

Expert food analysis system

S.M.U.C Seneviratne and D.R.V.L.B Thambawita

Faculty of Science and Technology, Uva Wellassa University of Sri Lanka

Introduction

Diet is a main factor which directly affects the health condition of a living being. Most of the times, unsuitable diet practices are the main reasons for long term diseases in the human body. For examples, unsuitable diet practice is the reason for occurring and increasing the diseases like diabetes, high blood pressure, heart diseases, cancers, allergies, etc. By choosing the correct diet can not only save the body from numerous diseases but also cure existing diseases.

Suitability or unsuitability of a diet depend on numerous factors like existing diseases of the body, age, gender, special body events like pregnancy, season of the year etc. Apart from the human health it may be required to select a suitable diet based on the religion and cultural facts of each person.

To identify a suitable diet (food products), it is required to analyze each and every food component which is used to produce a complete food product. But, due to the complexity of the formation of the food products in the current market and the less knowledge in the food analyzing domain makes it difficult to select the suitable food product base on the above mentioned facts.

With the help of Information Technology and knowledge of Ayurvedic Medicine, it is possible to identify a path to reduce the difficulty in analyzing food products (Alwis, R. 2012; Hemachandra, D. and Karunaratne, H. 2007). Ayurvedic medicine is rich in knowledge to analyse a food product but it is difficult to use that knowledge by the general public due to less understanding of the Ayurvedic food analyzing knowledge and less availability of the information from the food producers regarding the food product (Nagodawithana, P. 2007).

With the help of the Information Technology, it is possible to identify a pathway to provide a solution for above mentioned problems by creating an efficient and simple way for the proper flow of information among human experts in food analyzing domain, food producers and customers.

By using this solution, it is possible to keep the people away from the diseases which could be occurred due to unsuitable diet selections. It will improve the life quality of the human society. Additionally it will provide a high value to the economy.

“Expert Food Analysis System” will help people by minimizing the complexity when they are going to select a suitable diet based on their physical body and social status. Selection of a suitable diet will result a healthier society which is free from most of highly spread diseases like diabetes, high blood pressure, heart diseases etc.

“Expert Food Analysis System” creates new business opportunities in the market. It will create a competition among food products in terms of their healthiness. That competition will keep the healthy food products in the market and will create new opportunities for healthy new food products in the food market. And also will remove the food products which are obvious reasons for diseases.

The final outcome of this solution or the final goal of this product is improving the quality of life in the society by combining medicine and business with information technology.

Methodology

The whole project consists of three main parts as Expert System, Web Application and Mobile application. Expert System is implemented with CLIPS (C Language Integrated Production System) and is integrated into Web application using Mommosoft library (CLIPSNet; CLIPS). Web application is implemented with HTML, Javascript, CSS and C# in the Visual Studio 2010 environment. Databases were created with Ms SQL (MSDN Library; Newest Questions). Considering the whole system, Expert System can be considered as the back-end. Mobile application is the front-end and web application acts as the intermediate component between mobile and expert applications. Web application is hosted in an

IIS testing server. Mobile application is developed with Java on Android platform in the Eclipse environment. Mobile application and Web application is linked together with the internet.

Human food analysis experts should store their knowledge related to food analysis domain as raw data in the knowledge base of the Expert System. Raw data about various food products including ingredients should be stored in a SQL database. Web interfaces have been provided for ease of data insertion. System generates a QR code which is included an identification number which can uniquely identifies each registered food product. Generated QR code should be attached with the package of the food product or racks etc. Food consumers have to maintain a personal profile including the information related to personal health and culture.

Food consumers can scan the QR code with the mobile application and validate the food product by comparing the information already printed on the package of the food product and received information by the mobile application. When a QR code is scanned, mobile application send an identification number to the web server and refer the SQL database for food ingredients and personal profile. Then those data will be analysed and send the report to the consumer which indicates how the particular food product personally will be effected.

SQL database also stores the consumer feedbacks and raw data which are statistically valuable. Data transferring between the mobile application and remote server will be handled by http requests and responses.

Results and Discussions

Currently there are various systems which are related to Diet and Health domain combination. Most of them are developed by integrating the Mobile and Web Technology. Another obvious fact which is common to most of those system is they are based only on western medicine. Most of current systems are seemingly based on static information and direct information flow among food consumers, food producers and food analysis experts is poor or not exist.

“Expert Food Analysis System” introduces an open system architecture which connects not only the food consumer and food analyser but also the food producer. Possible problems which can be occurred by combining the food producer into the system have been handled in the system. Information domain for the knowledge base is not only the western medicine but a combination of Western and Ayurvedic medicine. Due to the design of this system it can be used regardless of a particular region and system’s knowledge base can be rapidly grown unlike other existing Hygiene and Diet related systems.

Conclusion

Expert Food Analysis System help the consumers to easily achieve the expectation of having a more healthy diet in the current market system. Businesses will be pushed to produce new products and competition among food product for healthiness will be increased. This system can be contrasted from other few existing systems by its open system architecture. This system combines Food Producers other than the Food Consumer and Food Analysers unlike other systems. The main success factor of this system depends on the richness of the knowledge base of this system. It is required to make new rules which cover many parameters and add new facts by the experts in the food analysis field. Results given by the system always depends on the completeness of the rules and accuracy of the facts. Generating new rules and facts is a non-IT function and it should be done through experiments in the food analysis field.

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