Rating System for Visual Media by Biosignal Measurement

Creative IT Design I: Fundamentals

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1 Introduction

1-1 Problems and Objective

- Current rating system of visual media is too subjective.
- There is also a problem of fabrication.
- The people who makes short video clip (such as advertisement maker) need to predict how their video will have effects on viewers, before they make their video public.

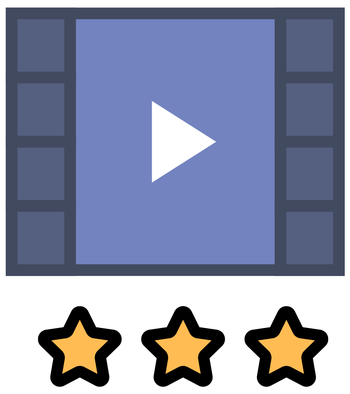
1-2 Main concept

- Measure the bio-signal of viewers, while they watching certain video clip.
- Analyze that signals to check the reaction of viewers.
- Consider if the emotion they've felt fit for that video and how their emotion has changed and their engagement.
- Finally, we will rate the whole video.

2 System Design

1. Getting Data from Sensors

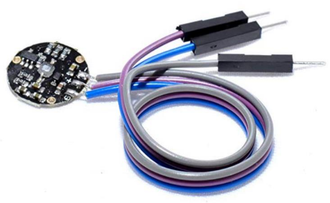
2. Analyzing and calculating Data



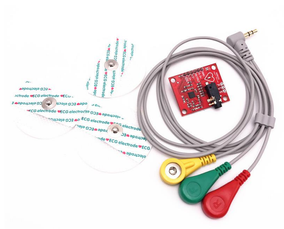
3. Rating score

3 Implement

1. GSR Sensor



2. Heart Rate Sensor



3. ECG Sensor

Data Standardization

$$D_i = \frac{1}{\sigma}(d_i - \bar{d})$$

d_i : i-th data / $\bar{d}$: mean of data / σ: standard deviation of data

Rate of Data Change

$$R = \frac{1}{N-1}\sum_{i=1}^{N-1}(D_{i+1} - D_i)$$

4. EEG Sensor

6 different cognitive states

1. Stress
2. Engagement
3. Interest
4. Focus
5. Excitement
6. Relaxation

4 Conclusion

4-1 Result

- Using 4 sensors, the change of user's emotion is measured during watching visual media.
- The score of visual media is rated automatically by biosignal which is measured.
- The score obtained from biosignal is generally similar to the user's subjective rating score.

4-2 Future Effect

- In a machine-centric computing environment, it will be used to automatically identify human biological information
- It will check human's emotional statement and provide appropriate services for it.