

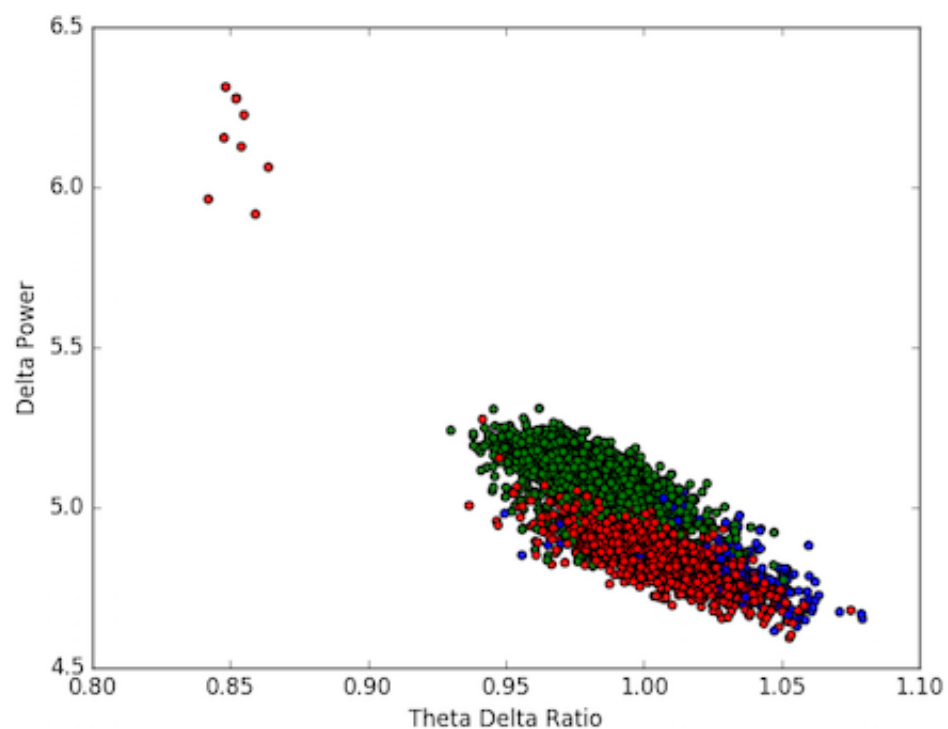
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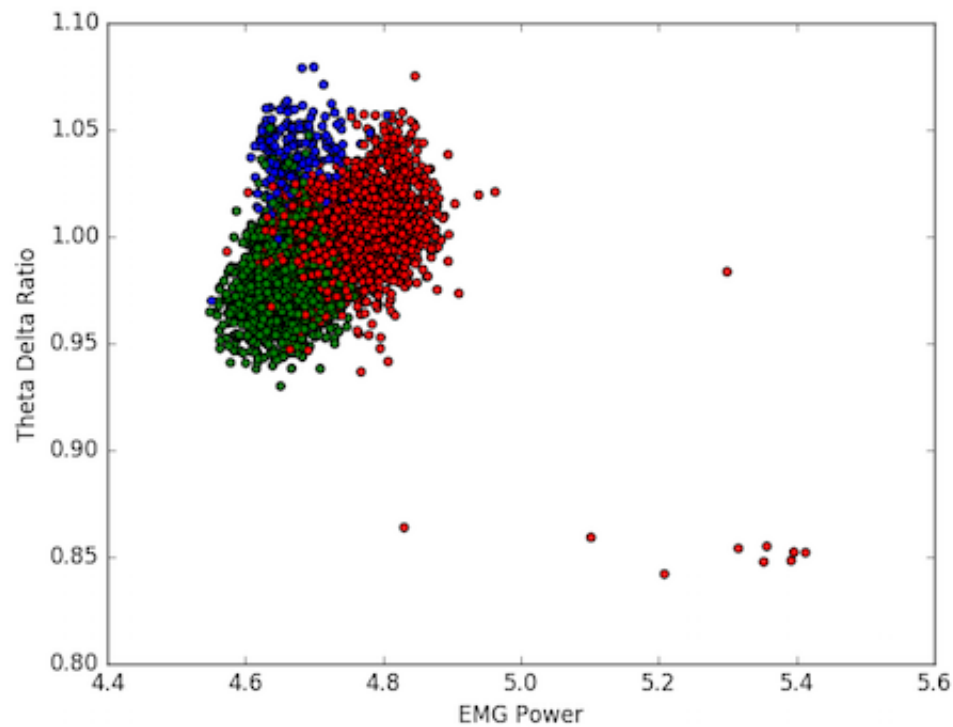
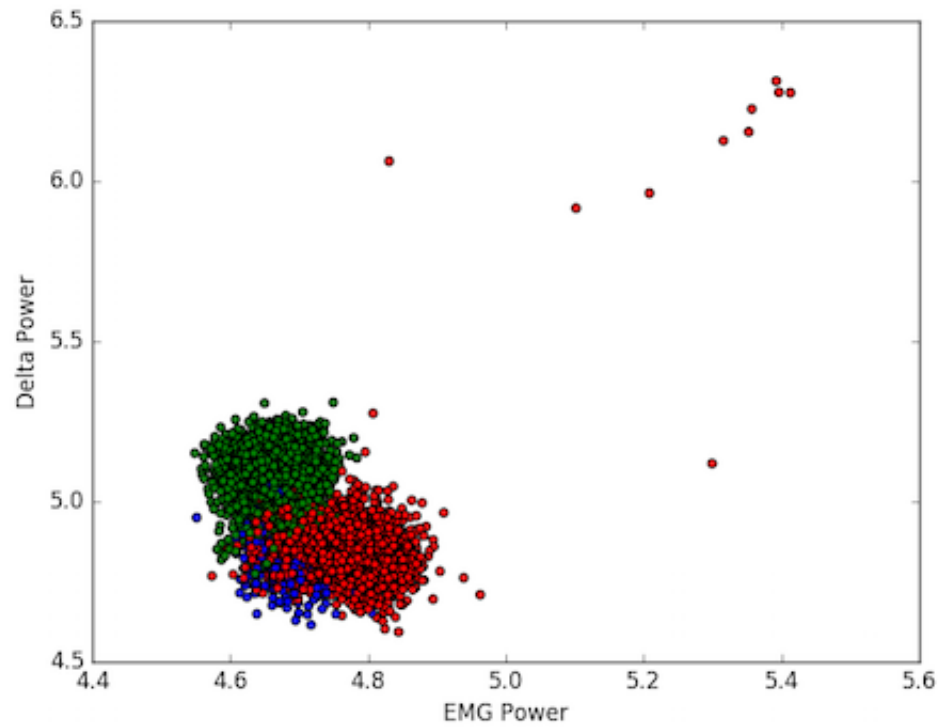
Today's Goal Recalculate feature to create a 3 features plot that makes sense with Ryan's states

Stopped using the FFT and did a simple Butter Bandpass on the entire data, then did $\text{Log}(\text{Sum}(\text{Abs}(\text{data})))$

Plot does all 4402 epoch's. Red=Wake, Green=NREM, Blue=REM

Plots for rat 1032:

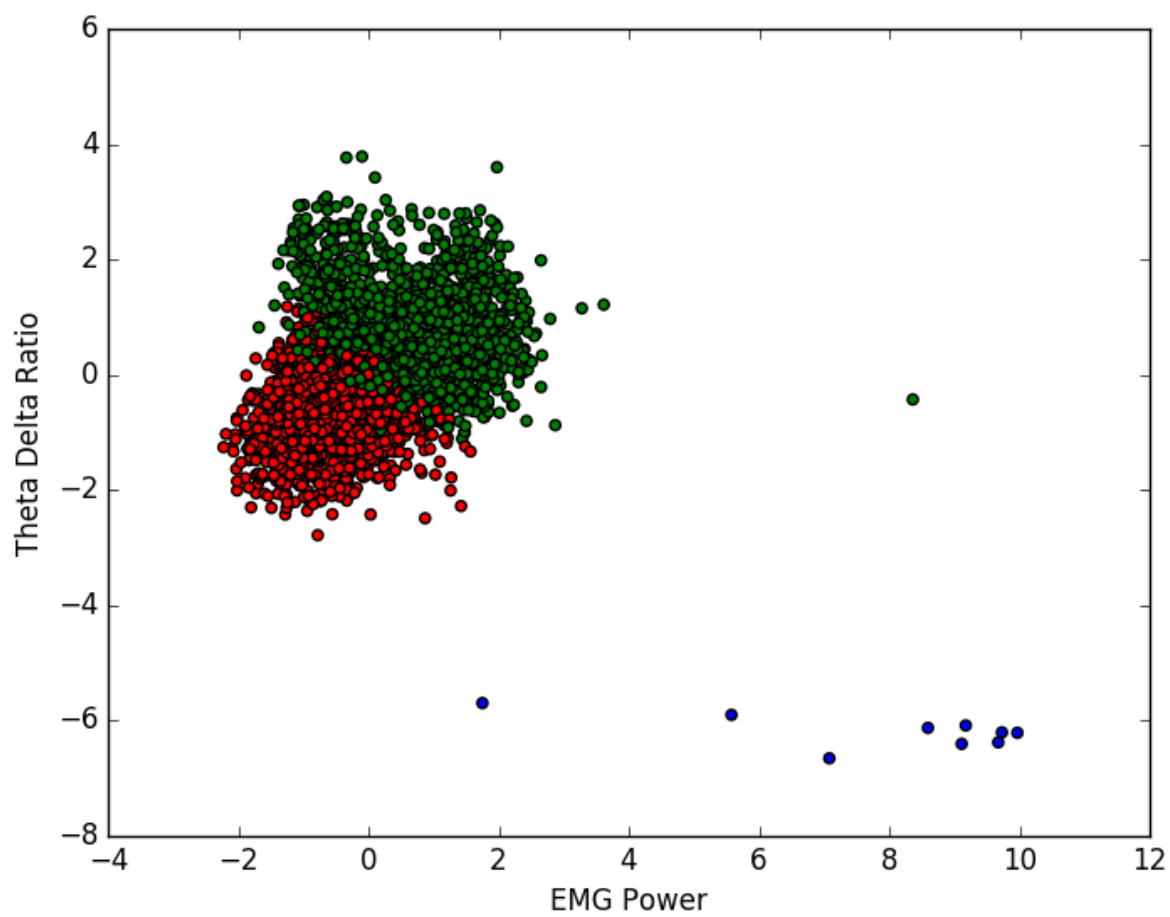


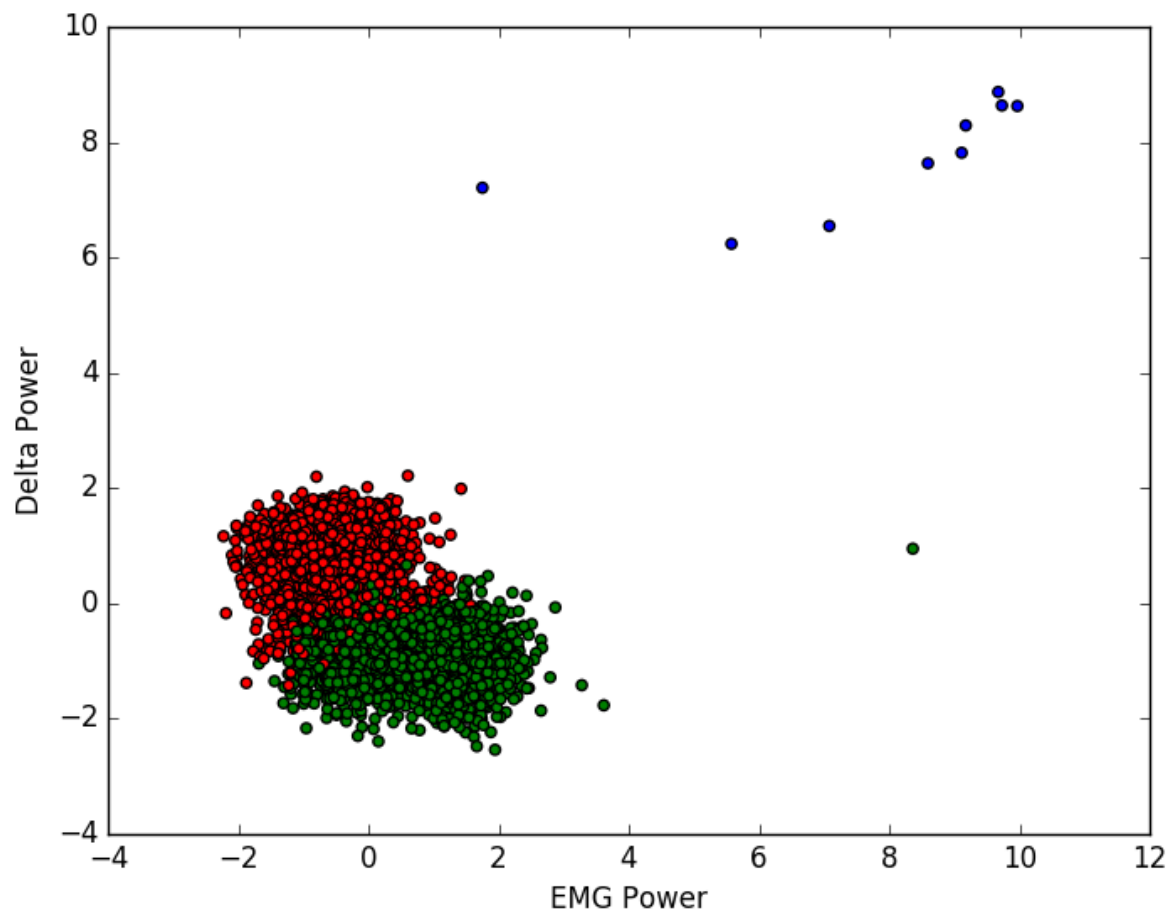


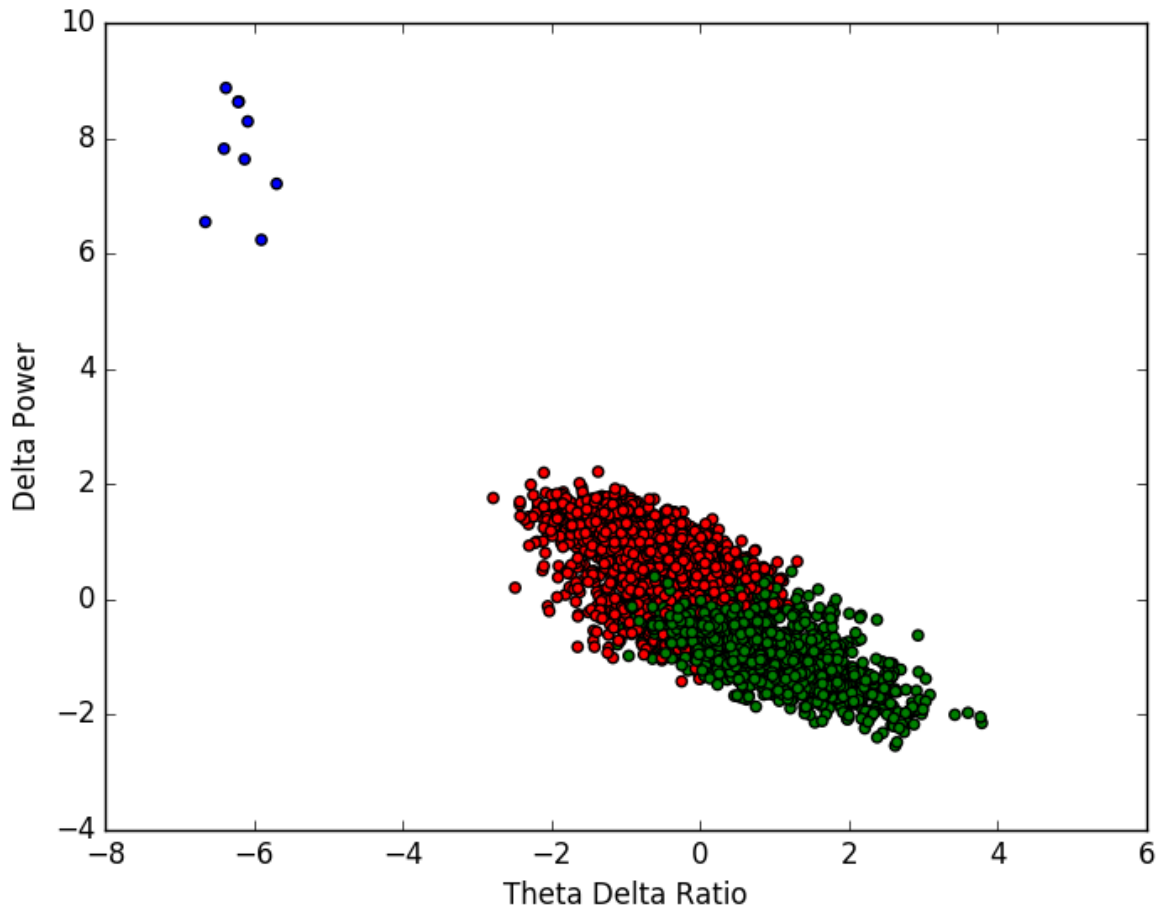
Rest of the plots hold similar structure, with the exception of the last epoch having values of all 0's (must be a measurement error). This ended up being an outlier.

Now that the clusters make sense, I know these features are feasible.

Started clustering. Normalized each feature and used kmeans with 3 clusters for unsupervised clustering. Results for Rat 1032:







So the algorithm was very sensitive to noise (outliers). Therefore, k means is not appropriate.

Manual thresholding may be used, but this may take time and may not be very easy to generalize. A supervised algorithm (decision tree) can be temporarily used to find thresholds to apply unsupervised.

Set up Git repository. Currently private.