

# **AI-POWERED NUTRITION ANALYZER FOR FITNESS ENTHUSIASTS**

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## **ABSTRACT :**

Health is a state of complete harmony of the body, mind and spirit. where the human body has been designed to resist an infinite number of changes and attacks brought about by its environments. Now a days food patterns and diet are important factors to improve the lifestyle by preventing diseases. Nutritional analysis is the process of determining the nutritional content of food. This fitness AI software is designed with personalized training regimens for each individual. It is a vital part of analytical chemistry that provides information about the chemical composition, processing, quality control and contamination of food. With the right data, reach your fitness goals faster, get personalized coaching and work with greater efficiency.

Health is the most important aspect of our life. There is nothing more crucial than health for any human being. The main purpose of this inventions is to design fitness AI software with personalized training regimens for each individual and also it allows the users to check and maintain the fitness and diet process and exercise regime, take the expert consult and connect to the respective fitness enthusiasts thus equipping them to maintain a healthy lifestyle. Also time and health are two precious assets that we don't recognize and appreciate until they have been depleted.

# LITERATURE SURVEY:

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## **1.Precision Nutrient Management Using Artificial Intelligence Based on Digital Data Collection Framework:**

### **ABSTRACT:**

Background: Nutritional intake is fundamental to human growth and health, and the intake of different types of nutrients and micronutrients can affect health. The content of the diet affects the occurrence of disease, with the incidence of many diseases increasing each year while the age group at which they occur is gradually decreasing. (2) Methods: An artificial intelligence model for precision nutritional analysis allows the user to enter the name and serving size of a dish to assess a total of 24 nutrients. A total of two AI models, including semantic and nutritional analysis models, were integrated into the Precision Nutritional Analysis. A total of five different algorithms were used to identify the most similar recipes and to determine differences in text using cosine similarity. (3) Results: This study developed two models to form a precision nutrient analysis model. The 2013–2016 Taiwan National Nutrition Health Status Change Survey (NNHS) was used for model verification. The model's accuracy was determined by comparing the results of the model with the NNHS. The results show that the AI model has very little error and can significantly improve the efficiency of the analysis. (4) Conclusions: This study proposed an Intelligence Precision Nutrient Analysis Model based on a digital data collection framework, where the nutrient intake was analysed by entering dietary recall data. The AI model can be used as a reference for nutrition surveys and personal nutrition analysis.

### **AUTHOR:**

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## **DRAWBACKS:**

Conventional FFQs are primarily designed to assess total nutrient intake or changes in intake over time [27,28,29]; however, the FFQ limits the range of foods that can be investigated as it combines food and beverages thus determining the exact amount of nutrients is less precise than other more detailed methods. It is also not possible to accurately measure absolute intakes of different food components. Moreover, FFQs require literacy and the physical ability to complete the questionnaire, and the FFQ survey can be burdensome for subjects and difficult or confusing to complete due to poor descriptions or difficult-to-understand questions. The most commonly used methods in nutrition research are the Diet Record, 24HR, and FFQ.

## **2. Smartphone Apps for Tracking Food Consumption and Recommendations: Evaluating Artificial Intelligence-based Functionalities, Features and Quality of Current Apps:**

### **ABSTRACT:**

The advancement of artificial intelligence (AI) and the significant growth in the use of food consumption tracking and recommend related apps stores have created a need for evaluation system, as minimal information is available about the evidence based quality and technology Advancement of these apps .According to our assessment , most mobile apps in the app stores do not satisfy the overall requirement for tracking food consumption and recommendations.

“Food visor” is the only app that can automatically recognise food items and compute the recommended volume and nutritional information of that food item however these features needs to be improvised in the food consumption tracking and recommendation apps. This study provides both researchers and developers with an insight into current state of the art apps and design giddiness with necessary information on essential features and software quality characteristics for designing and developing a better apps.

### **AUTHOR:**

Sabiha Samad, Fahmida Ahmed, Samsun Naher, Muhammad Ashad Kabir, Anik Das, Sumaiya Amin, Sheikh Mohammed Shariful Islam

## **DRAWBACKS:**

Each time the user wants to give a data that which type of food there are ate. If the user is forgot to give data to application. The application can't able to processes. It leads to the unproper information which make user heath worse.

## **3.A New Deep Learning-based Food Recognition System for Dietary Assessment on An Edge Computing Service Infrastructure:**

### **ABSTRACT:**

Literature has indicated that accurate dietary assessment is very important for assessing the effectiveness of weight loss interventions. However, most of the existing dietary assessment methods rely on memory. With the help of pervasive mobile devices and rich cloud services, it is now possible to develop new computer-aided food recognition system for accurate dietary assessment. However, enabling this future Internet of Things-based dietary assessment imposes several fundamental challenges on algorithm development and system design. In this paper, we set to address these issues from the following two aspects: (1) to develop novel deep learning-based visual food recognition algorithms to achieve the best-in-class recognition accuracy; (2) to design a food recognition system employing edge computing-based service computing paradigm to overcome some inherent problems of traditional mobile cloud computing paradigm, such as unacceptable system latency and low battery life of mobile devices. We have conducted extensive experiments with real-world data. Our results have shown that the proposed system achieved three objectives: (1) outperforming existing work in terms of food recognition accuracy; (2) reducing response time that is equivalent to the minimum of the existing approaches; and (3) lowering energy consumption which is close to the minimum of the state-of-the-art.

**AUTHORS:**

Chang Liu, Yu Cao, Yan Luo, GuanlingChen , Vinod Vokkarane, Yunsheng Ma, SongqingChen, Peng Hou.

**DRAWBACK:**

The experimental results on two challenging data sets using our proposed approach have demonstrated that our system has achieved the three major objectives: (1) it outperforms the results from all existing approaches in terms of recognition accuracy; (2) it develops a real-time system whose response time is close to the minimal of existing techniques; and (3) it saves the energy by keep the energy consumption equivalent to the minimum of the existing approaches.

**4. Recent advances and applications of artificial intelligence and related technologies in the food industry:****ABSTRACT:**

In current scenario most of food processing industries are majorly focusing on quality of food, nutritional value, and method of processing as the consumers are demanding for foods lined up with qualities, sensory and shelf life of the products. Emergence of technology in artificial intelligence (AI) and machine learning (ML) helps to measure the drifting issues in food processing technology. AI is an interdisciplinary promising approach for promoting performances in different areas of food sectors. Tremendous changes were carried out to solve problems to grow food industries. This review emphasises the applications of AI in dairy, bakery, beverages, fruit and vegetable industries. To advance the technology multiple strategies were used in different food sectors. Relevant literature on scope of robotics in food and beverages have been reviewed and discussed critically. Further intense research in advancing 3D printing that helps to improve food business from manufacture to servicing has been discussed with future vision.

**AUTHOR:**

Mounika Addanki a , Priyanka Patraa , Prameela Kandraa,\*

**DRAWBACK:**

Artificial intelligence application based on food nutrition where these application cannot be applicable to all the users. Because some people may have severe health

issues which the AI can't able to predict .If it predicts the problem also it is not that much efficient to the users convenient. So some times the user may not be adaptable to such technologies . the AI is fully compact with machines and technology so the use of technology is sometime it should reduce it may cause some drawbacks with human life .

## **5.Artificial Intelligence in Nutrients Science Research: A Review**

### **ABSTRACT:**

Artificial intelligence (AI) as a branch of computer science, the purpose of which is to imitate thought processes, learning abilities and knowledge management, finds more and more applications in experimental and clinical medicine. In recent decades, there has been an expansion of AI applications in biomedical sciences. The possibilities of artificial intelligence in the field of medical diagnostics, risk prediction and support of therapeutic techniques are growing rapidly. The aim of the article is to analyze the current use of AI in nutrients science research. The literature review was conducted in PubMed. A total of 399 records published between 1987 and 2020 were obtained, of which, after analyzing the titles and abstracts, 261 were rejected. In the next stages, the remaining records were analyzed using the full-text versions and, finally, 55 papers were selected. These papers were divided into three areas: AI in biomedical nutrients research (20 studies), AI in clinical nutrients research (22 studies) and AI in nutritional epidemiology (13 studies). It was found that the artificial neural network (ANN) methodology was dominant in the group of research on food composition study and production of nutrients. However, machine learning (ML) algorithms were widely used in studies on the influence of nutrients on the functioning of the human body in health and disease and in studies on the gut microbiota. Deep learning (DL) algorithms prevailed in a group of research works on clinical nutrients intake. The development of dietary systems using AI technology may lead to the creation of a global network that will be able to both actively support and monitor the personalized supply of nutrients.

### **AUTHOR:**

Jarosław Sak 1,2,\* and Magdalena Suchodolska 3

## **DRAWBACK:**

Main drawbacks is most of the application is not having the proper data and information .were It has some particular food data types which affect the human life .So people start thinking about the consequences of the issue which they are going to face . Even if it is good and healthy nutrition food they can't able to accept the reality because they are mostly some food types which affect the humans life .

## **6. Survey Paper On AI-Based Dietician:**

### **ABSTRACT:**

The awareness of good lifestyle is increasing among people these days. People tend to follow various diets and exercises. But consulting a dietician is something that everyone cannot afford. Also, consulting a dietician could be time-consuming. This research proposes an expert system method to recommend a personalized diet plan. The system consists of a recommender module that uses machine algorithms to recommend personalized diet plans based on factors such as age, gender, height, weight, allergies, and personal preferences. It first calculates the BMI and the BMR, recommends a diet plan and if the user is not satisfied with the current diet plan, it generates an alternative diet plan.

### **AUTHOR:**

Venkata Sai Prashanth , Vaishnavi Kulkarni , Thota Lokeswaranath1, Dr.Kavitha

## **DRAWBACK:**

One has to be sure about their details while entering fields like age height weight working hours and many more otherwise this system would give results that is not suitable for user if not sure about what they entered.

## **7.A Food Recommender System Considering Nutritional Information and User Preferences**

### **ABSTRACT:**

The World Health Organization identifies the overall increasing of noncommunicable diseases as a major issue, such as premature heart diseases, diabetes, and cancer. Unhealthy diets have been identified as the 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. Specifically, in the last few years, several types of research have proposed computational models for personalized food recommendation using nutritional knowledge and user data. 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 the previous works which lack this global viewpoint. The proposal incorporates a pre-filtering stage that uses AHPSort as multi-criteria decision analysis tool for filtering out foods which are not appropriate to the current user characteristics. Furthermore, it incorporates an optimization-based stage for generating a daily meal plan whose goal is the recommendation of food highly preferred by the user, not consumed recently, and satisfying his/her daily nutritional requirements. A case study is developed for testing the performance of the recommender system.

### **AUTHOR:**

RACIEL YERA TOLEDO<sup>1</sup> , AHMAD A. ALZHRANI<sup>2</sup> , AND LUIS MARTÍNEZ<sup>3</sup>

### **DRAWBACK:**

It includes an AHPSort-based pre-filtering stage for excluding those foods which are not appropriate according to the current user characteristics, being one of the first applications of the multi-criteria decision analysis in a food recommender system .



