BIOINF 580 – Final Project

Due on Apr 25, 2019 at 11:59 Pm

The goal of this problem is to classify single channel EEG signals to healthy and epileptic. EEG signals and their corresponding labels for 160 (80 healthy and 80 epilepsy) signals are available through Canvas. Each row in EEG\_signals.mat is a signal. Label 0 corresponds to healthy EEGs, and label 1 corresponds to epileptic signals. The sampling frequency (Fs) is 173.61 Hz.

For this project you have to create a set of functions that, given a set of training signals, will generate a model that can then be applied to a separate testing set. The performance will be assessed using F1 score on a set of 40 unseen data (we’ll curve the final project).

Some features to consider (this is by no means an exhaustive list):

* Power, entropy of the signal, wavelet decomposition, and Fourier transform.
* Consider looking at the FT as a whole, and also in overlapping frequency bands.
* Standard arithmetic features can also be useful (min, max, etc.). Note that signals are normalized to share the same mean and standard deviation.

The MATLAB details:

1. You will need to submit two functions: generate\_features and generate\_model
2. Your generate\_features function should take in a set of EEG signals (numeric array) and return a matrix of calculated features: function features = generate\_features(data)
3. Your generate\_model function should take in a set of features and labels and return a model: function model = generate\_model(features,labels)
4. To evaluate your submission, I will run the code found in evaluate\_submission.m
5. I’m running MATLAB 2018a

Remember: **your work must be your own**.