WORK FLOW

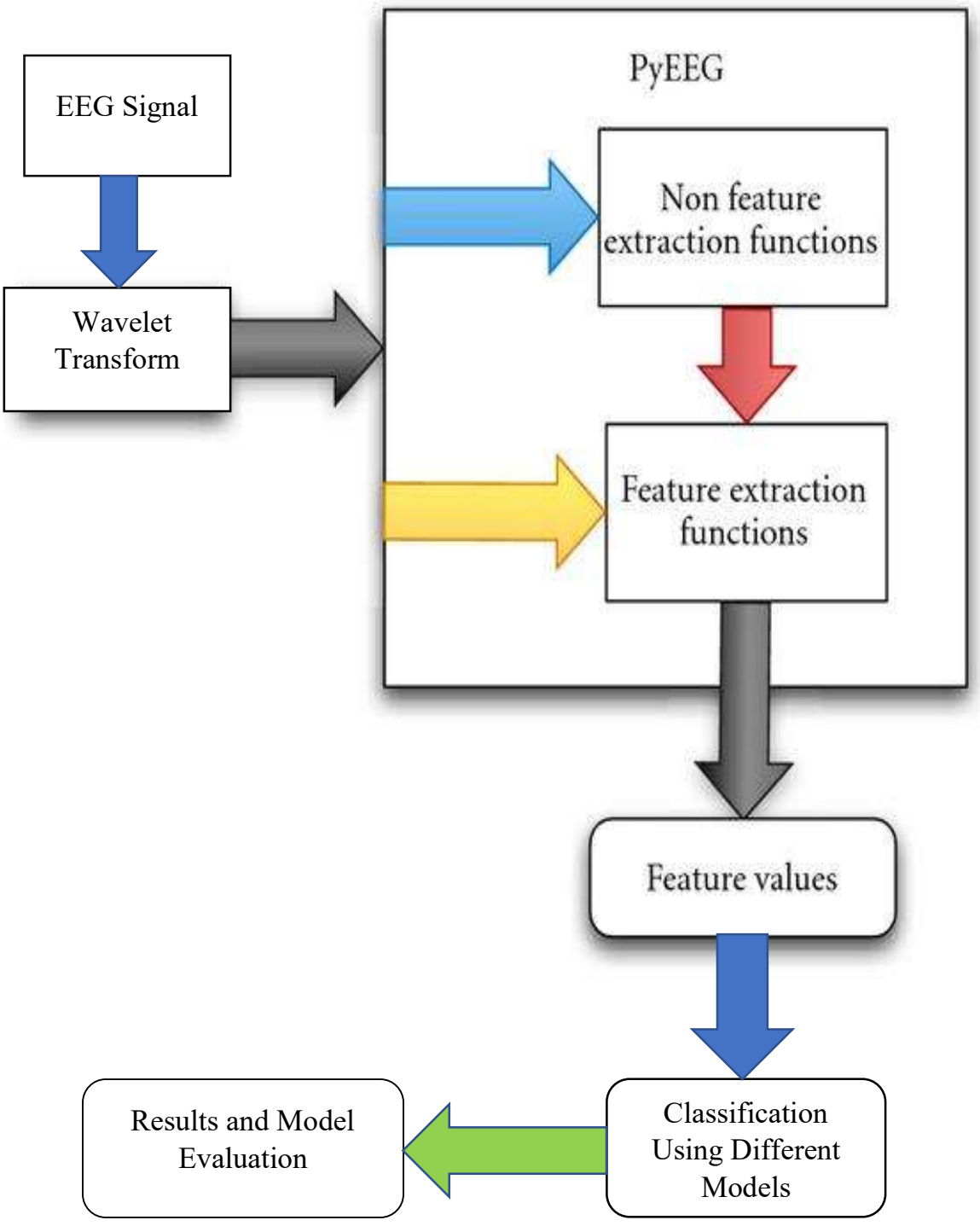
- **REQUIREMENTS**:

This project requires the extraction of features from the EEG data signals. In python, this part can be done using an open source library '**pyeeg'**. The EEG signals are decomposed in wavelets using **'PyWavelet'** package in python.

- **DataSet:**
  The Dataset is loaded in the google colab. This Dataset is taken from Bonn University. The Dataset is divided in 5 sets, in which Set A, B, C and D are labelled as Non-Seizure category, class "0" while the Set E is labelled as Seizure category, class "1". These sets are used to prepare the two matrices containing the sampled signals.
- **Wavelet Transform:**
  The two matrices are then passed through a Wavelet filter with different levels, 1-6 and the decomposed signals are being stored in the matrices for each category. The filters used are of the 'Bior' family.
- **Feature Extraction:**
  Once the Decomposed signals are stored in the matrices, these matrices are then passed through the feature extraction unit using PYEEG package in python. The features extracted are Petrosian Fractal Dimension (PFD), Higuchi Fractal Dimension (HFD) and Singular Value Decomposition Entropy.
- **Training and Test Sets:**
  The entire feature sets are then distributed in the training and test sets where 80% is training set and 20% is the test set.
- **Classification Models:** Different Models are trained using the training set.

  1. ANN using Linear Activation Function in the output layer
  2. SVM Classification.
  3. ANN using Sigmoid Activation Function
  4. ANN using Linear Activation Function in the output layer using Cross Validation
  5. SVM Classification using Cross Validation.
  6. ANN using Sigmoid Activation Function using Cross Validation.

The Accuracies of the models are then displayed using the graph and stored in an excel file.


EEG Signal
Wavelet Transform
PyEEG
Non feature extraction functions
Feature extraction functions
Feature values
Classification Using Different Models
Results and Model Evaluation