

NutriFact For Fitness Enthusiasts

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Abstract— Nutrition is very important for human life in maintaining health. Health is a main concern for our life than others. Nowadays there are many nutrition analysis tools for people to understand more about food and its values. From any place, people can explore nutrition values and maintain daily food habits as a healthy diet. NutriFact is an application for the analysis of nutrient content in fruits like apples, bananas, oranges, pineapples, and watermelons. The dataset is created for the five fruits. The dataset consists of a variety of images of the same fruit taken under separate folders for training the model. This project is developed by using an artificial intelligence-based nutrition analyzer. Google Colab is used for building the model for the analysis of an image. To display nutrition content, the database for each fruit is created using SQLite. For integration purposes, we have used the Flask application in pycharm. The main aim of the project is to classify the nutrient content based on fruit images as user input. Convolution neural network algorithm is used for analyzing purposes. The convolution neural network has four layers. Each layer performs a separate operation for the analysis of a single image. NutriFact website gives the nutrient content like Fruit Name, Serving Size, Energy, Fat, Potassium, Carbohydrates, Saturated Fat, Mono-unsaturated Fat, Poly-unsaturated Fat, Energy, Protein, Sugar, and Sodium.

Index Terms— Convolution Neural network, dataset , nutrition, image preprocessing, NutriFact

I. INTRODUCTION

The technique of finding out a food's nutritional content is called nutrition analysis. It is a crucial component of analytical chemistry that offers details on the chemical composition processing, quality assurance, and contamination of food. Food is vital to human life and has been a topic of discussion at numerous medical meetings. These days, additional chances exist to assist people in understanding their daily eating habits, exploring nutrition patterns, and maintaining a balanced diet according to new dietary assessment and nutrition analysis technologies. A fruit dataset lists several fruit images, including those of an apple, banana, orange, pineapple, and watermelon. Analyses reveal the fruit's nutritional content. A convolutional neural network can be used for the analysis. A convolution layer, a pooling layer, a flattening layer, and a fully linked layer are its four layers. The user uploads the image and works with the user interface. The input image is then sent to our Flask application, where we will classify the result and display it on the UI with the help of the model we built. The output will be predicted by the Pycharm and displayed with a nutritional value. Data collecting, the image processing, building models, and application development are the phases involved in this process. The trainset and testset images for our model's training can be found in the dataset folder.

II. RELATED WORK

The categorising of fruits is done automatically in the current system. With the aid of a standard camera, a dataset made up of five distinct fruits was created. In order to identify the classifier that provides the highest level of accuracy, all the fruits were analysed for their colour, shape, and texture. Calculating texture characteristics makes use of GLCM. Support vector machines have the best accuracy. International Conference on Latest Trends in Science, Engineering and Technology (ICLTSET'23) on May 5&6, 2023 organized by Karpagam Institute of Technology, Coimbatore Matlab was used for all of the processing. Recent years have seen a surge in intelligent systems due to advancements in the field of cameras and sensors. The basic goal of these systems is to explain and interact with an image in the same way that people do, that is, by understanding the symbolic meaning of images with the use of statistics, models, and geometry. The primary objective of this research is to use machine learning approaches to classify fruit images in order to automatically recognise them based on their characteristics..

III. THE PROPOSED MECHANISM

An method based on convolution neural network has been used for fruit detection and classification. In this case, we train a neural network to recognise fruits using a highquality, fruit-containing image dataset. Using a selected search method, the image portions are located. In today's world of innovation, computer vision is one of the most widely used technologies. Deep neural networks deliver more accurate outcomes than other machine learning algorithms, according to the testing findings. For fruit recognition, this model and architecture work well together. Fruit recognition from images is done using a deep neural network as part of an artificial intelligence and machine learning method. DNN has higher efficiency than other machine learning methods. The most popular algorithm in DNN, convolutional neural network, works well for visual identification including photo and video, face recognition, and handwritten digit recognition. CNN operates at a level of efficiency that matches human perfection. Another deep learning algorithm, the ANN, has a similar design to CNN. Each layer in an ANN has many neurons, and all of the neurons are not entirely connected; rather, they are connected locally as a component of the receptive field. The cost function is generated in addition for training objectives

IV. PERFORMANCE EVALUATION

The start menu's anaconda prompt can be accessed there. Navigate to the folder where your app.py is located and run app.py . The localhost URL will display the local host where the application is now running.Copy the localhost URL causes it to be opened in the browser. It does navigate to the website and displays it. The user can enter values, select the classify button, and view the result onscreen. Later, it will execute at localhost:5000. Go to localhost and press submit to see the results.



Fig.1 Output

FRUIT	SERVING	ENERGY	FAT	SATURATED_FAT	MONOUNSATURATED_FAT	POLYUNSATURATED_FAT	CARBOHYDRATES	SUGAR	FIBRE	PROTEIN	SODIUM	CHOLESTEROL
1 Apple	100 g	218 KJ	0.17 g	0.028 g	0.007 g	0.051 g	13.81 g	10.39 g	2.4 g	0.26 g	1 mg	0 mg
2 Banana	100 g	372 KJ	0.33 g	0.112 g	0.032 g	0.073 g	22.84 g	12.23 g	2.6 g	1.09 g	1 mg	0 mg
3 Orange	100 g	197 KJ	0.12 g	0.015 g	0.023 g	0.025 g	11.75 g	9.35 g	2.4 g	0.94 g	0 mg	0 mg
4 Pineapple	100 g	201 KJ	0.12 g	0.009 g	0.014 g	0.042 g	12.63 g	9.26 g	1.4 g	0.54 g	1 mg	0 mg
5 Watermelon	100 g	126 KJ	0.15 g	0.016 g	0.037 g	0.05 g	7.55 g	6.2 g	0.4 g	0.61 g	1 mg	0 mg

Fig.2 Database Schema

Table 1. PERFORMANCE EVALUATION

Test case ID	Test case ID	Test case ID	Test case ID
Model Building_TC_OO1	Training andTesting	Python	Verify whetherthe image prediction is proper or not
Backend_TC_OO2	App Configuration	Python	It will get data from front end andprocess it
Frontend_TC_OO3	UI	Home page(user),user input Page,image prediction page page,about us page	user can give inputas jpg,jpeg,png format and display output

V. CONCLUSION

NutriFact website help others to create awareness for the fitness enthusiasts and created successfully using pycharm and image input is accepted and it does image preprocessing using convolution layers and predict the output .It will display the name of fruit that we give as image input and its nutritional facts. User can know more details and get quality information from our website. It helps in maintaining health and fitness. NutriFact is understandable to all people so anyone can use this.It is very simple and easy to use. Users will definitely enjoy this application and know more interesting facts about fruits. In future the feedbacks are asked from users to meet their expectations like additional features such as BMI calculation, daily calorie intake calculator various features. In future the nutrition chatbot will be used. It can have various type of input such as speech recognition, image input, input as name and will give output in form of voice or text. It analyzes according to the bowl size. We will try to take the disadvantages as the challenges and make it possible in the upcoming creation.

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Authors Profile



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