

NUTRITION ASSISTANT APPLICATION

Project Title : Nutrition Assistant Application

Project Domain : Cloud Application Development

Faculty mentor : K.P.Sriram

Team members :

1. R.S.Divyadharshini
2. G.Abirami
3. M.Nanditha
4. V.Nithya Sri

Project usecase :

- Due to the improvement in people's standards of living, obesity rates are increasing at an alarming speed, and this is reflective to the risks in people's health. People need to control their daily calorie intake by eating healthier foods, which is the most basic method to avoid obesity.
- However, although food packaging comes with nutrition (and calorie) labels, it's still not very convenient for people to refer.
- App-based nutrient dashboard systems which can analyze real time images of meal and analyze it for nutritional content can be very handy and improve the dietary habit

EXISTING SOLUTIONS:

MY FITNESS PAL

Mobile applications that count calories, such as My Fitness Pal, are frequently employed on a daily basis. Recent research has shown that in undergraduates, calorie tracking is associated with eating disorder pathology. In the current study (N = 105 individuals diagnosed with an eating disorder), we assessed usage of My Fitness Pal to track calories. We also assessed perceptions that My Fitness Pal contributed to eating disorder symptoms and if these perceptions were associated with eating disorder symptoms. We found that a substantial percentage (~ 75%) of participants used My Fitness Pal and that 73% of these users perceived the app as contributing to their eating disorder. Furthermore, we found that these perceptions were correlated with eating disorder symptoms. This research suggests that My Fitness Pal is widely used in an eating disorder population and is perceived as contributing to eating disorder symptoms. Further research is needed to clarify the role calorie tracking applications play within a sample of individuals with eating disorders. It can be tailored to fit the needs of anyone with specific and/or doctor/dietitian-recommended requirements. MyFitnessPal's community aspect basically consists of a forum, where other fellow users of the app are free to exchange tips and advice, as well as to create relationships through sharing personal experiences or struggles. MyFitnessPal has more than 350 exercise stored in its database, and it shows how much each person burns during each activity, based on their specific height, weight, and gender. It includes most cardio and strength training workouts, as well as yoga and Pilates. The free application is available for Blackberry, Android, Windows, and the iPhone.

NUTRI ASSISTANT

NutriAssistant dedicates itself to the development of software in the cloud, with connection to web and mobile applications, for Professionals and any other Users. NutriAssistant is a work tool that is designed to be used by a trained nutrition Professionals. That software, NutriAssistant, enables the simplification of complex tasks, such as management and analysis of nutritional information of the Professions' clients. We consider 46 macro and micro nutrients as well as allergies and religious preferences. With NutriAssistant the Customer can plan, analyze and create professional grade weekly meal plans. NutriAssistant can generate meal plans and recipes automatically, based on parameters submitted by the User. However, NutriAssistant cannot provide medical or health advice, dietary recommendations, or produce diagnosis for any patients. It is the responsibility of the User that the use of NutriAssistant meet the local dietary, health and other regulations.

With NutriAssistant the Customer can plan, analyze and create professional grade weekly meal plans. If the User generates any kind of nutrition-related document in NutriAssistant, including meal plans, recipes, reports, and food analysis. NutriAssistant is not liable for any adverse effects, issues, or complications any patient or client may experience after implementing a meal plan or recipe created by using NutriAssistant in their lifestyle. NutriAssistant will endeavor to keep all nutritional facts, including nutrient data, recipe and diet information as accurate and up-to-date as possible. NutriAssistant will not be responsible for generating any meal plans or recipes that contain allergens the User wishes to avoid. Recipes and Menus that are created or amended by the User are owned by the Company.

TECHNICAL AND RESEARCH PAPERS:

PERSONALIZED DIETARY ASSISTANT ^[1]

As the Internet gains dominance as the primary source of information in the daily life of people, it is naturally among the first places one would start looking for such information, although numerous online sources have been shown to lack accuracy considering dietary guidelines. Nowadays, there are numerous types of diets that aim to improve the quality of life, health and longevity of people. However, these diets typically involve a strictly planned regime, which can be hard to get used to or even to follow through at all, due to the sudden nature of the change.

In this paper, the framework for an Intelligent Space application is proposed that helps its users to achieve a healthier diet in the long term by introducing small, gradual changes into their consumption habits. The application observes the daily nutrition intake of its users, applies data mining in order to learn their personal tastes, and educates them about the effects of their current diet on their health. Then it analyzes the knowledge base to find different food or drink items that align with the perceived preferences, while also add to the balance of the daily nutrition of the users considering their physical properties, activities, and health conditions (e.g. diabetes, celiac disease, food allergies, etc). Finally, the system uses the findings to make suggestions about adding items from the consumption list, or change one item to another.

POPULAR NUTRITION-RELATED MOBILE APPS

A FEATURE ASSESSMENT^[2]

A key challenge in human nutrition is the assessment of usual food intake. This is of particular interest given recent proposals of eHealth personalized interventions. The adoption of mobile phones has created an opportunity for assessing and improving nutrient intake as they can be used for digitalizing dietary assessments and providing feedback. This study aims to analyze the main features of the most popular nutrition apps and to compare their strategies and technologies for dietary assessment and user feedback. Apps were selected from the Google Play Store for Android and the iTunes App Store for iOS based on popularity as measured by the number of installs and reviews. Results - A total of 13 apps were classified as popular for inclusion in the analysis. Nine apps offered prospective recording of food intake using a food diary feature. Food selection was available via text search or barcode scanner technologies. Portion size selection was only textual (i.e, without images or icons). All nine of these apps were also capable of collecting physical activity (PA) information using self-report, the global positioning system (GPS), or wearable integrations. Their outputs focused predominantly on energy balance between dietary intake and PA. None of these nine apps offered features directly related to diet plans and motivational coaching. In contrast, the remaining four of the 13 apps focused on these opportunities, but without food diaries.

Conclusions: The high number of installs indicates that there is a clear interest and opportunity for diet monitoring and recommendation using mobile apps. All the apps collecting dietary intake used the same nutrition assessment method (ie, food diary record) and technologies for data input (ie, text search and barcode scanner). Emerging technologies, such as image recognition, natural language processing, and artificial intelligence, were not identified

NUTRITRACK: ANDROID-BASED FOOD RECOGNITION APP FOR NUTRITION AWARENESS^[3]

The use of smartphone technology has created new opportunities for people to be aware about health and wellness using diet monitoring applications. Proliferation of such applications have been manifested in the society and that using a smartphone and mobile technology nowadays become universal. One of the emergent concerns of human life is about health and wellness. Undeniably, health and nutrition are one of the valuable aspects of life. Thus, technological innovations to help enhance and even promote health awareness is essential. With the advent of mobile computing, it is much easier to be aware of health information because of its mobility and availability. Much mobile application is being developed to serve as a tool for health monitoring and nutritional guide. Mobile applications have the ability to support health needs like detecting heart rate, classifying food, and many more. Taking advantage of technology, utilization of it hereby addresses certain issue and problems of human life, especially in health.

In this study, the researcher's attempts to design and develop an Android-based food recognition application that could be used as a health awareness tool for non-health conscious individual. The application lets the user take the photo of the food and show its nutritional contents. Implementing Mifflin-St Jeor method in determining daily calorie consumption, users shall be aware of their required calorie intake. Moreover, the researchers' have studied its effect on people's health awareness on food nutrition by the randomly selected respondents. Finally, this paper presents an analysis of the impact of the food recognition app to change people's concept of food nutrition.

DIETITIAN ASSISTANT OPPORTUNITIES WITHIN THE NUTRITION CARE PROCESS FOR PATIENTS WITH OR AT RISK OF MALNUTRITION: A SYSTEMATIC REVIEW^[4]

Shifting to models of care that incorporate delegation of nutrition care process actions to dietitian assistants could facilitate effective and efficient nutrition care delivery. This review aimed to determine if delegation of malnutrition care activities to dietitian assistants, when compared with routine nutrition care practices influences patient, healthcare and/or workforce outcomes for adult hospital inpatients with or at risk of malnutrition. Methods This review was undertaken in accordance with PRISMA guidelines, with five databases (CINAHL, Medline, PsycINFO, Embase and Scopus) searched systematically for studies published up to and including February 2020. Exclusion criteria included review articles and studies conducted in community settings.

Results - The search yielded 3431 results, with 11 studies eligible for inclusion. Across all domains of the nutrition care process, there is emerging evidence dietitian assistants may improve the delivery of nutrition care practices, patient, healthcare and workforce outcomes. Findings demonstrated various roles and scope of dietitian assistants' practice throughout the studies. Positive patient outcomes were found when dietitian assistants were part of a multi-disciplinary model of care. Conclusions Implementing delegation of components of the nutrition care process to dietitian assistants is vital in the current health climate and should be considered in a future multidisciplinary model of nutrition care. Exploration of dietitian assistant roles and opportunities are required to expand and strengthen the evidence.

REFERENCES:

- [1] B. Tusor, G. Simon-Nagy, J. T. Tóth and A. R. Várkonyi-Kóczy, "Personalized dietary assistant — An intelligent space application," 2017 IEEE 21st International Conference on Intelligent Engineering Systems (INES), 2017, pp. 000027-000032, doi: 10.1109/INES.2017.8118575.
- [2] Zenun Franco, Rodrigo & Fallaize, Rosalind & Lovegrove, Julie & Hwang, Faustina. (2016). Popular Nutrition-Related Mobile Apps: A Feature Assessment. JMIR mhealth and uhealth. 4. 10.2196/mhealth.5846.
- [3] A. B. Oca, J. M. Fernandez and T. D. Palaoag, "NutriTrack: Android-based food recognition app for nutrition awareness," 2017 3rd IEEE International Conference on Computer and Communications (ICCC), 2017, pp. 2099-2104, doi: 10.1109/CompComm.2017.8322907.
- [4] Rushton, Alita & Edwards, Anna & Bauer, Judith & Bell, Jack. (2021). Dietitian assistant opportunities within the nutrition care process for patients with or at risk of malnutrition: a systematic review. Nutrition & Dietetics. 78. 10.1111/1747-0080.12651.