# Literature Review

**Title**           : Nutrition Assistant Application
**Domain**          : Cloud Application
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## A. Smartphone Applications for Promoting Healthy Diet and Nutrition

A variety of apps relating to diet, nutrition, and weight control are available from major smartphone platforms such as iPhone, Android, Nokia, and BlackBerry. Common techniques include providing feedback, goal-setting for healthy eating, healthy cooking, grocery or restaurant decision making, self-monitoring of energy and nutrient intake, weight tracking, and planning social support and change

**Advantages:**
Smartphone apps are likely to be a useful and low-cost intervention for improving diet and nutrition and addressing obesity in the general population. The accuracy of diet and nutrition measurements obtained using mobile devices has generally been found to be good.

**Disadvantages:**
In future work, it prospects to improve classification accuracy

## B.  Deep Learning based novel 5-layer neural network perceptron and a prediction algorithm based on Bayesian.

It is a proposed a Smart Log system based on deep learning for automated nutrition monitoring system in IoT. The proposed system is composed of a smart sensor board along with an application. Automatic Nutrition Quantification is the first step which collects the quantity of nutrient values along with the timestamp and transmits it to the cloud. The nutrient data acquisition is done using Optical Character Recognition in which the on-phone camera captures the FDA-mandated Nutritional Facts Label and the other method is by linking open source Application Program Interfaces (APIs) through barcodes. The meal prediction is done by collecting nutritional value of the leftover food along with the user's feedback on the purpose of the meal. Food Classification is done through an algorithm which is built on a Bayesian or Belief Network (BN) with constraint based method.

**Advantages:**

The prediction accuracy of Smart-Log is 98.6%.

**Disadvantages:**

Psychological monitoring mechanism is not incorporated

## C. Machine Learning based SVM classifier and LLC

It is a menu-match: restaurant-specific food logging from images. An image recognition framework based on the bag of visual words approach which extracts the base features from the images and then encoded with locality- constrained linear coding (LLC). The extracted features are pooled using max-pooling in a rotation-invariant pooling scheme. A regression based method estimates the calories and along with feature representation mapped the feature space to calories using Support Vector Regression. The approach is limited for discrete serving sizes and custom menu and is also dependent on the GPSS of food consumption. The system lacks user customization and requires cost-sensitive learning to directly minimize calorie estimation errors during the training.

**Advantages**

Automated computer vision system for logging food and robust calorie estimation

**Disadvantages:**

It lacks user customization and is GPSS dependent.

## D. Machine Learning based K Means clustering and SVM:

It is a method for measuring the calories and nutrition from food images using machine learning techniques. 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.

**Advantages:**

Img2 calories app that determines the calorie intake and estimation.

**Disadvantages:**

It lacks user customization and is GPSS dependent.