**Project Plan: Increment 1**

**Introduction:**

Everyone is carried out with some emotion every day. It’s important to continue the feel or to make it much better. Now how can we do it? After a long day of work or tiredness it’s difficult to find out which source of entertainment could be the best for you at that point of time. So our application “What to do?” is such kind of emotion sensor application which guides you to revive yourself than how you are now.

**Project Goals and Objectives:**

**Motivation:**

In certain situations a person may not be able to find the right choice or some way to revive him/her self. So this being the prime motive, we came up with a solution to handle those kind of situations with a mobile application “What to Do?” which is an emotion sensor recognizer. This application helps you to find the right option to revive yourself.

**Significance:**

The main goal of this application is to detect your emotion at the current moment and suggest you places or the things you can do to revive yourself or to uplift your mood. The application is basically designed for the android mobile users and the important feature of this application emotion recognition. These emotions will be detected based on your hand movements. And based on them we will be detecting your current mood and recommend you with certain options which can uplift your mood further.

**Objectives:**

The objective of this project is to suggest the places or things that are to be done by a person based on his mood. His/her current emotion is detected based on his hand movements and after analyzing those movements we will be suggesting the places to visit or the kind of things to be done to uplift himself/herself. The user needs to initially start the application and convey his mood by hand movements. Based on the actions made by the user. We shall then analyze those data and retrieve certain patterns. Based on the pattern matching with an emotion the recommendations will be made to the user. Like, consider a situation like the hand moment indicating facepalm, which says that the user might be feeling moody. So when we detect such situations we shall suggest the user with certain options which can revive him/her such as suggesting some movies, games going on through TV, events happening around the city etc. Each user is distinguished by his age or profession like a student can revive himself by games or a professional employee can revive himself by going to a movie or watching certain good shows on TV or for children it’s good to go for certain amusement parks etc. Based on the emotion, age/profession we shall provide the users with certain options to refresh themselves.

**System Features:**

The application is basically a native mobile application developed Android Users. We also use a sensor tag to detect the hand movements of the user. And the application uses the google places like google maps and other entertainment related information. The below is the system architecture of the application:



Figure System Architecture

Basically the sensor tag information will be recorded by the mobile application and these information will be logged. The logged information now will be sent to the HBase where we will be storing the data. Now these stored data will be send to R for analytics so that we can profile the hand moments. So based on the result from R we shall recommend the users with appropriate options either by suggesting them with going to movies, watching shows, games etc. But before these we will prior train the data and store the information so that next time whenever there is data to be profiled we shall sue the already classified trained data and detect the emotion. We will a set of three dimensional co-ordinates in order to detect the emotions based on the hand movements. Since there will be certain noises from the information taken from the sensor tag. We will fix a single three dimensional coordinate for each emotion.

The application will support android version from Ice Cream (4.0) version to KitKat (4.4.0) versions.

**Activity Recognition Scenario and Data Collection:**

**Devices/Sensors**

Devices that we are planning to use:

* Android mobile phone with SensorTag application installed.
* Sensor Tag

**Motion/Activity Model and Data Collection:**

We would attach the sensor tag to the user’s hand. User performs different gestures all day. His hand gestures can be based on his emotions – Happy, Sad, Moderate, Low, Hungry etc. For example, he gives a high-five if he feels happy; When he embraces someone that means he is happy; user puts his hand on his head when he feels helpless, which means he is sad. We would train our application based on these gestures and when user performs such gestures. He might concentrate on few incidents in his day to day, ignore few. At the end of the day, we would inform him how is day was and recommend him on what can be done to not to repeat it. Some interesting recommendations every day or could be good quotes that makes the user happy before he hits the bed. Data from the sensor tag is taken and is stored in HBASE. The following diagram shows the use case diagram of our application:



Figure Use Case Diagram

**Analytical Tasks:**

Data from HBASE will be taken and trained using R and we will come up with different recommendations to the users based on his emotions. For this we will have to use recommendation algorithms. Based on the training data, new arriving data is taken and application would decide about the emotion of a particular gesture. Data is again sent to HBASE after the analytics are done; from where the recommendations are sent to the user on his mobile application. We will also be creating an initial design for storing the data taken from the application in the HBase so as to make the retrieval process simple and effective. The recommendation algorithm will be precise and suggest only the options that will best suit for reviving the users. We will also consider the GPS services so as to show the display the directions to the amusements parks, theaters, gaming zones etc. so as make the application more helpful.

**Software Specification:**

Tools: Solr, Android Development Kit, R, Sensor Tag (External Tool).

Operating System: Android

Development Operating System: Windows 8

Programming Language: Java 7.0

Databases: HBase

**Task Planning:**

For the entire project we will be following Agile model and the code release will be done in four iterations. In brief each iteration consists of the following tasks:

1. Designing the GUI, and hosting the data onto the HBase database.
2. Performing data analysis tasks which includes data classification.
3. Performing recommendation related tasks and parsing of the output retrieved.
4. Testing the entire application with different sets of data and performing bug fixing if found any.

The entire process and task split has been clearly mentioned is the ScrumDo tool and following is the link for the ScrumDo process for our project:

* [https://www.scrumdo.com/organization/umkc95/dashboard#](https://www.scrumdo.com/organization/umkc95/dashboard)​

There will be an initial testing done on the data once it is being hosted on Hadoop so as to validate the data analysis.

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