AI-powered Nutrition Analyzer for Fitness Enthusiasts

Introduction

The main aim of the project is to building a model which is used for classifying the fruit depends on the different characteristics like colour, shape, texture etc. Here the user can capture the images of different fruits and then the image will be sent the trained model. The model analyses the image and detect the nutrition based on the fruits like (Sugar, Fibre, Protein, Calories, etc.).

Litrature Survey

S.No	Author	Title	Objective
1.	Praveen Chopra et al. (2022)	ProgressiveSpinal Net architecture for FC layers	In this paper the ProgressiveSpinalNet progressive computational network for FC layers of deep-networks is introduced as an upgraded version of the DNN concept.
2.	H M Dipu Kabir et al. (2022)	SpinalNet: Deep Neural Network with Gradual Input [2]	In this research, the SpinalNet DNN model was introduced. The chordate nervous system, which has a special way of connecting a lot of sensing data and making local decisions, is mimicked in the construction of

			SpinalNet.
3.	Mirra K B	Classification of Fruits Using Deep Learning Algorithms [3]	In this study a deep learning-based system for classifying fruits is suggested. A DCNN model, an AlexNet model, and a MobileNetV2 model were investigated in the proposed framework. Three datasets with different sizes and levels of complexity were used to test the recommended framework.

4.	Feras Albardi et al (2021)	A Comprehensive Study on Torchvision Pre-trained Models for Fine-grained Inter-species Classification	This study attempts to investigate various pre-trained models provided in the PyTorch library's Torchvision package. And look into how well they can classify fine-grained photos.
5.	Nguyen Vuong Thinh et al (2021)	Fruits classification by using machine learning - An experiment using popular approaches on local data	In this paper, we examine the methods for classifying images that can be used to categorise fruits. The study's findings can be used to place fruit on the correct shop shelves, spot fruit mismatches there, or check fruit prices without using a barcode scanner. Three well-known classification models—Random Forest, K-Nearest Neighbors (KNN), and Support Vector Machine—are employed in this study (SVM).

6.	Haci Bayram Ünal et al. (2021)	Fruit Recognition and Classification with Deep Learning Support on Embedded System (fruitnet)	This suggested study employs image processing techniques for fruit recognition. Convolutional Neural Networks (ConNN)* deep learning model for classification is created in the study. The Keras platform was used to construct the suggested model.
7.	Marieke van Erp et al. (2021)	Using Natural Language Processing and Artificial Intelligence to Explore the Nutrition and Sustainability of Recipes and Food	According to this paper's point of view, interdisciplinary approaches should be used to address food and recipe research in order to address health and sustainability issues. These approaches should combine NLP and other AI techniques with historical food research, food science, nutrition, and sustainability expertise.
8.	Mehenag Khatun et al. (2020)	Fruits Classification using Convolutional NeuralNetwork	This study investigates a CNN-based classification of fruits. For five scenarios utilising the fruits-360 dataset, the accuracy and loss curves were created using various combinations of hidden layers. This paper discusses several

			computer vision-based approaches and algorithms for fruit recognition and classification.
9.	Siyuan Lu et al. (2016)	Fruit classification by HPA-SLFN	In this study, we introduced a brand-new fruit classification method called HPA-SLFN. The findings indicated that HPA-classification SLFN's accuracy of 89.5% was superior to those of other classification techniques.
10.	Ghulam Muhammad et al. (2015)	Date fruits classification using texture descriptors and shape-size features [10]	In this study a suggested technique breaks down a visual image of a date into its component colours. The local texture descriptor, such as a Weber local descriptor (WLD) histogram or a local binary pattern (LBP), is then applied to each component in order to encode the texture pattern of the date. To characterise the image, the texture patterns from each component are combined.

References:

[1] Muhammad, Ghulam. "Date fruits classification using texture descriptors and shape-size features." Engineering Applications of Artificial Intelligence 37 (2015): 361-367.

[2] Lu, Siyuan, et al. "Fruit classification by HPA-SLFN." 2016 8th International Conference on Wireless Communications & Signal Processing (WCSP). IEEE, 2016.

[3] Khatun, Mehenag, et al. "Fruits Classification using Convolutional Neural Network." GRD Journals-Global Research and Development Journal for Engineering 5.8 (2020).

[4] Ünal, Haci Bayram, et al. "Fruit recognition and classification with deep learning support on embedded system (fruitnet)." 2020 Innovations in Intelligent Systems and Applications Conference (ASYU). IEEE, 2020.

[5] Thinh, Nguyen Vuong, et al. "Fruits classification by using machine learning-An experiment using popular approaches on local data." 2021 IEEE International Conference on Machine Learning and Applied Network Technologies (ICMLANT). IEEE, 2021.

[6] Albardi, Feras, et al. "A comprehensive study on torchvision pre-trained models for fine-grained inter-species classification." 2021 IEEE International Conference on Systems, Man, and Cybernetics (SMC). IEEE, 2021.

[7] KB, Mirra, and R. Rajakumari. "Classification of Fruits Using Deep Learning Algorithms." Available at SSRN 4068366.

[8] Chopra, Praveen. "Progressivespinalnet architecture for fc layers." arXiv preprint arXiv:2103.11373 (2021).

[9] Kabir, HM Dipu, et al. "Spinalnet: Deep neural network with gradual input." IEEE Transactions on Artificial Intelligence (2022).

[10] Van Erp, Marieke, et al. "Using natural language processing and artificial intelligence to explore the nutrition and sustainability of recipes and food." Frontiers in artificial intelligence 3 (2021): 621577.