Ideation Phase
Literature Survey

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Team ID	PNT2022TMID21658
Project Name	AI-powered Nutrition Analyzer for Fitness Enthusiasts
Maximum Marks	4 Marks

AI-powered Nutrition Analyzer for Fitness Enthusiasts

Abstract:

Food is essential for human life and has been the concern of many healthcare conventions. Nowadays new dietary assessment and nutrition analysis tools enable more opportunities to help people understand their daily eating habits, exploring nutrition patterns and maintain a healthy diet. Nutritional analysis is the process of determining the nutritional content of food. It is a vital part of analytical chemistry that provides information about the chemical composition, processing, quality control and contamination of food. 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.)

Litreature Survey:

- Using image processing technique the agriculture field and food science field is increasing day by day. The image features are shape, colour and texture which is used to classification and calorie estimation of fruits. This paper proposes an algorithm for fruit recognition and its calorie estimation based on the shape, colour and texture along with the histogram of gradients and GLCM with the local binary pattern algorithms for texture segmentation scheme recognizing the fruits and area, major axis, minor axis, minor axis is calculated by using the shape feature to get more accurate calorie value. With the help of nutritional look up table these features are fed to multi SVM classifier for accurate classification, real time database and pretend plastic fruit databases of MATLAB used for evaluation. Results obtained are very close to real calories of the fruit.

- Emerging food classification methods play an important role in food recognition applications. For this purpose, a new recognition algorithm for food is presented, considering its shape, colour, size, and texture characteristics. Using various combinations of these features, a better classification will be achieved more importantly. At the classification step the support vector machine method is engaged which leads to better results. Support vector learning is based on simple

ideas which originated in statistical learning theory. Supported by our simulation results, the proposed algorithm recognizes food categories with an average approval recognition rate of 92.6%.

- A variety of sensors are used to assess the quality of fruits and vegetables based on different parameters. Estimating the freshness of the given fruit by finding edibility using sensors. The inner quality of the watermelon is detected using acoustic impulse response. The detection of quality and grading based on tissue using laser-induced fluorescence. The fruits and vegetables are evaluated for freshness detection using ultrasonic technology. Using image processing and deep learning strategy for detecting the mellowness of dragon fruit. A method for identifying and classifying given mango fruits using image processing techniques. With the use of image processing techniques to determine the nature of the given fruit or vegetable and the diseases associated with it. Applying various image processing techniques for fruit quality assessment and these methods will be using different factors such as nutrition value, flavour, aroma, etc., in grading the fruit and this process will also reduce the human involvement in assessing the fruit. Usage of image processing and computer vision in extracting the diverse types of features, and also explained different functional models for classifying the fruits. Evaluating the quality of the given food image through computer machine vision by using image segmentation. An Inspection system for grading the given tomatoes using image processing. An application for food recommendations for users by evaluation received from the users using the AD-Net algorithm.
- A computer vision method is used to evaluate the quality of a fruit or vegetable from a given image. Methods for identifying the quality of fruit by employing non-destructive techniques and grading them. The quality of the orange is detected using a machine learning algorithm-SVM. Prediction of the quality of kiwifruit based on the firmness using ANN and linear regressions. An image processing method for grading fruits and vegetables using various machine learning algorithms is presented and explained along with its effectiveness. Android Application for finding whether the fruit is ripened naturally or artificially. By utilizing image processing, designing an application that counts calories based on the features obtained from the given image. The use of an ANN-based technique for measuring vegetable quality.

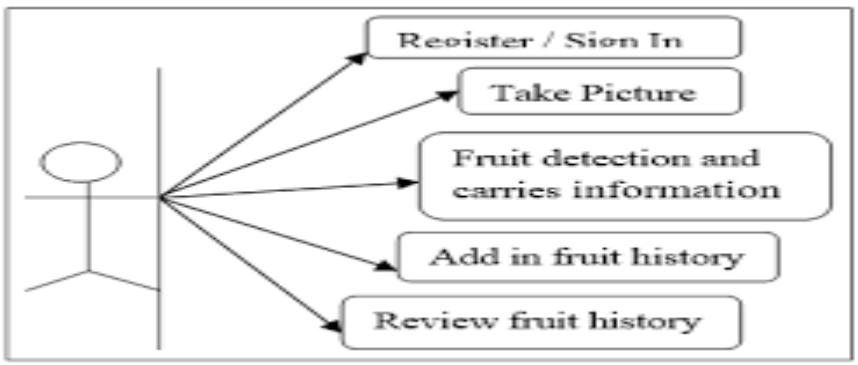

FIGURE 1: Dataflow diagram for Nutrition Analyzer for fitness enthusiasts

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