PROBLEM STATEMENT

Title : Nutrition Assistant Application

Domain : Cloud Application

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Problem Statement Description :

Due to overeating, eating certain foods, taking medicines or as a result of surgery Heartburn occurs. Changes in how food tastes ,How food tastes often determines what you like to eat. If food begins to taste different — if it becomes too sweet, too bland, bitter or metallic-tasting — your appetite can be affected. Medicines often cause these taste changes and the unhealthy food habits are being practiced or being followed now a days due to the fast moving world, It makes humans to lead a unhealthy lifestyle which leads to health issues such as being overweight or obese, tooth decay, high blood pressure, high cholesterol, heart disease and stroke, diabetes, some cancers, depression, eating disorders and so on. People need to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity. However, although food packaging comes with nutrition (and calorie) labels, it's still not very convenient for people.Here comes the way that people can use App-based nutrient application which can analyse real-time images of a meal

and detect the nutritional content which can be very handy and improves the dietary habits, and therefore, helps humans to lead a healthy lifestyle.

Solution :

This project focuses on building a web App that automatically estimates food attributes such as ingredients and nutritional content by analysing and classifying the input image of food. This project allows humans to lead a healthy lifestyle by suggesting the nutritional content of the food they're consuming.

Literature Survey :

S.NO.	Journal Paper Title	Author's Name & Year	Source	Finding

1.	Calorific value prediction mechanism using image processing and machine learning.	R.Kohila	Research Gate	The image of the food is transmitted through a mobile device and it initially undergoes segmentation with Fuzzy C-means Clustering Segmentation which fixes the cluster centre based on the group data unlike the K-means Clustering which can be erroneous if the cluster centre is not defined properly by the user. The mathematical morphology is utilized as a tool for extracting the image components and the region shape description such as erosion, dilation, opening and closing. Feature extraction is performed to retrieve interesting parts of the image and then calorie measurement is done. It has limited scalability and diversely mixed food images have not been considered.
2.	A survey on nutrition monitoring and dietary management system	Kamaks9hi Priyaa Prakash Dr L Arockiam	Research Gate	A well balanced diet with an estimated nutrient intake is vital for infants and children which reduces the risks of deadly diseases namely cancer, diabetes, obesity and cardiovascular diseases. Unlike adults, infants require some assistance in their food intake. The survey provides valuable insights about the various advancements of IoT in the healthcare industry

				and the need for nutrition and dietary monitoring. A varied number of nutrition monitoring systems for the estimation and prediction of calories have been developed using various machine learning techniques and also with advanced deep learning based techniques. A comparative view of the previous works of researchers in the recent times has been provided.

3.	Calorie estimation model based on deep learning approach	Yanchao	Science Direct	The image acquisition is done by obtaining the food image using a smartphone. The object detection is done by using Faster Region based Convolutional Neural Networks (Faster R-CNN), which includes Region Proposal Network (RPN) and an Object Detection Network. GrabCut, an image based segmentation algorithm which depends on optimization by graph cuts is used for image segmentation. Volume Estimation requires calculation of side and top views scaling factor using equations based on the shape types. Finally, calorie estimation is obtained by using the volume and density value of the food mapped using ECUSTFD dataset. The limitation in this system is that it has 20% and more mean error for the discrepancy in the estimated result when
				compared with the actual values.

4.	Enhancing cloud and Big data systems for healthy food and information systems practice (conceptual study)	Sreeramana Aithal, P.K. Paul YEAR-2017	International Journal of Scientific Research in Biological Sciences	Cloud computing may be applicable in the field of Food and Nutrition. Moreover, the paper also talks about cloud computing applications in different and diverse areas of Food Science, Nutrition and Dietetics. Further, the paper discusses some of the contemporary and future challenges to build Cloud Computing based Food Information Systems.
5.	Measuring the calories and nutrition from food images using machine learning techniques	Dr.M.Kiran	Research Gate	The images got from the mobile device are pre-processed followed by the segmentation step to extract the colour and texture features through K Means clustering. The extracted options are used for food classification using Support Vector Machine (SVM). The food portion volume measurement is done by superimposing a grid of squares onto the image segment which matches the irregular shape of the food images easily. The calorie measurement is done based on the food mass and nutritional tables. The system has limited cuisine varieties mixed food images have not been considered.