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**Nutrition assistant Application**

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**Abstract**

It can be very helpful and improve eating habits to develop app-based nutrient dashboard systems that can evaluate real-time photographs of meals and assess them for nutritional content. The health tracking platform must, like any other nutrition app, have a specific capability set as well as a number of fundamental elements that assist users in bettering their physical condition and set it apart from other apps currently on the market. Diet services can provide more than just calorie counting, food intake monitoring, and physical activity tracking. In addition, it offers food diaries, diet tracking, a health activity tracker, and diet plans for pregnancy, bodybuilding, and veganism. Even if the main goal was to design an app for a diet plan with proper nutrition, the platform must be adaptable to future changes and the addition of new features.

**Background**

Despite the fact that there are several different app, the development of app-based nutrient dashboard systems that can examine in-the-moment images of meals and evaluate their nutritional value can be highly beneficial and improve eating habits. The health monitoring platform must, like any other nutrition app, have a certain feature set in addition to a number of essential components that help users improve their physical condition and set it different from other applications already available on the market. More than only calorie counting, food intake monitoring, and physical activity tracking are available through diet programmes. It also provides diet tracking, a health activity tracker, food diaries, and diet plans for vegans, bodybuilding, and pregnancy. Even if the primary objective was to create a diet plan app with the right nutrition,

**Literature Review**

**A. Picture-to-Amount (PITA): Predicting Relative Ingredient Amounts from Food Images**

PITA, a deep learning architecture for predicting the relative amount of each ingredient in a given food image, was proposed. From a domain-driven Wasserstein loss from image-to-recipe cross-modal retrieval system, they first learn an image embedding representation. Then, using an amount prediction network, they detect ingredients from ingredient detection networks and predict amounts based on the results of the ingredient detection networks. As part of the evaluation metric and loss function, ingredient substitution groups are created to facilitate functional ingredient substitutions.

**B. Smart Log system that performs automated nutrition monitoring and meal prediction.**

The smart sensor board consisting of Piezo Electric sensors is used for nutrition quantification. The nutrient data acquisition is done using Optical Character Recognition and 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 type of food that is desired. The SR8 database available through the US Department of Agriculture website is also analysed using their API which provides a food report of associated nutrient values for a particular food item and a nutrient report which gives an extensive list of food and their nutrient values for a selected amount of nutrients. The results have been analysed by creating an AttributeRelation File Format which inputs the Waikato Environment for Knowledge Analysis (WEKA) tool which builds a better prediction model and is observed that the Bayesian classifiers provided better results.

**C. Using Deep Learning for Food and Beverage Image Recognition**

NutriNet, a novel deep learning architecture, and a pixel-level classification solution for images of fake food were created by the researchers. NutriNet was the first to recognise beverage images after being trained on a larger food image dataset with more food classes than previous works. Their work on fake-food image recognition includes the development of the first automatic system for recognizing images of fake food, and the visual similarity between fake and real food makes it useful for both fake-food experiments and real food recognition.

**Existing Solutions**

**A. Automated food recognition system that provides dietary intervention based on computer vision and machine learning**

The unique feature of the system relies in the realization of real-time energy balance with the help of network simulation. Food recognition deals with the challenges in image segmentation, classification and the volume- nutrient estimation. Food segmentation is done on the food image using Otsu’s segmentation. Feature extraction is done using Local Binary Patterns (LBP), colour, texture and Scale-Invariant Feature Transform (SFIT). Classification is done using SVM, Bag of Features and K Nearest Neighbours. Weight estimation is done by mapping the nutritional facts from the USDA dataset and then followed by metabolic network modelling

**B. NutriTrack: Android-based food recognition app for nutrition Awareness**

The researcher developed an Android-based food recognition application used as a health awareness by allowing the user to photograph food and view its nutritional content. Users are informed of their required calorie intake when the system implements the Mifflin-St Jeor method to determine daily calorie consumption. Furthermore, the researchers investigated its impact on people's health awareness regarding food nutrition using randomly selected respondents.

**Reference**

1. Nutrition-Reference-Center-https://play.google.com/store/apps/details?id=com.ebsco.nurc&hl=en\_IN&gl=US