\*There are two repositories for my work – ComoEEG-NN-MATLAB and ComoEEG-NN\_PYTHON

ComoEEG-NN-MATLAB:

Master Branch stores original code. N of M branches off of master and stores n of m postprocessing code and repaired original model - balanced psd sample. Confusion branches off of the master with added TN/FP/TP/FN calculations to the neural network. Boosting stores code from a full psd and an in sample lda to create a roc. Its default is 176 features and you have the option to go back to 2640 (each t-step in the 20s retained). Lda\_classifier branches off of boosting and stores code for 176 feature power spectral and an lda classifier lda\_classifier\_optimized branches off of lda\_classifier and stores code for a hyperparameter-optmized classifier. Boosting\_noroc branches off of boosting and stores the boosting results after taking the n highest power interictals, where n is the number of ictals. In all of the 176 feature PSDs, you have the option to switch into full 2640 features by just uncommenting a couple lines. LSTM\_in\_boosted branches off of boosting\_noroc and stores an LSTM NN trained on series for within the high power segment. time\_and\_sgram branches off of boosting\_noroc and stores additional time differential and spectrogram processing. This is the first part of CNN V1. CNN\_V2 branches off of tdif\_and\_sgram and stored the matlab preprocessing for a CNN – updated multitaper and same color range w/ 55-65 Hz taken out. It also changes to 1 FC at the end and redoes the order of the time difference to right before the spectrogram instead of before finding the points. CNN\_V3 branches off of CNN\_V2 and stores code for spectrograms outputted in a binary data file format. CNN V4 branches off of tdif\_and\_sgram – no changes here but changes in its Python NN (CNN\_V4). CNN\_V5 branches off of CNN\_V4 and has an added spatial difference processing – changes to the first script.

ComoEEG-NN-PYTHON:

The master branch stores the NN for CNNV1. The CNN\_V2 stores the NN for CNNV2 – no big changes (but changes in the MATLAB portion). The CNN\_V3 stores the NN for CNN V3. The major change here is that it is geared towards reading in binary file spectrograms. CNN V4 branches off of master and stores the NN for CNN V4 – added data augmentation. CNN\_V5 has no big changes (but changes in the MATLAB portion)

Cross:

CNNV1 – The first part of this is stored in tdif\_and\_sgram. The second part is stored in the master branch of ComoEEG-NN-PYTHON.

CNN V2 – The first part of this is stores in MATLAB’s CNN\_V2. The second part is stored in CNN\_V2 in the python repo. Again, this shifts into multitaper for calculating spectrograms, reorders to the time differential calculation to right before the spectrogram calculation, changes the 2 FC layers to 1, and retains the same color-range for all spectrograms.

CNNV3 – The first part is stored in the MATLABs’ CNN V3. The second part is stored in CNN\_V3 in the python repo. This just changes the medium between the MATLAB and Python scripts from .TIFF (Image) to .bin (raw data).

CNNV4 – The first part is stored in MATLAB’s CNN V4. The second part is stored in CNN V4 in the python repo. I return to CNN V1 and add in data augmentation.

CNN V5 – The first part is stored in MATLAB’s CNN V5. The second part is stored in CNN V5 in the python. Here, I add spatial difference.