Software Engineering I Project Proposal

Personal Health Monitoring and Analysis

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Personal health monitoring can be useful for individuals: providing them with professional and highly-customized food and sports suggestions, motivating them to keep active and have a good habit. Also it gives a lot of potential important information by analyzing the health data collected. It can be used by public health specialists to provide more effective policies in a big way and by manufactures to make products that could really help.

In our project, we will design a system to keep track of users' health data and provide them with valuable suggestions to achieve their goal. In the background we will design a powerful analyzing system to give feedback about any difference so that several main factors resulting in the difference can be found. Typical suggestions for users including food diet based on their active status. One of the information by analyzing them is whether or what kind of wearable devices can really help. Generally speaking, we are going to design a system which will be useful for both users and the ones not using it.

The system will collect the data from wearable health devices - fitbit - using the API provided by the manufacture. Also it will be collecting data from integrated health interface like Apple Health. The data will be uploaded or synced to the server and shared to the client's friends if permitted. The clients will get visualized graphs of their progress and target daily, weekly and monthly.

We are going to imply APIs from the internet as the specialist to give recommendation to the users. We are still considering using single or multiple API to generate recommendations, because sometimes, there is no definite solution to the healthy diet, not every API would get identical result. So what we are trying to do is to add a function in our system: the system would keep a value to represent the weight of each API we utilized, and the users are presented with different recommendations generated by different API. As a result, certain API would get a increased weight when chosen by the users, and the most weighted API would be labeled as 'Preferred' which would make it easier for the user to decide among various options.

The fitbit API will mainly provide the following data: Activity & Exercise, Body & Weight, Friends, Heart Rate and Sleep information. It can be used to track users personal activities and body information. Data will be stored into our databased for further analysis. For recommendation, we will use the API from DailyMile, which will provide us the following functions: Track running route and GPS information and Social functions. With the API from MyFitnessPal, we will be able to access over 20k kind of foods' information, which can be used for our customized food recommendation system. When the APIs have overlaps, we will use the system above to decide which one is most recommended to clients.

It will be possible for our users to share pictures with others who are not their friends in real life and can share their working out data like steps, running time or active hours with their real friends. Because according to our research, it works better if strangers share pix of themselves while acquaintances share data with each other. This will contribute them to use our system more often and keep track of their health information and be of great help for

them to achieve their goal. Also it can provide us more accurate data for foods and sports suggestions as well as background health information search for specialists.

We intend to use PHP and MySQL for our website and we may also develop an Android app to collect users' health data more efficiently.