Extraction Of Ayurveda Herbs and Benefits By Using Deep Learning Algorithm

DR K. NAVAZ[1], B.MOUNISHA[2], G.NAGALAKSHMI[3], V.NIKHIL SAI TEJA[4], P.PRATHAP[5]
Professor, student, Department of CSE, AITS, Tirupati

Abstract
 Ayurveda, yoga, unani, siddha, and homeopathy are some of India's traditional medicinal systems. Ayurveda is effective in healing ailments without causing adverse effects. Medicinal plants or herbs are regarded as a valuable resource for satisfying people's healthcare needs. It is necessary to preserve and digitise information regarding this therapeutic knowledge. The ability to understand the semantics of document content is essential for assuring the quality of content retrieval in the form of unstructured textual data, there have been a huge number of publications and articles on ayurveda research.
Keywords: Ayurveda Herbs Images and details, Deep Learning, CNN, Densent121, Resnet50

Introduction

Ayurveda is a traditional Indian medical system that has been practised since 2000 B.C. Ayurveda is the Sanskrit word for "life science." Ayurveda is a system of medicine derived from nature. Over a thousand years of research, experimentation, and documentation of hundreds of plants, India's ancient sages have arrived at reliable findings on the efficacy of various plants and herbs. Although Ayurveda's efficacy for a range of human problems is well known in and around India, much of the rest of the world is unaware of the benefits that this unique Indian system of medicine may provide. The majority of ayurvedic medications have no negative side effects or reactions. Many internal problems that are deemed stubborn and incurable in other systems of medicine can be treated rationally with Ayurveda. Ayurveda views life as a blend of senses, mind, body, and soul. As a result, it is apparent that Ayurveda is not confined to body or bodily ailments, but also encompasses spiritual, mental, and social well-being. Vata, Pitta, and Kapha are three basic mind-body types or doshas in Ayurveda, and they represent diverse combinations of the five elements: ments air, ether, fire, water, and earth. They are more likely to develop anxiety, asthma, heart illness, nervous system issues, rheumatoid arthritis, and skin problems if vata dosha is the predominant life force. They are more likely to develop: Anger and bad emotions, Crohn's illness, heartburn a few hours after eating, high blood pressure, and infections if pitta dosha is the predominant life force. They are more likely to develop asthma and other lung illnesses, cancer, diabetes, nausea after eating, and obesity if the kapha dosha is the dominant life force. One is healthy when these aspects are in balance. All disorders are excesses of one or more of these elements, and illness is defined as an imbalance of these elements. Ayurveda is a system of natural medicine that uses nature's power to bring people back into balance. The vast amount of data produced everywhere in today's digital world has resulted in a data-intensive world. The internet connects people all over the world, allowing for data sharing, a wide range of contact, and worldwide communication. Every person, as well as practically all businesses and procedures, generates data. This textual data is all around us, and it's developing at a tremendous pace.

1.Related Work

The availability of suitable datasets is a critical aspect for the successful application of deep learning algorithms in the extraction of Ayurveda herbs and their benefits. Some related works on dataset creation for this task include:

Ayurvedic Herb Dataset for Deep Learning-based Classification" by S. Raju and S. Varghese. This paper presented a dataset of Ayurvedic herbs consisting of 22 classes and over 500 images. The dataset was used for the identification of Ayurvedic herbs using a deep learning-based approach. This paper presented a dataset of Ayurvedic medicinal plants consisting of 16 classes and over 800 images. The dataset was used for the identification of Ayurvedic medicinal plants using a deep learning-based approach.

2. Algorithm
Step 1: The input is taken in two ways- Using camera and the images.
Step 2: The front and back side of the leaves are scanned using a scanner that has the maximum possible resolution. These images are stored in leaf image dataset.
Step 3: These images are pre-processed. The dimensions of the images in the dataset are set to the required size.
Step 4: Now the pre-processed dataset is divided into testing and training dataset.
Step 5: Training data set is now driven as input to the Convolutional neural network.
Step 6: The output of the CNN layer along with the testing dataset is provided as input for the performance assessment. In this step the accuracy and loss of the model and validation set is considered, the accuracy and loss graphs are plotted accordingly using confusion matrix.
Step 7: The image i.e., the result of the output layer of convolutional neural network is displayed.

3.Design:
As for the benefits of Ayurvedic herbs, they can vary depending on the herb and its properties. Some herbs have anti-inflammatory properties, while others can boost immunity, improve digestion, and reduce stress and anxiety. It's important to consult with a qualified Ayurvedic practitioner or healthcare professional before using any herbal remedies, as some herbs can interact with medications or cause allergic reactions.

4. Result:
Ayurveda is an ancient system of medicine that has been practiced in India for over 5,000 years. It uses natural herbs and remedies to treat various health conditions and promote overall wellness.These are just a few of the many Ayurvedic herbs that are used to promote health and wellness. As with any herbal remedy, it's important to consult with a healthcare professional before starting a new regimen.

Table : Performance of the training and validation accuracy

S.NO	Model accuracy	Validation accuracy
1	0.178	0.444
2	0.436	0.600
3	0.557	0.665
4	0.620	0.739
5	0.682	0.772
6	0.701	0.784
7	0.748	0.796

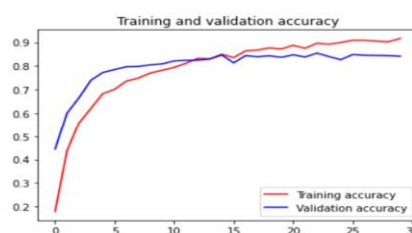Table 1: Epoch vs model accuracy and validation accuracy

Fig 1 : epoch vs accuracy graph

5. Conclusion:

In this project we have successfully classified images of Identification of Ayurveda Herbs Classification and its properties to use for diseases. how to use for medical purposes with the help of deep learning and Transfer learning methods like CNN, Densnet121, Resnet50.

Ayurveda is a traditional system of medicine that originated in India thousands of years ago. It makes use of various herbs and natural substances to promote health and wellbeing. Ayurvedic herbs are extracted from various parts of plants such as leaves, stems, flowers, roots, and seeds. These herbs are believed to have numerous benefits for the human body.

Some of the most commonly used Ayurvedic herbs include Ashwagandha, Turmeric, Triphala, Brahmi, Tulsi, Neem, and Amla. These herbs are known to possess various medicinal properties such as anti-inflammatory, anti-bacterial, anti-fungal, and anti-viral. They also contain antioxidants that help protect the body from harmful free radicals.

6. References:

1. A. Camargo and J.S. Smith, "An image-   processing based algorithm to automatically identify plant disease visual symptoms," Biosystems Engineering, vol.102, pp.9–21, January 2009.

2. J.S. Cope, D. Corney, J.Y. Clark, P. Remagnino, and P. Wilkin, "Plant species identification using digital morphometrics: A review," Expert Systems with Applications, vol.39, pp.7562–7573, June 2012.

3. J. Garcia and A. Barbedo, "Using digital image processing for counting whiteflies on soybean leaves," Journal of Asia-Pacific Entomology, vol.17, pp.685–694, December 2014.

4. A. Gongal, S. Amatya, M. Karkee, Q. Zhang, and K. Lewis, "Sensors and systems for fruit detection and localization: A review," Computers and Electronics in Agriculture, vol.116, pp.8–19, August 2015.

5. I. Goodfellow, Y. Bengio, and A. Courville, Deep Learning, MIT Press, 2016.

6. J. Hemming and T. Rath, "Computer-vision-based weed identification under field conditions using controlled lighting," Journal of Agricultural Engineering Research, vol.78, no.3, pp.233–243, March 2001

7. S. Ji-Yong, Z. Xiao-Bo, Z. Jie-Wen, W. Kai-Liang, C. Zheng-Wei et al., "Nondestructive diagnostic of nitrogen deficiency by cucumber leaf chlorophyll distribution map based on near infrared hyperspectral imaging," Scientia Horticulturae, vol.138, pp.190–197, May 2012.

8. A. Krizhevsky, I. Sutskever, and G. E. Hinton, "Imagenet classification with deep convolutional neural networks," Proceedings of 25th Advances in Neural Information Processing Systems (NIPS 2012), pp. 1097– 1105,2012.

9. C. Leksomboon, Plant Disease and Diagnosis, Kasetsart University Press, 2011 (in Thai).

10. P. Li, S.H. Lee, and H.Y. Hsu "Review on fruit harvesting method for potential use of automatic fruit harvesting systems," Procedia Engineering, vol.23, pp.351–366, 2011