

**MEENAKSHI COLLEGE  
OF ENGINEERING**  
**B.TECH-INFORMATION TECHNOLOGY**

**ARTIFICIAL INTELLIGENCE**

**LITERATURE SURVEY**

**Nutrition Analyzer for Fitness Enthusiasts**

**TEAM ID**

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# **AI-powered Nutrition Analyzer for Fitness Enthusiasts**

## **INTRODUCTION:**

In India, because of unhealthy food, most young people are dying due to obesity, type 2 diabetes, heart disease, high blood pressure, and stroke. Nowadays new dietary assessment and nutrition analysis tools are available. Nutritional analysis is the process of determining the nutritional content of food. This helps the fitness enthusiast to track and monitor their intake nutrition and calorie intake.

## **SOFTWARE USED:**

- IBM watson
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## **HARDWARE USED:**

- Computer

PAPERS	DESCRIPTION
<p><b>1.Base paper-</b> Pre-Exercise Nutrition: The Role of Macronutrients, Modified Starches and Supplements on Metabolism and Endurance Performance</p>	<p><b>1.AIM:</b> To prepare a Best pre-exercise meal.</p> <p><b>2.ABSTRACT:</b> Endurance athletes rarely compete in the fasted state, as this may compromise fuel stores. Thus, the timing and composition of the pre-exercise meal is a significant consideration for optimizing metabolism and subsequent endurance performance. Carbohydrate feedings prior to endurance exercise are common and have generally been shown to enhance performance, despite increasing insulin levels and reducing fat oxidation. These metabolic effects may be attenuated by consuming low glycemic index carbohydrates and/or modified starches before exercise. High fat meals seem to have beneficial metabolic effects (e.g., increasing fat oxidation and possibly sparing muscle glycogen).</p> <p><b>3.EXISTING SYSTEM:</b> Optimal endurance performance requires careful consideration of nutrient intake. Research accumulated over the last half-century has shown that the most beneficial nutritional intervention is one that can augment and preserve carbohydrate (CHO) fuel stores (muscle and liver glycogen) for late-race, high-intensity exercise. Consuming a meal in the hours preceding an event is one</p>

method for maximizing glycogen stores and potentially influencing its utilization during exercise. The aim of the following review is to examine the effects of pre-exercise macronutrient composition on metabolism and performance. Additionally, the metabolic and performance effects of consuming caffeine and beetroot juice in the hours prior to exercise will be discussed.

**4.PROPOSED SYSTEM:** Consuming a CHO-rich meal in the hours prior to endurance exercise appears to benefit performance.

Performance may also be improved, or at least does not seem to be impaired, by ingesting CHO within 60 min of exercise. High CHO food categories (breaded meat, chips, mashed potatoes, noodles, pasta, polenta, potatoes, and rice): Both dietitians and Go CARB had difficulty in estimating pasta, rice, and polenta, as demonstrated by the wide range of differences and both over- and under-estimations. Go CARB underestimated potatoes, chips, and mashed potatoes by ingesting CHO within 65 min of exercise. Low CHO food categories (beans, broccoli, carrots, salad, and zucchini): Estimation errors made by both methods were small for the zucchini category. While Go CARB overestimates salad, there was a high level of agreement with dietitians, as evidenced in the close to zero median difference and

	<p>very short whiskers. Both methods underestimated broccoli by ingesting CHO within 70 min of exercise. No CHO food categories (fish, meat): Go CARB was 100% accurate in estimating fish and meat. Finally, it has to be noted that the result for ICC among dietitians was 0.86 with 95% CI (0.78, 0.91), which implies good to excellent reliability.</p>
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## 2.Reference

**paper-**An Artificial Intelligence-Based System for Nutrient Intake Assessment of Hospitalised Patients

**1.AIM:** To propose a novel system based on Artificial intelligence for patients in hospital.

**2.ABSTRACT:**Regular nutrient intake monitoring in hospitalised patients plays a critical role in reducing the risk of disease-related malnutrition (DRM). Although several methods to estimate nutrient intake have been developed, there is still a clear demand for a more reliable and fully automated technique, as this could improve the data accuracy and reduce both the participant burden and the health costs. In this paper, we propose a novel system based on artificial intelligence to accurately estimate nutrient intake, by simply processing RGB depth image pairs captured before and after a meal consumption. For the development and evaluation of the system, a dedicated and new database of images and recipes of 322 meals was assembled, coupled to data annotation using innovative strategies. With this database, a system was

developed that employed a novel multi-task neural network and an algorithm for 3D surface construction. This allowed sequential semantic food segmentation and estimation of the volume of the consumed food, and permitted fully automatic.

**3.EXISTING SYSTEM:** The system is based on Artificial Intelligence, that accurately estimates the nutrient intake for each food type with a 15% estimation error.

**4.PROPOSED SYSTEM:** THE SYSTEM IS GET ADVANCED WITH THE CAMERA THAT WILL BE NOT ATTACHED IN THE TABLE, IN to it can be operated in hands that reduce the space to maintain and the estimation error is reduced to 10%.

### **3.REFERENCE PAPER- APPLICATION OF ARTIFICIAL INTELLIGENCE ON NUTRITION ASSESSMENT AND MANAGEMENT**

**AIM:** To implement an app on AI on nutrition assessment.

**ABSTRACT:** The Precise and Personalized medical nutrition care by assessing food and nutrient intake, nutritional evaluation. The application of AI for the provision of food services to hospitalized patients is of immense scope. This review details the various ways through which AI can be applied for the nutrition assessment. Even though commercial AI-based nutritional assessment systems are available, many do not evaluate the nutrient intake, and the data available through them were not validated. Fat Secret is a commercially available AI-based food and nutrient assessment system that can evaluate the food's calorie content. Also, the major challenge posed by such systems is the availability of locally appropriate data sets. Hence further research and validation are essential in this field.

#### **EXISTING SYSTEM:**

Nutritional status assessment of the patients can be determined by using lab tests and general and specific nutritional assessment tools such as Malnutrition Screening Tool (MST), Twenty-four-hour recall of food intake, food diary, and three-day food weighment survey are the globally accepted methods to assess food and nutrient intake of a person. These methods are time-consuming and require skilled persons to interview the patients and collect the data. They primarily rely on the memory of the person to be investigated. Hence the accuracy of the data is minimal, especially if the person is elderly or affected with diseases that can affect memory.





Earlier studies reported that the reliability of the data obtained through traditional methods might be biased due to incorrect Face recognition images will form the datasets for such systems. Similar datasets of images of different fast-food products enabled their standardization. For recipe standardization, datasets of images of food ingredients were used estimation of the food intake data. The image taken by system will be analyzed by three stages such as segmentation, recognition, and estimation of portion size.

### **PROPOSED SYSTEM:**

The major challenge for applying AI-based food and nutrient intake monitoring data is that a specific program

is not fit for all cuisines and meal patterns across the world. The regional differences in the gastronomy of the populations pose a real challenge in the development of appropriate necessary data sets for deep learning

Moreover, even within a region; the food items served to a patient differ from hospital to hospital.

Standardization

of meals served in hospitals under the same management is recommended to ease the task. In the exisiting system they have used to measure only calories available in the food but we will try to implement the measurement of nutrients available in the same food.



#### **4.REFERENCE PAPER- A FOOD RECOMMENDER SYSTEM CONSIDERING NUTRITIONAL INFORMATION AND USER PREFERENCES**

**AIM:** To create a food recommender system based on nutritional knowledge and user data.

**ABSTRACT:** The World Health Organization identifies as a major issue the overall increasing of non-communicable diseases such as premature heart diseases, diabetes and cancer been unhealthy diets an important causing factor of such diseases. In this context, personalized nutrition emerges as a new research field for providing tailored food intake advices to individuals according to their physical, physiological data, and further personal information. This paper presents a general framework for daily meal plan recommendations, incorporating as main feature the simultaneous management of nutritional-aware and preference-aware information, in contrast to previous works which lack of this global viewpoint.

**EXISTING SYSTEM:** Regarding the use of nutritional principles this paper will focus on building a nutritional recommender system that integrates principles taken from multi-criteria decision making (MCDM) approaches, optimization models. In existing system foods will be sorted into classes so it will be used a MCDM Sorting process. As far as we know, this proposal is based on research effort on the following directions:

- The development of a food recommendation model that integrates both nutritional and user preferences-related information.
- Integration of MCDM sorting processed together nutritional information-awareness within the food recommendation domain.
- The use of feedback-based user profiling methods, in the food recommendation domain.

**PROPOSED SYSTEM:** The current paper has presented a food recommendation approach focused on generating daily personalized meal plans for the users, according to their nutritional necessities and previous food preferences. The revision of the most recent related works proves that although there are several researches focused on developing computational tools for food intake advice, most of them do not directly manage both User preferences and nutritional information.

Our future research will be focused on three main directions focused on proposing direct complements to the presented work:

- The use of long-term information for the menu generation. Currently, the proposal only considers physical user information for daily nutritional Requirement calculation. In this future direction, the goal will be also the use of the previous food logs as input. for this calculation, in order to guarantee an adequate weekly-monthly food intake balance.
- The incorporation of recipe recommendations into the daily generated meal plan. Recipe recommendation has been recently study by some authors, and therefore it is necessary to integrate it into the currently presented approach focused on the simultaneous management of nutritional and preference-based information.
- The exploration of the presented approach in a group recommendation scenario. group recommendation have been recently a very active research area, which has a direct application to food recommendation. Therefore, it is necessary to extend the current proposal to be used in the group recommendation context.

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