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Prakriti Chatbot Using NLP

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Abstract:
This literature explores the connection of traditional Ayurvedic ideas and modern technologies, providing a new perspective.
Evaluate Ayurvedic Prakriti using Prakriti Bot, an AI-powered chatbot. Ayurveda classifies individuals into three prakriti types: Pitta, Kapha, and Vata. We offer a website with a chatbot to swiftly determine an individual's ayurvedic constitution, as traditional prakriti evaluation can be time-consuming. Prakriti bot simplifies evaluation by providing personalised health recommendations and Ayurvedic teaching materials. The website bridges the gap between traditional ayurvedic medicine and modern healthcare by enabling regional language option and personalised report generation.

Keywords: Prakriti Bot,AI-powered chatbot, Ayurveda, modern healthcare, regional language option, personalised report generation

1. Introduction:

Ayurveda, the world's oldest healthcare system, originated in India over 5000 years ago and is respected worldwide for its tremendous contributions to health and life. Ayurveda, known as the "mother of all healing," emphasises self-awareness, particularly the understanding of one's own unique constitution or character. This understanding enables people to adopt lifestyle and health decisions that are consistent with their natural energy balance, known as their Prakriti. Ayurveda's fundamental idea is that sickness results from living out of sync with one's constitutional balance.This balance consists of a combination of physical, mental, and emotional characteristics that determine susceptibility to various health disorders. Tridosha is a central idea in Ayurvedic practice, identifying three basic energies (Vata, Pitta, and Kapha) that control bodily and emotional well-being. Each person has a distinct blend of these doshas, which influences their personality and health.The traditional approach to Ayurveda is a thorough consultation with a Clinical Ayurvedic Specialist to determine the balance of these energies and develop a personalised treatment plan that includes diet, herbs, and lifestyle changes. This ancient system, which identifies seven distinct constitutional kinds, provides a comprehensive and personalised approach to healthcare.
Table 1.1 displays the seven categories into which Prakruti can be grouped. Most persons have a dominant Dosha (V, P, or K), whereas only a few have two equal Doshas (VP, VK, PK), and even fewer have all three Doshas in equal proportion (VPK).

Table 1.1 Types of Prakriti

Type	Description
V,P,K	Predominant in one Dosha
VP,VK,PV	Two relatively equal proportions with one predominating
VPK	Dosha in almost equal proportion

Table 1.2 enlists few out of the 31 special characteristics observed by Ayurvedic doctors to determine the Prakruti of people.

Table 1.2 Characteristics of Tridosha

No.	Observation	Vata	Pitta	Kapha
1	Body Size	Slim	Medium	Large
2	Body Weight	Low	Medium	Overweight
3	Cheeks	Wrinkled,suken	Smooth Flat	Rounded,Plump
4	Face Shape	Thin angular	Tapering/triangular	Rounded,double chain
5	Eyes	Small, Sunken,dry,active,black,brown,nervous	Sharp,bright,gray,green,yellow/red,sensitive to light	Big,Beautiful,blue,calm,loving
6	Nose	Uneven,deviated septum	Long pointed,red nose-tip	Short rounded,button nose
7	Lips	Dry,cracked,black/brown tinge	Red,inflamed,yellowish	Smooth,oily,cool,white,pale
8	Teeth	Stick out,big,roomy,thin,gums	Medium,soft,tender, gums	Healthy,white,strong,gums
9	Skin	Thin,dry,cold,rough,dark	Smooth,oily,warm,rosy	Thick,oily,cool, white,pale
10	Appetite	Irregular,scanty	Strong unbearable	Slow but Steady

2. Literature Survey :

The report "Classification of Humans into Ayurvedic Prakriti Types using Computer Vision" by Gayatri

Gadre investigates the use of computer vision techniques to categorise persons into Ayurvedic Prakriti kinds. Here's a summary that includes the introduction, general operations, and some observations on the model's usefulness and disadvantages.

General Working

The research uses computer vision to analyse facial characteristics such as hair, eyes, nose, lips, and skin colour, which correspond to Ayurvedic Prakruti types. Individuals are classified into one of seven Prakruti kinds by the system, which uses procedures such as skin region segmentation, feature size computation, colour recognition, and hair texture analysis. The methodology consists of dataset collecting and labelling, feature engineering, and the use of machine learning algorithms for face feature analysis.

Observations and Drawbacks

The algorithm has an accuracy of roughly 50%, with higher accuracy when detecting Kapha-Pitta kinds. The model suffers with classes incorporating the Vata element due to difficulties in capturing all necessary information using computer vision.

Given the unique nature of the approach and the lack of available datasets for Prakruti categorization, data collecting and labelling presented considerable challenges. The final collection included manually selected and labelled photos, with the majority falling into the Kapha-Pitta and Vata-Pitta categories, indicating a possible geographic and genetic bias.

Facial feature analysis alone cannot reflect the complexity of Ayurvedic assessment, which typically includes not only physical but also psychological and behavioural study. This constraint emphasises the complementary function such a system could play alongside traditional Ayurvedic assessments rather than replacing them.

3. System Working

3.1 Dataset

Datasets are critical in machine learning, and when working with AI, datasets are essential for training. A particular chatbot dataset includes a Natural Language dataset, which helps to deal with natural human language.

Here are the primary datasets used in the creation of the Prakriti chatbot.

Dataset 1: Sentence Intent (sentences.csv)

This dataset appears to be geared towards natural language understanding, specifically the detection or classification of intent within sentences. It has at least three columns: Sentence, Target, and an unnamed column that is most likely used as an index. The Sentence column holds textual data representing various sentences, such as greetings or questions (e.g., "Hi", "How are you?"). The Target column contains numerical values that most likely match to the various categories or intents mentioned in the phrases. This dataset could be used to train or test a model's capacity to detect various sorts of intent in text data.

Dataset 2: Body Characteristics (bodyfind.csv).

This dataset offers precise information on many bodily traits that could be used for research or applications in health, fitness, anthropology, or cosmetic science. There are 21 columns for body size, weight, height, bone structure, complexion, and other physical characteristics. Each row appears to represent an individual, with various qualities codified into numerical numbers, which could indicate multiple sorts or categories of each trait. This data could be utilised for statistical analysis, pattern detection, or predictive modelling based on physical properties.

3.2 Model Working

Along with other necessary data processing procedures, the supplied model.py script describes how to create, train, and save a neural language model (NLM) using TensorFlow and Keras. Here is the script's step-by-step flow.

1. **Bringing in Required Packages**

Pandas: For analysis and data manipulation.
JSON: For processing a JSON file with intents for training data.
TensorFlow (Keras): For creating and training neural network models.
Scikit-learn (CountVectorizer): Converts text data into a matrix of token counts.
NumPy: A library for numerical computations.

2. **Loading and organising training data**

The script begins by loading intents from a JSON file, with each intent having a tag (category) and patterns (text inputs).
It creates a dataframe from these intentions, including sentences and their target tags.
Scikit-learn's LabelEncoder is used to encode target labels into numerical form, as is usual practice when preparing categorical data for machine learning models.

3. **Vectorization of Text**

The sentences are subjected to a CountVectorizer in order to convert them into a bag-of-words model, or sparse matrix representation, in which each row denotes a sentence and each column a distinct vocabulary word.
The text data is transformed into numerical data that the neural network can use throughout the vectorization process.

4. **Building Neural Network Models**

Three dense layers make up the sequential model that the script builds:
The first dense layer uses a bag-of-words vector length to determine the input shape. It has 1000 neurons and a ReLU activation function.
100 neurons make up a buried dense layer that is also activated by ReLU.
The output dense layer, which is appropriate for classification, has sigmoid activation function and seven neurons (assuming there are seven distinct tags).
The prototype is compiled with the Adam optimizer and sparse categorical cross entropy loss, which is appropriate for multi-class classification tasks.

5. **Training Models**

Using the vectorized words (X_train) and their encoded targets (y_train), the model is trained for 100 epochs.

6. **Preserving the Acquired Model**

The trained model is then stored to a file called nlm.h5, which may be used to perform predictions at a later time.

4. Unique Features

The project's original and significant features include the generation of personalised reports based on lifestyle, educational pattern, and career recommendations, as well as language switching between English, Marathi, and Hindi to accommodate user preferences in question presentation. By providing services in their chosen language, this multilingual strategy not only increases user engagement but also

demonstrates a thorough awareness of the demands of the diverse user base. Let's see how this functionality might be incorporated into your project, taking into account the previously discussed datasets and model creation methodology:

1. Preparing a multilingual dataset

You will require different datasets (in English, Marathi, and Hindi) or a comprehensive dataset with language tags added to the questions and answers in order to facilitate language switching. Every entry in these databases would be associated with a particular language version of the inquiries and forecasts. This method guarantees that the model can retrieve or be trained on data in the appropriate language.

2. Switching and Detecting Languages

By automatically choosing the language based on the user's input language or system settings, an automatic language identification function could simplify the user experience. As an alternative, giving customers the ability to manually choose their preferred language guarantees that they are in charge of the language in which their reports and queries are presented.

3. Each Language's Model Training

It may be necessary to train separate models for English, Marathi, and Hindi due to their distinct linguistic and semantic features. This guarantees that the subtleties of every language are faithfully conveyed. On the other hand, a single model might be able to handle many languages by learning language-specific features if the dataset is structured with language tags.

4. Creation of Customised Reports

The prediction results are combined with a template that provides career, education, and lifestyle advice to generate personalised reports in the user's preferred language based on the model's predictions and user preferences. These templates would have to be dynamically supplied with data from the model and localised into each of the supported languages.

5. Implementation Points to Remember

Language-Specific Preprocessing: Characters, stopwords, and linguistic norms vary by language. The model performs better when language-specific preprocessing techniques are used to enhance its comprehension and management of the text.

Ensuring cross-language consistency in the advise and predictions necessitates meticulous translation and localization of the report's content.

Scalability: Create the system so that adding more languages requires little work; this may entail breaking up the language-specific components into smaller units.

5. Applications:

Originating in Ayurveda, the term Prakriti refers to the individual's constitution or body type, which is generally classified into Vata, Pitta, and Kapha, as well as their combinations. With Prakriti as its foundation, a chatbot can be used for a variety of purposes to support wellbeing, health, and individualised Ayurvedic counsel. These are a few creative uses for a Prakriti chatbot:

1. Tailored Wellness and Health Guidance

Based on the user's Prakriti, the chatbot can provide tailored advice on lifestyle, fitness, and nutrition. For example, it can propose particular meals to balance a person's dosha or yoga poses and meditation techniques based on their constitution.

2. Ayurvedic Treatment Plans and Remedies

The chatbot can deliver Ayurvedic cures and treatments for common diseases or imbalances. It might

recommend oil massages, herbal cures, detoxification methods, and other conventional therapies that suit the patient's Prakriti.

3. Instructional Instrument

Users that are curious about Ayurveda and their Prakriti can utilise the chatbot as an educational resource. It can clarify the traits of many doshas, how they affect behaviour and health, and how to stay in a balanced state.

4. Planning Nutritionally

The chatbot can help with meal planning by suggesting foods that are healthy and avoiding those that might lead to imbalance based on the user's Prakriti. Those who want to enhance their general health, energy levels, and digestion may find this feature especially beneficial.

5. Advice on Exercise and Physical Activity

The user's body type can be taken into consideration when the chatbot recommends exercises and physical activities. For instance, intense physical activity might be advantageous for Kapha types, whilst relaxing pursuits like yoga might be more suitable for Vata types.

6. Linguistic and Cultural Adjustments

The chatbot may provide its services in many languages and tailor its recommendations to suit local dietary customs and preferences, reflecting your project's unique multilingual characteristic and enabling Ayurveda to be accessible to a worldwide audience.

Through the integration of contemporary technology and Ayurvedic principles, a Prakriti chatbot can serve as an adaptable instrument for advancing well-being, balanced living, and health—all tailored to the individual constitutions of its users.

6. Drawbacks:

Like every tech-driven initiative, a Prakriti chatbot has its share of obstacles and opportunities for further development, even though it offers many benefits and uses. Resolving these issues not only improves the user experience but also broadens the use of the chatbot. The following are some possible negatives and potential areas of growth for the Prakriti chatbot project:

Cons: Dependability of Self-Reported Data: The quality of the chatbot's advise depends on the data it gets. Users may unintentionally give false information about their lifestyle or symptoms, which could result in recommendations that are less tailored to them or less successful.

Ayurvedic complexity: An automated chatbot may oversimplify the subtleties of this intricate system. Generalisation carries the risk of producing advice that is less sophisticated or useful than consultation.

Cultural and Dietary Restrictions: Although the chatbot strives to be inclusive by providing multilingual support and taking into account cultural contexts, it can be difficult to translate Ayurvedic principles and dietary recommendations into a variety of cultural contexts, and not all users will find them to be compelling.

Medical Concerns: Relying on a chatbot for Ayurvedic treatments instead of consulting a trained physician could potentially cause a delay in the diagnosis or treatment of severe medical disorders for users with major health difficulties.

7. Future Scope:

Assimilation of Diagnostic Instruments: The chatbot could be coupled with real-time health data-producing health monitors or diagnostic technologies to increase accuracy. This could aid in providing

recommendations that are more accurate given the user's current health status.

Telehealth Services: By allowing users to book appointments with Ayurvedic doctors, telehealth features could help close the gap between automated recommendations and medical attention, providing a more complete range of health services.

Adaptive Learning Algorithms: By using machine learning algorithms that pick up on user interactions, chatbot recommendations can be refined over time to more closely match user needs.

Cross-disciplinary Approaches: By incorporating knowledge from both traditional and modern medicine, the chatbot's knowledge base may be expanded and users can be provided with a more comprehensive approach to wellbeing.

Improvements to Privacy and Security: Data privacy and security should always be the first priority for any application that handles personal health information. Subsequent iterations may integrate sophisticated security protocols to safeguard user information.

Feedback channels: Ensuring that users have reliable feedback channels to report on the efficacy of the advise they receive can aid in improving the accuracy and relevance of the chatbot.

Ayurvedic Database Expansion: By adding the most recent Ayurvedic research and discoveries to the chatbot's database on a regular basis, the quality and range of advise it offers will be improved.

Improving the chatbot's language and cultural sensitivity to make sure it recognises and honours the subtle differences between other cultures and eating customs is known as cultural sensitivity training.

Partnership with Healthcare Providers: Including Ayurvedic practices into mainstream healthcare and verifying the chatbot's recommendations could be facilitated by forming partnerships with hospitals and healthcare providers.

The Prakriti chatbot can develop into an even more useful tool for promoting health and wellness by resolving these issues and considering its potential in the future. This will allow it to remain faithful to Ayurvedic principles while embracing the advantages of contemporary technology.

Conclusion:

Our Prakriti chatbot, which combines modern artificial intelligence with traditional Ayurvedic wisdom, is an example of how technology may be creatively applied to promote personal health and wellness. The chatbot breaks traditional limits by providing individualised guidance based on the age-old Ayurvedic principles, customised to each person's constitution, and available in several languages to serve a worldwide audience seeking holistic well-being.

The chatbot's ability to adjust to the distinct cultural and linguistic contexts of its users has been evident throughout its development and implementation. This ensures that the traditional advantages of Ayurveda are not obscured and are instead improved and made applicable to the diverse global community of today. Its multilingualism, especially in Hindi, Marathi, and English, increases its influence and makes it more accessible, allowing for a more inclusive approach to wellness and health guidance.

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