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Name of the Supervisor: Dr XSA, Professor,
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Introduction

Objective of your work

In this project, I have developed to measure the calories and nutrition of the food based on the image of food.

Origin of your proposal

This system proposes a effective way to measure and manage daily food intake of patients and dietitians. The system will take the images of food and using image processing, segmentation and classification it calculates the nutrition and calorie content in the food..

Methods

Methods and Materials

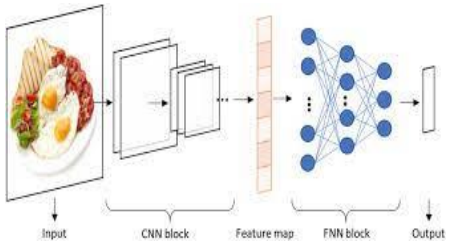
The problem can be simply stated as, given a set of food images with calibration object thumb with the food name and an unlabeled set of food images from the same group of food, identify food and estimate food volume and calories intake.

Fruits	Calorie	Estimated Calories
Apple	53.96	40.42
Banana	170.88	188.81
Carrot	31.16	26.28
Cucumber	29.44	37.65
Onion	44.88	37.13

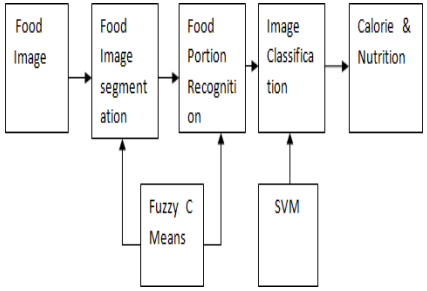
Block Diagram, Flowchart, Models, Results

Food Recognition deals with recognition of food item when given an image. For this problem I used Convolutional Neural Network (CNN). The Architecture of CNN given below figure

Figure 1

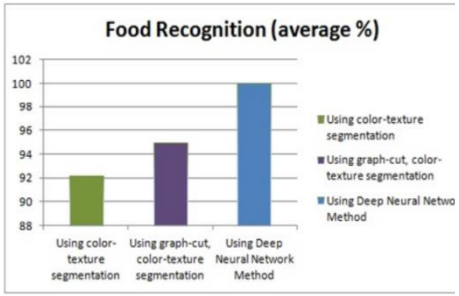


The methodology consist of two main parts first one is segmentation using fuzzy c means and second one is classification by SVM. These important steps are described below, Segmentation is a process of extracting and representing information from an image is to group pixels together into regions of similarity Segmentation subdivides an image into its constituent regions or objects that have similar features according to a set of predefined criteria. The goal of image segmentation is to cluster pixels into salient image regions, i.e., regions corresponding to individual surfaces, objects, or natural parts of objects.



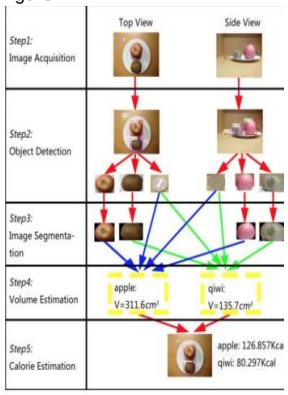
The method of approach we use is that we set our dataset loaded in the program and then our graph cut segmentation algorithm works over the present images in the dataset and differentiates the segment where the actual food part is present.

. Then, we use the convolutional Neural network for our remaining part and then predict the food present in the image and then classify each of the image with the calories of the food present. There color segmentation algorithm, graphcut algorithm has less accuracy when compared to the neural network i.e; CNN algorithm.



Segmentation is the process of partitioning a digital image into multiple segments with the aim to simplify or change the representation of the image into something that is more meaningful and easier to analyze. An adaptive thresholding is used to convert an image consisting of gray scale pixels to just black and white scale pixels.

Figure 2



Conclusion

Discussion/Conclusion

In the implementation of food recognition system based on image processing the comparative study of various software scheme is done. we proposed a measurement method that estimates the amount of calories from a food's image by measuring the area of the food portions from the image and using nutritional facts tables to measure the amount of calorie and nutrition in the food. And calorie is shown in final results with approximate value. Thus the paper is designed to aid dieticians for the treatment of obese or overweight people, although normal people can also benefit from our system by controlling more closely their daily eating without worrying about overeating and weight gain

Limitations

1) Actual weight and calories can't due to image quality
2) Lighting condition i.e pixel changes with respect to light.

Future Direction

In Future , we also implement these system by using an hardware for an calorie and nutrition measurement along with the mass. By using an MATLAB and hardware interfacing controller for measuring the mass with high megapixel camera and precision sensor to take liquid food such as milk, sauce, tea, juices and etc.

References

References

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3) Geeta shroff, asim smailagic, "Neural Network based Food Recognition and Calorie calculation for diabetes patients", diawear technical report, pp. 1-8, march, 2009