DOMAIN: CLOUD APPLICATION

Ideation Phase

LITRATURE SURVEY

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Project Name	Nutrition Assistant Application

JOURNAL TITLE 1

Smart Diet - Personal Wellbeing Assistant and Diet Planner Mobile Service

ABSTRACT

The paper describes a new mobile service that combines features of personal wellbeing assistant and diet planner. The application area has huge potential and could significantly increase quality of peoples' life. An idea of making services on top of smart space technologies is getting more and more popular not only in academic community, but also in industry. These services help in development of the classical humans' aspiration to make life more comfortable, easy and enjoyable in work, entertainment and housekeeping. The existing smart space solution pilots are helping to manage organization of business meetings and conferences and so allow focusing on the main subject and actual goals of an event. Following the clear success of existing solutions we see a huge opportunity for adopting smart space principles in the field of wellbeing and mobile healthcare.

ALGORITHM/METHODOLOGY

Nowadays there is an open source platform Smart-M3 [3] that can be used for prototyping smart space applications. Thanks to work done by large research and developer community the Smart-M3 platform is quite stable and has been already ported to a number of operating systems.

Development of Smart Diet service will be split to two stages. In the first stage the basic diet monitoring application is developed based on the conventional technologies of today's mobile

development. The second stage targets in adopting all key features of smart spaces solutions by
using features that already can be delivered using Smart-M3 platform. The proposed solution will
ensure proper combination in one solution the top scientific results in areas of mobile healthcare
and smart spaces, with clear addressing of every-day needs of users. Based on this principle the first
version of diet monitoring service has been developed already and its functional description is
provided in the next section.
The second stage of implementation is ongoing. Currently the main focus of our studies has shifted
to exploration of the smart space capabilities in providing a way for communication between
different devices participating in SmartDiet service provision chain. For example, refrigerators are
de-facto mandatory equipment at every kitchen, which in addition to its main functionally can be
used for collecting information about products that the user has.
The SmartDiet service functionality can be extended by connecting additional sensors, e.g.,
pulsimeter, glucometer, cardiograph and so on, so that some special requirements “healthy diet” can
be better fulfilled as a part of patient’s treatment or prophylaxis. The real-time data on changes of
body parameters will allow faster regulating meals schedule and content.

FEATURES

- Edit the personal data
- Do record in journal
- Set target
- Get body mass index (BMI)
- Calculate an action
- Track food and activity
- Track nutrition value
- Calculate a product

DRAWBACKS

According to many studies, one of the main reasons for people to break diet requirement is a
need to continuously align their specific requirements to the available food offer. For example,

when one is in office or on business meeting nowadays it is quite difficult to get food according to
the personal requirements, while preserving feeling that a person is a regular member of this society
(which is psychologically is very important). Even in a family it is often difficult to prepare meals
that everyone like and all personal diet requirements are taken into account.

JOURNAL TITLE 2

Diet Monitoring and Management of Diabetic Patient using Robot
Assistant based on Internet of Things

ABSTRACT

This paper is presented to improve the eHealth care platform by using Robots which are
connected through IoT for providing personalized multiple-care approach particularly to a diabetic
patient. The architecture of this model is such that it makes use of Internet of Things for Disease
Management Hub web-centric platform which is then wirelessly connected to the robot. The robot
has a chain of capillary networks in it which contains medicals sensors and sensor for dietary
monitoring of the diabetic patient and thus provides them with fully multidimensional-care. The
architecture of software is built so simply that even a person with little knowledge of platform can
develop various applications out of it. This is possible by using the multi-layer approach which is
working on the principle of automatic service delivery and object virtualization.

ALGORITHM/METHODOLOGY

The main field of this paper is eHealth with the connection to IoT in order to access or manage
physical objects remotely. The two network architecture which is used in this platform are 1)
Disease management hub(DMH) which is a place to or a web portal to monitor and manage
disease2) Physical object's capillary network. Wi-Fi module is used to send the data to long ranges
which are connected to the internet. For detecting the dietary habit of the patient we take help of
temporalis mastication muscles which raises up the lower part of jaw and thus helps us to chew our
food [28] When chewing up the food the temporalis contracts while the teeth clenchand this is how
EMG sensor comes into play to monitor the behaviour of diet the patient is following. For other
eHealth features the medical sensors which include rate monitor, blood pressure, BG monitor and

weight scale are fitted in each and every network of capillaries plus an already made AI robot is
also there.

FEATURES

- Collecting Data
- Verbal Interaction
- Handling events
- Connectivity handler
- Data protection layer
- Database Monitoring

DRAWBACKS

A prototype robot was used as a first step to gain a more realistic understanding of the feasibility and initial results of the application of the robot to community health care for diabetic
patients and pharmacists in community pharmacies. Although it was not possible to explore in a
single intervention whether robots can have a profound impact on the quality of care in the
community and enhance the health care of diabetic patients, the overall direction of the development was recognized by the middle-aged and elderly diabetics in the community.

JOURNAL TITLE 3

Personalized Dietary Assistant - An Intelligent Space Application

ABSTRACT

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 it

ALGORITHM/METHODOLOGY

In this paper, the framework of an Intelligent Space application is proposed for educating
human users about nutrition science and helping them achieve a healthier diet in the long term by
introducing small but gradual changes to their consumption habits. The knowledge base is
realized by a graph-based architecture, where each node represents a concept or a real world
instance. The edges connecting the nodes describe the relationship between their concepts, or
assign numeric or fuzzy data. The identification of each concept and the data mining is done by
specialized fuzzy look-up table classifiers. The operation of the system is shown through an
example, where the functionality and the speed of the application is tested. While the initial setup
of the application takes ~7 seconds on average, the operation (the evaluation of data and the
decision making) takes less than 0.1 seconds. The application is capable of helping the user
optimizing their diet over a long period of time, by recommending small but gradual changes.

FEATURES

The user provides the necessary personal data (age, height, weight, level of
physical activity, taste preferences, etc.). Using the given information, the system can
determine the Recommended Daily Intake (RDI) of the user.

DRAWBACKS

The disadvantage of this method lies in the complexity of the problem: at first it
would seem easy to calculate the nutritional values considering the few nutrients and
minerals that are listed on product labels, but in fact there are dozens of nutritional
values that are needed to be accounted for, and most of them are not even listed on product labels.