Personal Health Companion

User Documentation

Group 3

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November 6, 2015

1. Introduction

1.1 Purpose

The purpose of this documentation is to assist user in learning about the basic information of our project and the way to use our system. And the documentation can be helpful for individuals who want to use our system to get the information of their community or general health status of any aspects, academic researchers and health organizations who want to use our system to get the information of their community or general health status of any aspects, and enterprises which might gain information relating to health for business use.

1.2 Need for a Personal Health Monitoring System

Just one in 20 people worldwide (4.3%) had no health problems in 2013, with a third of the world's population (2.3 billion individuals) experiencing more than five ailments, according to a major new analysis from the Global Burden of Disease Study (GBD) 2013, published in The Lancet.[i] Except for some people who have diagnostic diseases, others could be descripted as Suboptimal Health Status (SHS). Suboptimal health can be defined as a **state characterized by some disturbances in psychological behaviors or physical characteristics, or in some indices of medical examination, with no typical pathologic features,**[ii] which exactly characterize common situation that most of people are facing.

However, most of the people underestimate how severe this problem is. What they prefer most is a convenient and a leisure lifestyle. They can hardly realize whether their lifestyle is healthy or not until some diagnostic illness shows up. In some other cases, people know that they need exercise or that they need to follow good habits, but they pursue them irregularly and fail to put efforts on a daily basis.

What was mentioned above are only some of the symptoms which precisely interpret the sub-health status. Essentially, the problem is caused by being accustomed to bad habits in the five aspects listed below:

1. **Long period of insufficient sleep**
2. **Irregular eating habits**
3. **Pressure from work or from academics**
4. **Lack of sport activities in the daily routine**
5. **Smoking or Drinking alcohol**

If people want to improve the condition, they should form complete and well-organized plans which can assist them in managing their daily schedule scientifically as well as efficiently. Besides, people also require motivation in order to

maintain their interests on following the schedule. These are the reasons why our project would highly appeal to them.

1.3 Glossary of Terms

1. Suboptimal health
   Suboptimal health can be defined as a state characterized by some disturbances in psychological behaviors or physical characteristics, or in some indices of medical examination, with no typical pathologic features,[iii] which exactly characterize common situation that most of people are facing.

2. Twitter
   Twitter is an online social networking service that enables users to send and read short 140-character messages called "tweets".

3. Hashtags
   A hashtag is a word or a phrase prefixed with the number sign ("#"). It is a form of metadata tag. Words or phrases in messages on micro blogging and social networking services such as Facebook, Google+, Instagram, Twitter, or VK may be tagged by entering "#" before them, either as they appear in a sentence or appended to it. The term "hashtag" can also refer to the hash symbol itself when used within the context of reciting a hashtag. (From Wikipedia)

4. Calories
   Calories are used as a judgement of how long or how much have you exercised. In this project, we are going to translate both the time and the sports type user have done to Calories.

5. Social Networking Service (SNS)
   A social networking service (also social networking site or SNS) is a platform to build social networks or social relations among people who share similar interests, activities, backgrounds or real-life connections. (From Wikipedia)

6. Application Programming Interface (API)
   In computer programming, an application programming interface (API) is a set of routines, protocols, and tools for building software applications. An API expresses a software component in terms of its operations, inputs, outputs, and underlying types. An API defines functionalities that are independent of their respective implementations, which allows definitions and implementations to vary without compromising the interface. (From Wikipedia)

7. Server and database

A server is a running instance of an application (Software) capable of accepting requests from the client and giving responses accordingly. A database is an organized collection of data. The data are typically organized to model aspects of reality in a way that supports processes requiring information. (From Wikipedia)

8. Automatic Tweet
   A message sent using Twitter that has been created automatically by devices like mobile apps and wearable devices, not human beings. In our project, the automatic tweets always appear with the hash-tag "#LoseIt" and keywords "calorie, burn".
9. BBS
   Bulletin board system, or BBS, is a computer server running custom software that allows users to connect to the system using a terminal program. Users can read news and bulletins, and exchanging messages with other users through public message boards.

2. Application

2.1 Project Description

The name of our project is Personal Healthy Companion. And the main task of the project is to gather data from the web sources and analyzing the gathered data, and we will use machine learning for statistical analysis.

Our solution is to help people in three ways:

1. Out prior consideration is to help users realize that they might be in sub-health status. We will provide basic data in diagram to show this problem intuitively so that users will realize the severance of sub-health. We will provide an optional quick health investigation to find out the possibility of users in sub-health status as well.

2. We will provide some more careful and specific suggestions for the users who are willing to go deeper. We focus on population of particular geographic locations on the basis of their daily habits like:
   - **Sleeping habits**
   - **Sporting habits**
   - **Eating Habits like content of sugar, fat and carbohydrates (Junk food)**
   - **Smoking Habits**
   - **Alcohol Habits**
   - **Stress-Pressure faced by the students, at workforce**

3. In addition to the purely data analysis and hollow suggestions, motivation can help people to be more focused on their health spontaneously. That is what we would like to provide.
    - People can be encouraged to write comments and suggest tips to their friends in their area or community. A BBS can be built for the convenience for people who would like to share their experiences. For example, People who are trying to reduce their stress levels can get together with other people who are also trying to do the same. Group activities can be organized for these people and psychiatrists can join the meetings to give some tips on how to overcome extreme stress levels.
    - To motivate the people further, leaderboard competitions can be arranged and this would motivate people to contest for the top positions. People can see the achievement from every significant step they make through the leaderboard.

2.2 Vision

Our team has decided to build the following features for the product. We will be using some of the existing infrastructure for data collection. On top of the existing features, we have decided to add enhancements to the data analysis by widening our scope of analysis and by taking other inputs into consideration for more meaningful results. Here are some features of our application:

1. The website will display the statistical trend showing the number of people who exercise in a given area, analysis will also include the percentage of people who exercise out of their areas population.
2. Data analysis will be done based on different age groups, gender and occupation and different demographic locations.
3. Data analysis on how often and how intensely people exercise will also be done.
4. Ranking of the popular exercises on the basis of how frequently, intensely, time duration and geo-location involved. The trend will also show different proportions of different exercises like running, walking, biking, hiking, swimming, yoga or cardio.
5. Trend showing for around which area people complain about health care/health issues. Ranking the areas on this criterion.
6. Correlation positive or negative between the groups that exercises and the group which constantly tweets about health and wellness. Checking correlation about people who are concerned for diet/foods on the basis of people who exercise, discuss about dieting and on the basis of gender.

7. Feeds or topics that appear common to people who exercise, watch on their diet and follow a healthy lifestyle.
8. In order to keep people motivated they will get healthy dietary suggestions, latest feed on exercise, they can keep notes and share it with friends and can put reminders for their exercise routine.
9. Ranking of the popular sports on the basis of how frequently, intensely, time duration and geo-location involved. The trend will also show different proportions of different sports.

We will be focusing our data analysis mainly on weekly trends. After tweet analysis and classification, we would like to do the following things:

1. **Weekly Diet Trends**
2. **Weekly Exercise Trends**
3. **Weekly Alcohol Consumption Trends**
4. **Weekly Smoking Trends**
5. **Weekly Sleep Pattern Trends**
6. **Weekly Stress Level Trends**

We will do all these trend analysis based on gender, geographic locations, etc.

Here are parts of our websites showing some of our features mentioned above.

Figure 1. Homepage (1)

When users enter our websites, they well see a welcome interface.

Figure 2. Navigation

Users can choose to login by click “Login” on the top right of the web to find more personalized detail. And they can find out main features of our project after clicking “Services”. And “Home” will allow users to return the home page.

Figure 3. Homepage (2)

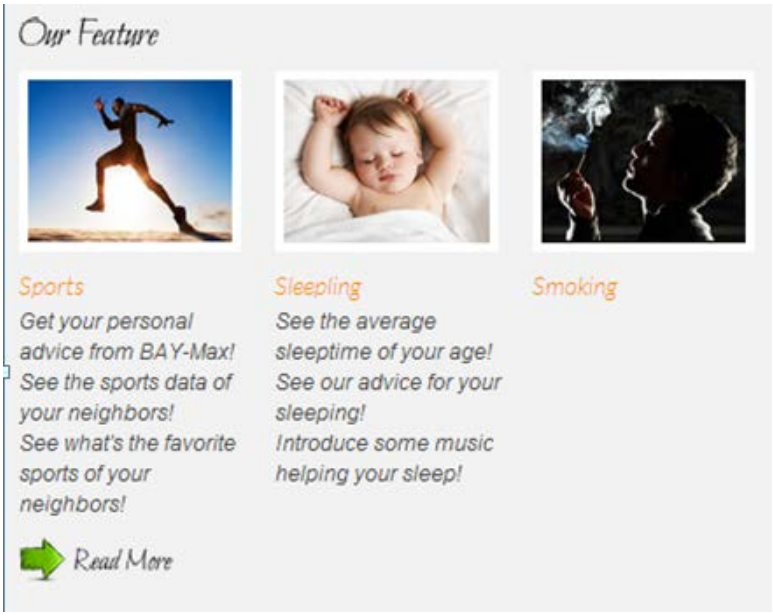

Figure 4. Choose feature

Users are also available to access those features from links below the welcome interface.

Figure 5. Calendar

Users will find out recent events happened nearby from the calendar displayed above, and figure out what they are interested in then add it to their own schedule.

Figure 6. Services page

Users can click “Services” and enter this page.

Figure 7. Heat map

On this page, users are able to find a heat map showing the density of, for example, people who exercise or smoke of different regions.

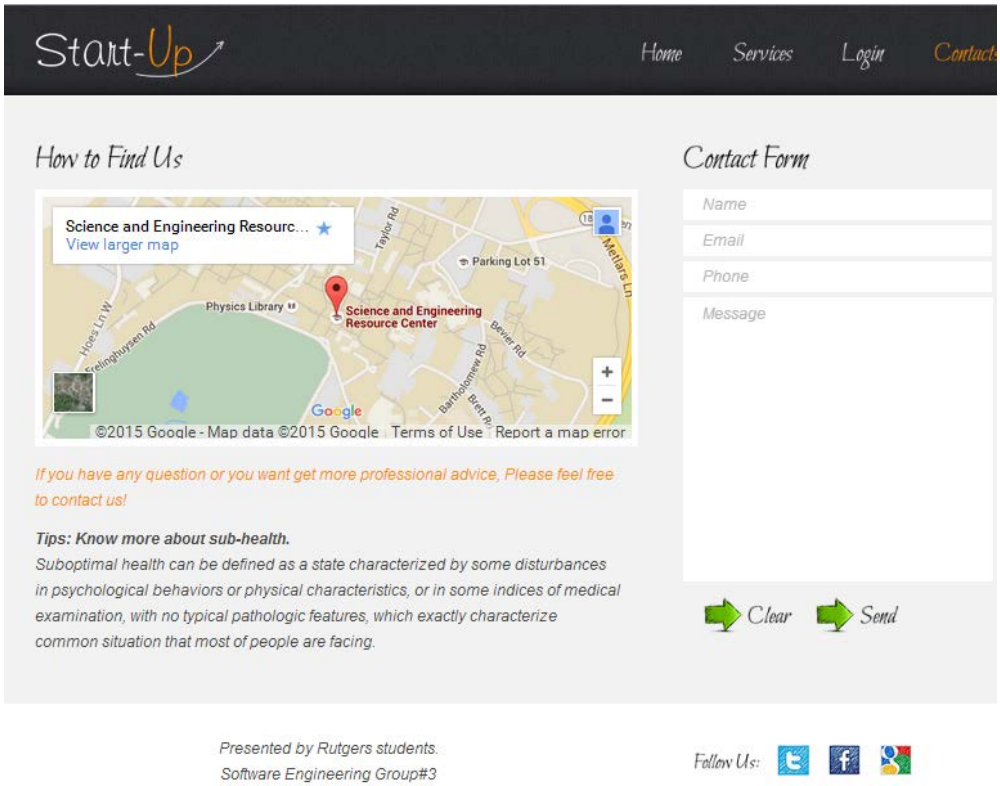

Figure 8. Contact us page

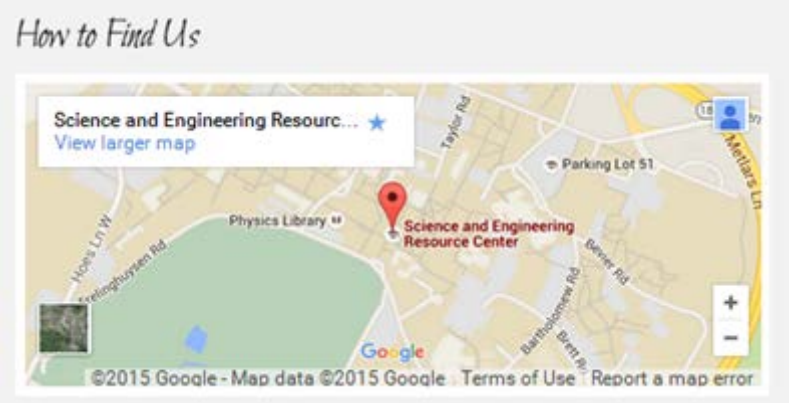

Figure 9. Map

Users will enter this page after clicking “Contacts” and they can easily find the location of our team from the map.

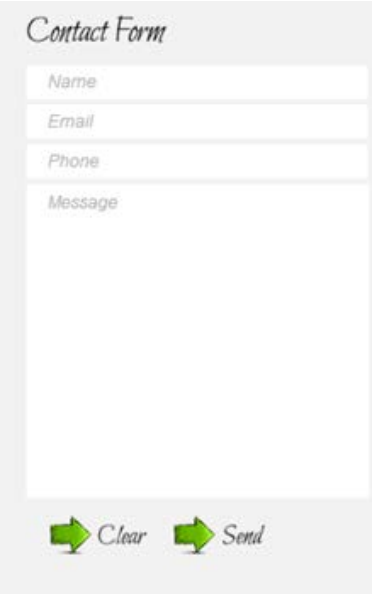

Figure 10. Contact Form

And they can also write down advises about our project on the contact form showed at the right of this website.