**1. What is an Emotion?**

Change in the states of organic subsystems in response to stimulus, as relevant to major concerns of the organism.

**Basic Emotional States:**

* Happy
* Sad
* Excited
* Angry
* Tender
* Scared

**2.Emotion and Affect as Input**

**Input Sources -**

**3D Motion Sensor Gestures, 2D Screen Gestures, Context Information**

**3D Motion Sensor Gestures:**

* TILT
* Slow Shake
* Fast Shake
* Rotation

**2D Screen Gestures :**

* Click
* Long Click
* Fast Swipe
* Slow Swipe
* Fast Scroll
* Slow Scroll
* Patting

**Context Information**

* Accelerometer
* Proximity
* Brightness

**3.Evaluation Model:**

**Discrete vs. Continuous Model**

In Discrete model only 6 basic emotional states are considered for evaluation while in Continuous model we need to consider emotional states among dimensions.

For example in Valence Arousal Dimensional model, every emotional state has two variables associated with it, namely Valence which means the positive or negative value of an emotional state, while Arousal means the degree of reactiveness to the stimuli.

In Discrete model the estimation rate of final result is much more correct than Continuous model because in latter infinite pairs of co-ordinate points can be plotted which can lead to ambiguity in judgment.

For example, Fear and Anger have same Arousal value.

The guessing probability is less in Discrete Model and the results are more accurate. So, we will be adopting **Discrete Model** for evaluating Emotional States.

**Datasets Format:**

The process for binding together the three different domains of input is done in constant time intervals Ti such that in each Ti we will be recording each type of input event with its timestamp tia of occurrence with corresponding context value for each Ti

**Examples:**

**T1 Walking (low acceleration)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time Stamp** | **t1a** | **t1b** | **t1c** | **-** |
| **Gesture** | **Click** | **Long Click** | **Long Click** |  |

**T2 In a dark room ( low brightness)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time Stamp** | **t2a** | **-** | **-** | **-** |
| **Gesture** | **Scrolling** |  |  |  |

**T3 Proximity (Calling)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time Stamp** | **t3a** | **t3b** | **t3c** | **t3d** |
| **Gesture** | **Click** | **Click** | **Click** | **Shake** |

**Proposal for Collecting Datasets**

**Explicit or Implicit Method**

Explicit Method:

Ask subjects to input gestures on the mobile app, on the basis of theirs current emotional states, by injecting types of emotions from some external source e.g. Video or photographs.

Implicit Method:

Record the subject’s natural activity, using mobile app as daemon, during each continuous and constant time interval Ti in form of dataset format mentioned above with a simultaneous Screen Cast.

**Questions:**

We would like to discuss the following question during our next meet.

1. **Should we map emotions into Positive and Negative or should we consider discrete value (like irritated , relaxed ,soft and more) ?**

**Abstract Emotion States:**

|  |  |  |  |
| --- | --- | --- | --- |
| POSITIVE | | NEGATIVE | |
| EXCITED | RELAXED | FRUSTATED | BORED |

**Touch Properties:**

1. Pressure
2. Speed
3. Length

**Revised Data Set Format:**

**T1 Walking (low acceleration)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Time Stamp** | **t1a** | **t1b** | **t1c** | **t1d** |
| **Gesture** | **Click** | **Long Click** | **Long Click** | **Swipe** |
| **Touch Property** | **Pressure** | **Pressure** | **Pressure** | **Speed, length, Pressure** |

Deriving values from Gesture Properties:

|  |  |  |
| --- | --- | --- |
| Event | Abbreviation | Properties |
| Click | C | Pressure |
| Swipe | sw | Length (speed) , Pressure |
| Scroll | sc | Length (speed) , Pressure |

Pressure is directly proportional to activity value.

Assumptions:

1. If Length and Pressure are directly proportional, only Pressure is considered for evaluation.

Activity value = average of values of gesture events in a particular sub interval.

Possible cases for assigning values to gesture events for each sub interval :

1: Assign values for each time stamp .

2: Assign values as an average for particular gesture event in each sub interval .

Gesture Activity value in the interval 6 sec:

|  |  |  |  |
| --- | --- | --- | --- |
| Gesture event | c,c,c,sw,c,,c,sc,c | c,sw,sc,c,c,c,c,c | c,sw,c,c,c,c,sc,c,c |
| Activity value | X units | Y units | Z units |
| Sub interval | 2sec | 2sec | 2sec |
| Full interval | 6sec | | |

|  |  |  |  |
| --- | --- | --- | --- |
| Gesture event | c,c,c,sw,c,,c,sc,c | c,sw,sc,c,c,c,c,c | c,sw,c,c,c,c,sc,c,c |
| Activity value | X units | Y units | z units |
| Sub interval | 2sec | 2sec | 2sec |
| Full interval | 6sec | | |

| | | | | | | | | | | | | | | | | |

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Activity value (units)

3p

2p

1p

**Computational Phase**

Low Positive

Low Negative

High Positive

High Negative

**Learning Phase**

Time(sec)

Sub interval – 2 sec

Interval – 6 sec

Emotion state is obtained for each interval by comparing its sub interval activity value and its previous interval value.

Learning phase starts after each idle state.