Spike Sorting

We wish to build a model to classify the action potentials of cerebellar neurons into simple spikes and complex spikes. The single-unit recording of the neuron electrical activity is provided for 95340 action potentials, consisting of 93163 simple spikes and 2177 complex spikes (labels of the spikes are also included in the data). Each action potential is represented as a 181 time samples (shown in the figure).

First, use PCA method to reduce the dimensionality of the data from 181 to 2. You are not allowed to used MATLAB built-in PCA function.

Then, using the two features (PCA1 and PCA2), find the decision boundary to the data. You can use any classification method you have already learned in class.

