Emotion Recognition Using Emotiv Sensor

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INTRODUCTION

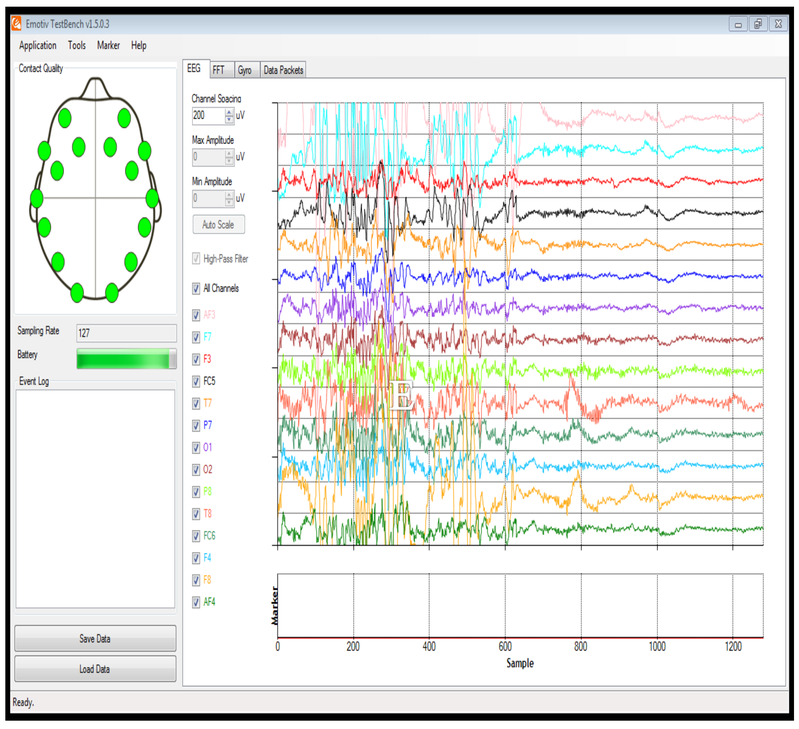
- Our emotional state plays a key role in how we experience and interact with the environment.
- Emotion directly affects our decision making, perception, cognition, creativity, attention, reasoning and memory.
- The estimation of emotional changes from EEG is of great interest among researchers and people who develop devices in the HCI field.
- We conducted experiments using the Emotiv Headset to find variations in different emotions while participant watches different movies.
- We extracted the raw data from the Headset.
- The comparative analysis reveals that the raw data is helpful in revealing patterns of emotions which we will use in our second phase.

DATA COLLECTION

- The participant was a normal 23 year old, right handed without any brain trauma.
- The data was collected from 14 sensors for approximately 12 minutes.
- Each tests was conducted consecutively for approx. 120 seconds.
- Five such experiments were conducted.

Figure 1. EMOTIV Headset

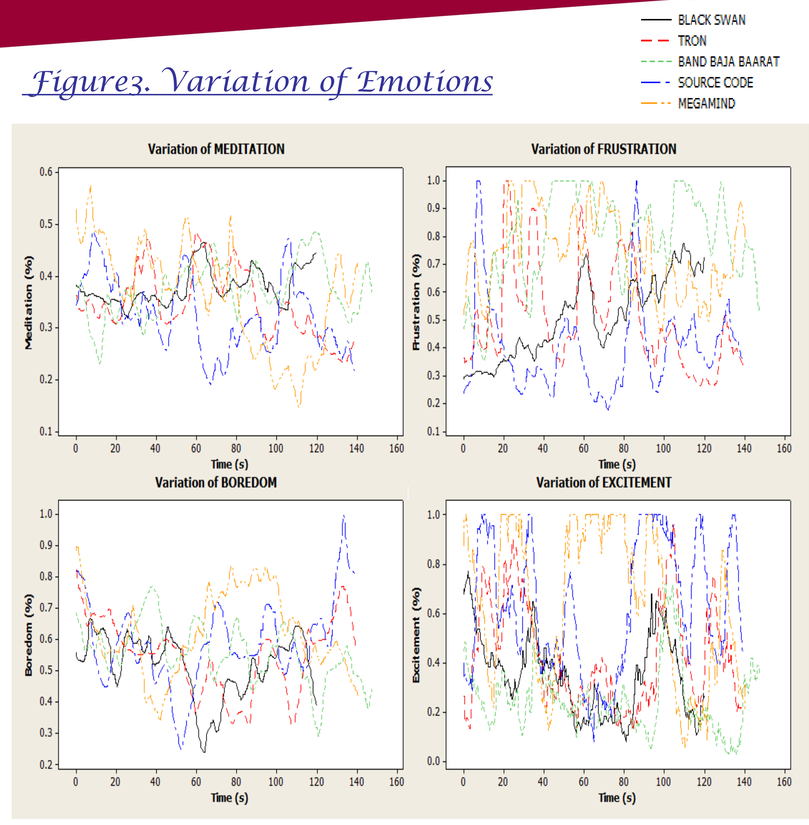
Figure 2. Sensor Raw Data



EXPERIMENTS & RESULTS

- The Emotiv headset classifies the following emotions: excitement, engagement/boredom, meditation and frustration.
- The raw data of emotions (in percent) is collected.
- The emotional data is generated in real time in millisecond increments.
- Different genres of movie trailers were watched with the Emotiv headset on.
- Figure 3 shows the emotional data collected while watching five movie trailers.
- We observe that the participant was very excited while watching Source code and Megamind. And it was verified by the participant._____

Figure3. Variation of Emotions



FUTURE PLANS

- The headset shows promising results of giving emotional data. We are still not convinced of the headset's ability.
- To help ensure success of the project, we will add Gyroscope data. Hopefully, the Gyroscope data will not be needed, but provide a safety net.
- We will use the open source program PokerTH as the Poker Engine.
- To store poker and EEG data we will use SQLite.
- Two human players will use the Emotiv headset. The experiment will have two phases training and testing.
- During training, the humans and an AI agent will play each other.
- Machine Learning will classify if a player is bluffing or not . In the test phase this information will give the agent an advantage.