJSET)*, vol. 11, Special Issue 2, pp. 68–70, May 2024.
- [5] Deng, L., Li, J., Huang, J. T., Yao, K., Yu, D., Seide, F., ... Zweig, G. (2013). Recent advances in deep learning for speech research at Microsoft. In 2013 IEEE international conference on acoustics, speech and signal processing (pp. 8604-8608). IEEE.
- [6] Gopalakrishnan, S., Ganapathy, K., Raghunathan, A., &

Muralidharan, V. (2018). Chatbot-based Prakriti evaluation and management in Ayurveda: Design and development. In 2018 IEEE 8th International Advance Computing Conference (IACC) (pp. 392-397). IEEE

[7] Menaria, H.K., Nagar, P., Patel, M. (2020). Tweet Sentiment Classification by Semantic and Frequency Base Features Using Hybrid Classifier. In: Luhach, A., Kosa, J., Poonia, R., Gao, XZ., Singh, D. (eds) First International Conference on Sustainable Technologies for Computational Intelligence. Advances in Intelligent Systems and Computing, vol 1045. Springer, Singapore. https://doi.org/10.1007/978-981-15-0029-9_9

[8] Singh, N., Singh, S. P., & Nath, R. (2019). Development and validation of questionnaire for assessment of Prakriti: A preliminary study. AYU (An international quarterly journal of research in Ayurveda), 40(1), 24

[9] D. Kothari, M. Patel and A. K. Sharma, "Implementation of Grey Scale Normalization in Machine Learning & Artificial Intelligence for Bioinformatics using Convolutional Neural Networks," 2021 6th International Conference on Inventive Computation Technologies (ICICT), Coimbatore, India, 2021, pp. 1071- 1074

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