LITERATURE SURVEY

SURVEY 1

S.NO:1

Name of the paper : Development of a cloud based solution for effective nutrition intervention in the management of lifestyle diseases

Published year : Mar-2014

Name of the Journal : Asian Journal of Multidimensional Research (AJMR)

Topic : Nutrition assistant application

Theme:

Due to the ignorance of healthy food habits, obesity rates are increasing at an alarming speed, and this is reflective of the risks to 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 to App-based nutrient dashboard systems which can analyze real-time images of a meal and analyze it for nutritional content which can be very handy and improves the dietary habits, and therefore, helps in maintaining a healthy lifestyle.

Author:

- Mangu P
- George
- Kalpana CA

Abstract:

A web based tool is being planned for therapeutic nutrition prescriptions in a clinical settings. The cloud based system would have the ability to calculate the nutritional requirements and to guide first line nutritional management to patients and clients automatically. Also, it serves as an electronic medical

and dietetic record, and personalized nutrition consultation approach can be planned even in the client's busy shedule. One to one approach is more simplified in the client can converse to his/ her personal dietitian at their own convenient setting. The implementation once done would invite more and more queries for personalized nutrition support rather than depending on the set menu plans as in the case of current online approaches. Authenticity of the consultant dietitian would also be ensured by the responsible team providing nutrition support.

Advantages

- Customized and easy to access user Interface.
- Can create profile with Setting goals & keeping check points with alarms.
- Individual Chat rooms with options of fixing appointments for counseling.
- Offers multiple options available as per the Nutritional assessment
- Calorie values of more than 3000+ International & Indian cuisines

Inference:

In cloud computing with its immense computation power for easily deployment of healthcare monitoring algorithms and helps to process sensed data. Cloud computing is one of the new approaches in distributed systems that can handle some of the challenges of smart healthcare in terms of security, sharing, integration and management. The wireless infrastructure based devices can collect data for long period of time. In cloud computing with its immense computation power for easily deployment of healthcare monitoring algorithms and helps to process sensed data.

SURVEY 2

S.No: 1

Title: Nutrition Assistant Application

Published year: 15 October 2021

Journal Name: User Model User-Adap Inter

Authors:

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Nadja Leipold, Mira Madenach, Monika Wintergerst, Martin Lurz, George Groh, Markus Böhm, Kurt Gedrich & Helmut Krcmar.

Abstract:

Healthy nutrition contributes to preventing non-communicable and diet-related diseases. Recommender systems, as an integral part of Health technologies, address this task by supporting users with healthy food recommendations. However, knowledge about the effects of the long-term provision of health-aware recommendations in real-life situations is limited. This study investigates the impact of a mobile, personalized recommender system named Nutrilize. Our system offers automated personalized visual feedback and recommendations based on individual dietary behaviour, phenotype, and preferences.

Theme:

The research in recommender systems has been recently interested in food recommender systems addressing, among others, nutritional health with different approaches. These systems have the potential to help users navigate the growing amount of multimedia food content while fostering healthy eating patterns. Conventional recommender systems learn the users' preferences and try to cater to

them, which might enforce recommendations for unhealthy food as well. Thus, health-aware recommender systems need to also incorporate different parameters related to taste and health into their systems. The use of nutrition assistance systems is promising since previous studies have shown that persuasive technologies can help people to eat healthier.

It is our goal to show how long-term usage of a nutrition assistance system influences the users' (a) physique, (b) nutrition behaviour, (c) system interaction and (d) system perception.

Inference:

Our *Nutrilize* system provided dietary tracking, prospective, retrospective, and perspective visual feedback, as well as personalized recipe recommendations. We investigated the changes in physique, the nutritional behaviour changes, the system interaction, and the perception of users for 34 participants (11 control, 11 3-month, 17 2-month).

Our results suggest that the system is effective in changing behaviour but struggles with high dropout due to different contextual factors. The changes in physique were minor and without clear differences between the groups due to the low sample size and short study period. As our results have shown that participants specifically appreciated the visual feedback, we suggest that recommender systems should consider visual feedback as an integral part to serve awareness, reflection on behaviour, and educational content to enhance nutrition-related knowledge.

References:

1. Achananuparp, P., Weber, I.: Extracting food substitutes from food diary via distributional similarity (2016).

2. Baecke, J.A., Burema, J., Frijters, J.E.: A short questionnaire for the measurement of habitual physical activity in epidemiological studies. Am. J. Clin. Nutr. **36**(5), 936–942 (1982).

3. Brooke, J.: SUS-A Quick and Dirty Usability Scale. Usability Evaluation in Industry, pp. 189–194. CRC Press, Boca Raton (1996).

4. Davis, C., Bryan, J., Hodgson, J., Murphy, K.: Definition of the mediterranean diet; a literature review. Nutrients **7**(11), 9139–9153 (2015).

SURVEY 3

S.No : 1

Name of the project : Nutrition research to affect food and a healthy lifespan

Published year : September 2013

Name of the Journal : An International Review Journal

Topic : Nutrition assistant application

Authors :

Dennis Bier, David M Klurfeld, Zhaoping Li, Jonathan R Mein, John Milner, A Catharine Ross, Robert Russell (Chair), and Patrick Stover,Sarah D. Ohlhorst and Emily Konopka.

Theme :

Proper nutrition offers one of the most effective and least costly ways to decrease the burden of many diseases and their associated risk factors, including obesity. Nutrition research holds the key to increasing our understanding of the causes of obesity and its related comorbidities and thus holds promise to markedly influence global health and economies. After outreach to 75 thought leaders, the American Society for Nutrition (ASN) convened a Working Group to identify the nutrition research needs whose advancement will have the greatest projected impact on the future health and well-being of global populations. ASN's Nutrition Research Needs focus on the following high priority areas: 1) variability in individual responses to diet and foods; 2) healthy growth, development, and reproduction; 3) health maintenance; 4) medical management; 5) nutrition-related behaviours and 6) food supply/environment.

Abstract :

The attainment of good nutrition depends on and economic passes the entire food supply. Plant and animal foods and their various components are the primary vehicles that provide nourishment to human beings. Nutrition is vital, not only in growth and development of humans and animals but also in the prevention and treatment of disease. Nutrition is also fundamental to the maintenance of good health and functionality. Thus, innovative nutrition research and education provide the basis for solutions to larger health-related issues, allowing individuals to live healthier, more productive lives.

The top 6 nutrition research needs cut across the entire research spectrum from basic science to health policy, from discovery to application. Specific research areas are listed under each research need. These 6 nutrition research needs are highlighted in the hope that they will prompt scientists from all disciplines to collaborate to advance these challenging research needs that have high potential for translation and public health impact.

Inference :

The multidisciplinary nature of nutrition research requires collaboration among research scientists with differing areas of expertise, many different stakeholders, and multifaceted approaches to develop the knowledge base required for establishing the evidence-based nutrition guidance and policies that will lead to better health and well-being of world populations. Proper nutrition offers one of the most effective and least costly ways to decrease the burden of chronic and noncommunicable diseases and their risk factors, including obesity.

The confidence this approach would bring to the skeptical consumer would improve adherence to weight management and disease treatment techniques and improve the chances of success for disease prevention. To realize the full positive impact of achieving good nutrition on disease prevention and the health of populations, we must have the will to invest in and support the 6 key areas of nutrition research that have been outlined above.

References :

1. Turnbaugh PJ, Ley RE, Hamady M, Fraser-Liggett CM, Knight R, Gordon JI. The human microbiome project. Nature 2007;449:804–10.

2. Huh SY, Rifas-Shiman SL, Taveras EM, Oken E, Gillman MW. Timing of solid food introduction and risk of obesity in preschool-aged children. Pediatrics 2011;127:e544–51.

3. Skinner AC, Steiner MJ, Perrin EM. Self-reported energy intake by age in overweight and healthy-weight children in NHANES, 2001–2008. Pediatrics 2012;130:e936–42.

4. Economos CD, Hyatt RR, Goldberg JP, Must A, Naumova EN, Collins JJ, Nelson ME. A community intervention reduces BMI z-score in children: Shape Up Somerville first year results. Obesity (Silver Spring) 2007;15:1325–36.

SURVEY 4

S.NO:1

- **Title:** Nutrition Assistant Application
- **Published year:** November 2017
- **Name of the paper: Healthy food and nutrition information system**
- **Journal : International journal of scientific research & Biological science**

Authors:

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Abstract:

Cloud Computing is a kind of virtualization technology based on internet. In cloud computing, central remote server plays an important role for healthy data management and applications. It offers handsome efficiency in the field of Computing as well as Information Technology for providing centralized storage, money, processing, and bandwidth. Thus regardless of the size of the institute (i.e. big or small) there is no additional requirement for the establishment of own as well separate IT infrastructure for more and higher business units. Networking Technology and Internet Technology play a vital role in the establishment of cloud computing in different settings. Today it is treated as an emerging technology among the other applied Information Science & Technology.

Theme :

The procedure and mechanism which is responsible for spreading Information Technology infrastructure with remote services is called Cloud Computing. This is a solution which is dedicated to data storage and data

sharing needs. Consumption in several factors which include time, money, technology, hardware etc. are the core benefits of Cloud Computing [1], [5],[8]. Practically, the creation of sophisticated and advanced centralized storage, memory, processing, and bandwidth based IT services is the core motto of this technology

Inference:

Informatics is an important domain dealing with several information jobs using not only manual knowledge organization tools but also automated or computational tools. Informatics has various foci. And it has also many domain dependencies or clearly concentration with other domains which results in the creation of many other domain

References:

[1] Aarts, J., Peel, V., & Wright, G. (1998). Organizational issues in health informatics: a model approach. International journal of medical informatics,52(1), 235-242.

[2] Friede, A., Blum, H. L., & McDonald, M. (1995). Public health informatics: how information-age technology can strengthen public health. Annual review of public health, 16(1), 239-252.

[3] Haux, R. (1997). Aims and tasks of medical informatics. International journal of medical informatics, 44(1), 9-20.

SURVEY 5

S. No. 1

Title: Nutrition Assistant Application

Name of the journal: JMIR mHealth and uHealth

Published year: August 2016

Author:

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- MSc; Rosalind Fallaize2, PhD..,
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- Faustina Hwang1, PhD.,

Abstract:

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. In the last few years, hundreds of nutrition-related mobile apps have been launched and installed by millions of users. Objective: 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. Methods: Apps were selected from the two largest online stores of the most popular mobile operating systems—the Google Play Store for Android.

Theme:

There is a general focus on weight loss and calorie counting,with the majority of apps containing either calorie or weight inthe title. It is important to note that nutrition assessment shouldnot be related only to weight loss to target obesity, althoughthis might be one of the main motivations for using nutrition-related apps. Ideal weights are not suggested to theusers, but are sometimes required as inputs. The target date forreaching a specific weight is also entered by the user. However,if used without professional recommendation, this may misleadthe users to begin unhealthy diets or trigger an eating disorder[11,12]. Although integration of food diaries and some types of PA monitoring have been successful, personalized nutritionadvice is limited. The innovative feature of sharing results withhealth professionals might be a possible strategy for achievingpart of this goal.

Interface:

Within the apps offering food diaries, aspects of PA monitoringwere available via the use of GPS or wearables. These featuresallow users to monitor their outdoor activities (eg, walking andrunning) and the use of application programming interfaces(APIs) plays an important role in these integrations becausethey are created to facilitate the communication with otherexternal apps. In general, the wearable devices collect data andsave them in their own systems and allow third-party apps, suchas the nutrition-related apps, to import that data via APIs. Inaddition, indoor activities can be logged by

selecting the typeof activity and duration. Using the same strategy, LS and MFPprovided the possibility to import weight measurements fromWithings body scales (Withings Inc, Cambridge, MA), whichcan measure weight, BMI, and heart rate and send thisinformation via Wi-Fi to the Internet [17].Emerging technologies, such as image recognition and naturallanguage processing, are not present in the most popularnutrition apps. The combination of these technologies couldsimplify the food and portion selection processes. Imagerecognition seems to be promising for recognizing food itemsand estimating their portion sizes [18] and natural languageprocessing could be used to transcribe spoken dietary records[19].

References

1. Global Status Report on Noncommunicable Diseases 2010. Geneva, Switzerland: World Health Organization; 2011. URL:http://www.who.int/nmh/publications/ncd_report_full_en.pdf [accessed 2016-06-28] [WebCite Cache ID 6ibtFrqbc]

2. Simko MD, Cowell C, Gilbride JA. Nutrition Assessment: A Comprehensive Guide for Planning Intervention. 2nd edition.Gaithersburg, MD: Aspen Publishers; 1995.

3. Benedik E, Koroušić Seljak B, Simčič M, Rogelj I, Bratanič B, Ding EL, et al. Comparison of paper- and Web-baseddietary records: A pilot study. Ann Nutr Metab 2014;64(2):156-166. [doi: 10.1159/000363336] [Medline: 25116257]

4. Thompson FE, Subar AF, Loria CM, Reedy JL, Baranowski T. Need for technological innovation in dietary assessment. Jam Diet Assoc 2010 Jan;110(1):48-51 [FREE Full text] [doi: 10.1016/j.jada.2009.10.008] [Medline: 20102826].