**Literature Survey**

Nutrition is very important for the growth of a human body. Nutritional Analysis ensures that the food has optimal requirement of vitamins and minerals wherein the examining of nutrition in food helps in understanding about the fat proportion, carbohydrates dilution, proteins, fiber, sugar, etc. Another thing we need to take care of is not to exceed daily calorie needs. If exceeded, we maybe end up being obese.

**Let’s now look into some of the existing solutions**

1. DeepFood: Deep Learning-Based Food Image Recognition for Computer-Aided Dietary Assessment – This paper talks about how they developed a new Convolutional Neural Network (CNN)-based food image recognition algorithm to address this problem. We applied our proposed approach to two real-world food image data sets (UEC-256 and Food-101).
2. Meal Snap Meal Snap: Magical Meal Logging for iPhone – This app estimates the calorie content by asking the user to take a picture, dial in data such as whether you are eating breakfast or lunch, and add a quick text label. However, the accuracy of calorie estimation is unstable and is heavily dependent upon the accuracy of manually entered text input from users.
3. Another App named “Eatly” simply rates the food into one of the three categories (“very healthy”, “it’s O.K.”, and “unhealthy”) using the food image taken by the user. However, the rating is actually manually performed by the app’s community of users, instead of by automated computer algorithms.
4. Jing-jing Chen, Chong-Wah Ngo, and Tat-Seng Chua. 2017. Cross-modal Recipe Retrieval with Rich Food Attributes, A single CNN architecture was proposed that takes as input an image of a food item, extracts features at different resolution levels in order to obtain fine-grained information, and predicts the ingredients, cutting method and cooking method. This triplet is then used for text-based recipe retrieval. The evaluation results showed that the additional tasks of cutting and cooking method prediction were beneficial to the ingredient prediction as well. This method was also able to find the location of each detected ingredient in the input image.
5. Puri et al. [39] employed a combination of color and texture features at different scales, which were used for training an SVM-based AdaBoost classifier for segmenting and classifying the food items on a given image. To obtain an estimation of the volume, three pictures of each dish were used (where a checker-board was also visible for scale), for which key-points were detected and matched using Harris corners and RANSAC.
6. an SVM classifier trained with color, texture, size, and shape features is used for the task of food recognition. Then, the area that each food item occupies is measured and a side photo of the same dish is used in order to calculate depth and volume information. It should be noted that users’ thumb is also visible in the images for scale assessment. Finally, the calories for each item in the image are calculated using predefined tables for food density and caloric content.