Emotional Regulation Project

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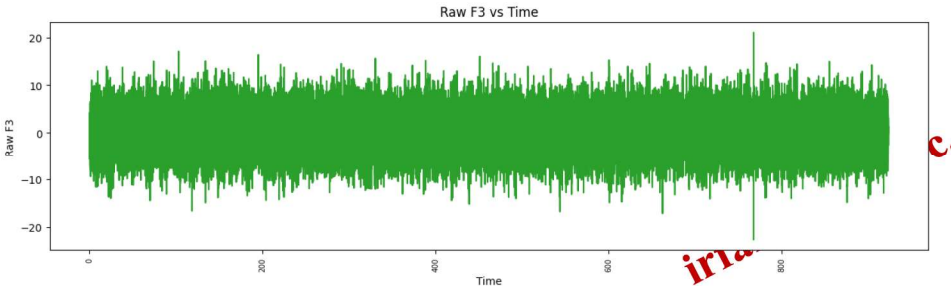
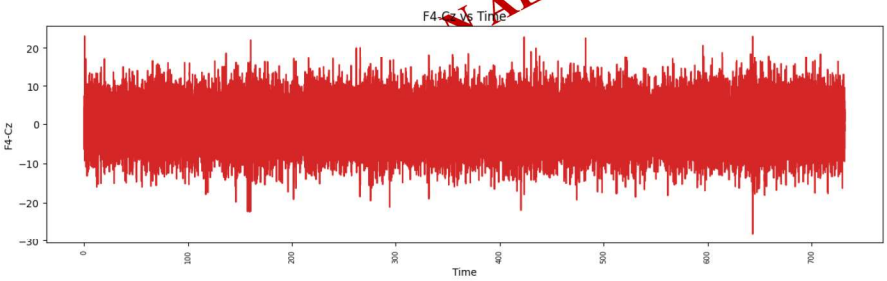
Step-1

- In step1, we have plot the raw data from the three categories- Resting, passive and active.
- We compared the variations of F3-CMA, F4-CMA; and F3-CZ, F4-CZ for the three categories.
- We compared the Standard Deviation F3 against F4.

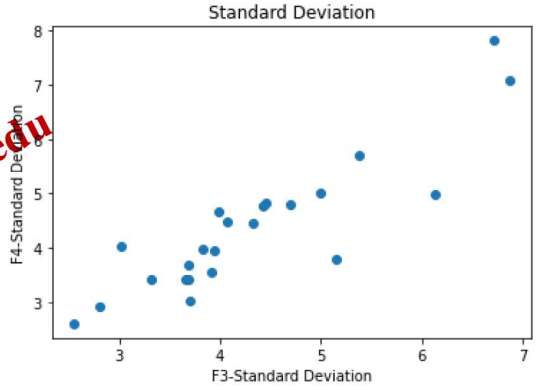
Figure 1



A sample of the raw data - Raw F3 (Passive Viewing)



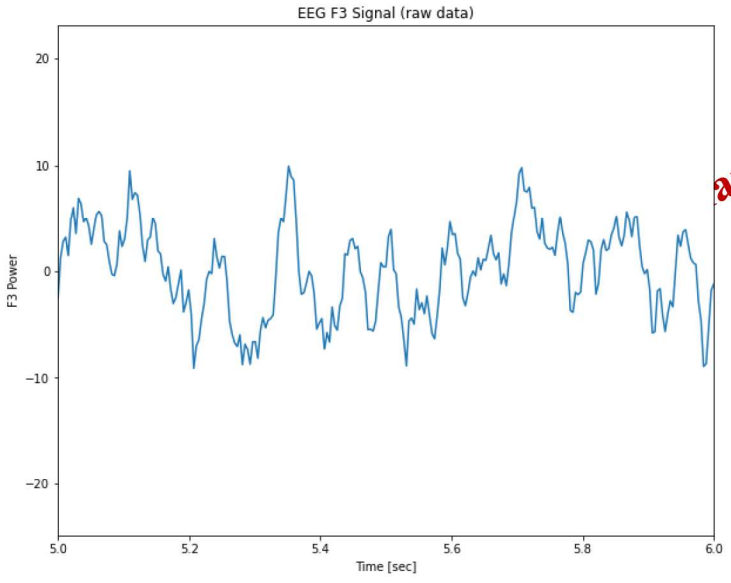
F4-Cz vs Time (Passive Viewing)



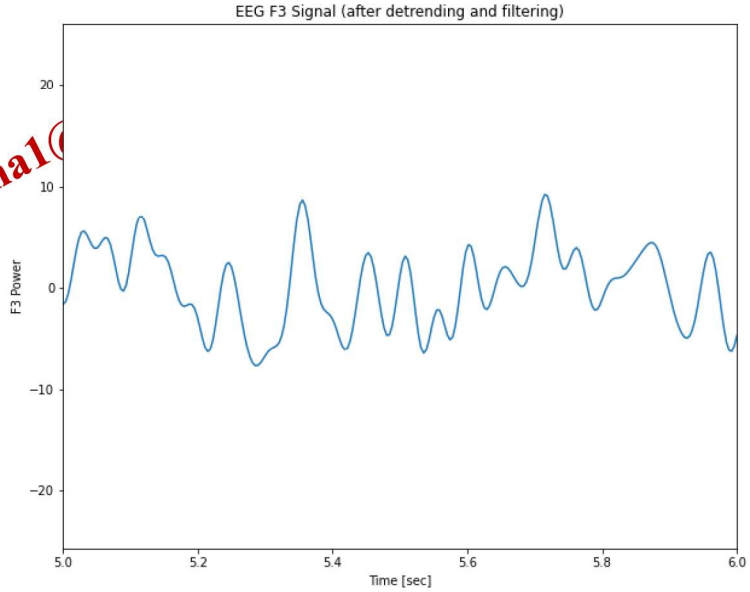
Standard Deviation plots between Raw F3 and Raw F4 of 37 Subjects

Figure 2

Before and After Denoising



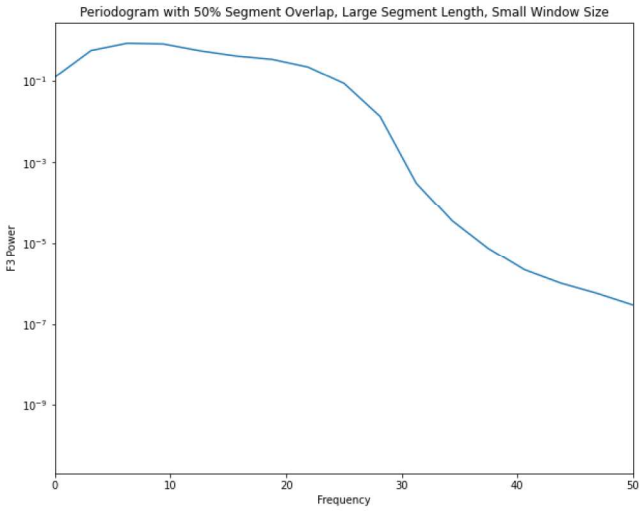
One second's worth of the data before denoising.



One second's worth of the data after detrending and using a FIR filter of 1-40 Hz with 800 taps.

Figure 3

- For the resting state data, we used Welch's method to measure alpha power (8-12Hz)
- We used varying window sizes, steps, and overlaps



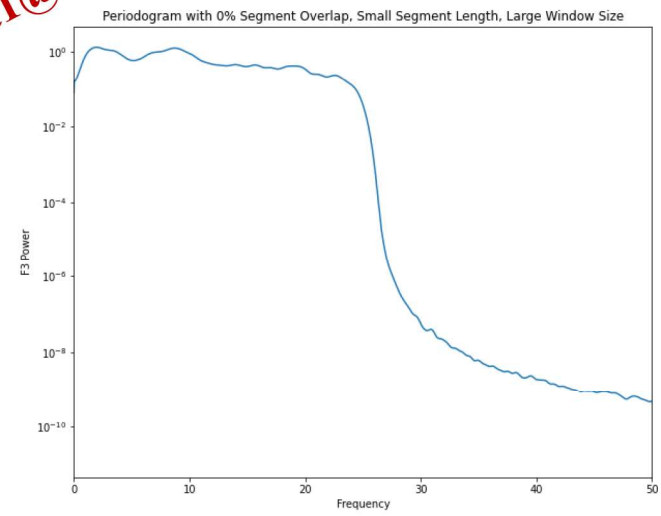
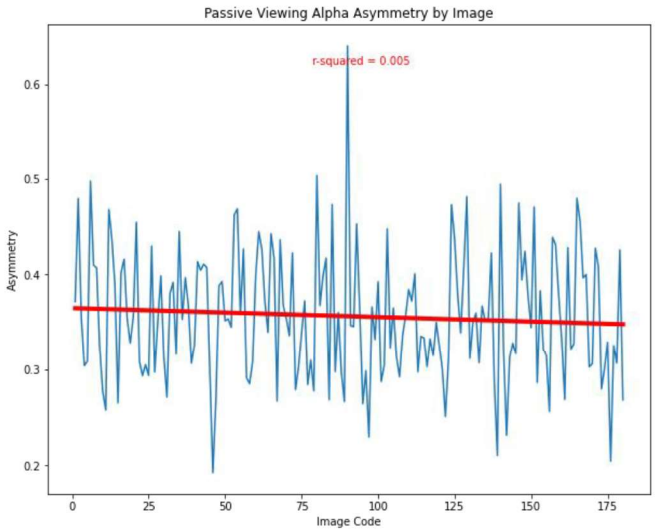
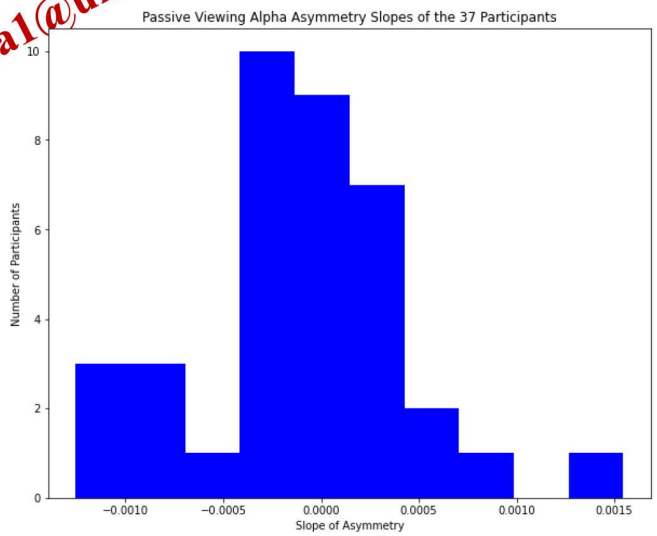


Figure 4

- The plot shows linear (or categorical) regression of the F3-F4 asymmetry for the images in the passive viewing condition – We used the resting state asymmetry as a baseline
- Also we have a histogram of the regression coefficients for each of the 37 participants

Evidence for low emotion regulation individuals -Negative slope for the Alpha asymmetry





- The next plots shows the relationship between emotion regulation effectiveness and the frontal alpha asymmetry
- As suggested it may be worth modeling the effect of the image on the rating and then using the residuals of that model against the asymmetry

Figure 5-Average Alpha Asymmetry by Image

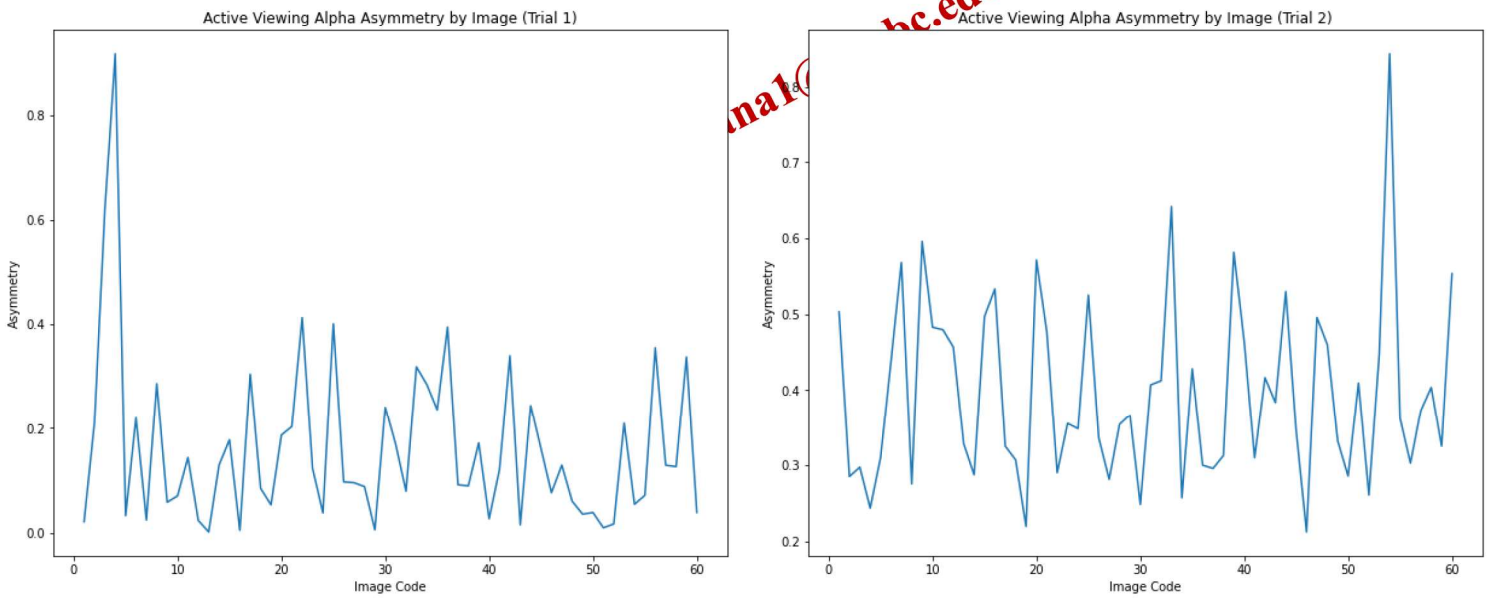


Figure 6- Average Difference Between Trials

The average asymmetry difference
between the first and second viewing is very significant

It's 0.23389403116670848, and the max asymmetry value is less than 1, meaning that the alpha asymmetry increased more than 20% between trials on average.