**Documentation of presented project**

**Data used for classification**

Each .pickle file contains one array with a single dimension signal that was generated. Every signal has 5120000 data points and is labelled. Label can be found in file name of the file. There are only two class labels: 0 and 1. None of the arrays has any missing values.

**Necessary libraries**

Libraries used in the project are as follows: pandas, numpy, oc, gc, sklearn, matplotlib, pickle, scipy and tqdm.

**Methods created in the project**

* extractFeatures(data)

Method does FFT on smaller signal composed of first 1 000 000 records from each original signal from the data. Then it extracts three features from those signals: skewness, spectral centroid, and standard deviation of PSD.

Inputs:

data – list of signals

Return value:

List containing extracted features from all given signals.

* makePrediction(data, classes, path\_to\_model)

Method does feature extraction given data, loads model, makes predictions and then evaluates them.

Inputs:

data – list of signals

classes – list of labels corresponding to data inputted earlier

path\_to\_model – path to .h5 file with the trained model

Return value:

List containing prediction for signals in order of inputted data.

* loadDataFromDirectory(directory, class\_index)

Method loads each .pickle file from given directory into a list. Labels are taken from file name and assigned to each signal part.

Inputs:

directory – path to directory containing data to be loaded

class\_index – index of class label in the string containing path of the file

Return value:

Method returns two lists, one containing signals and second containing class labels of each signal.