

# EE6024 Engineering Machine Learning Solutions

## Assignment 3 Briefing

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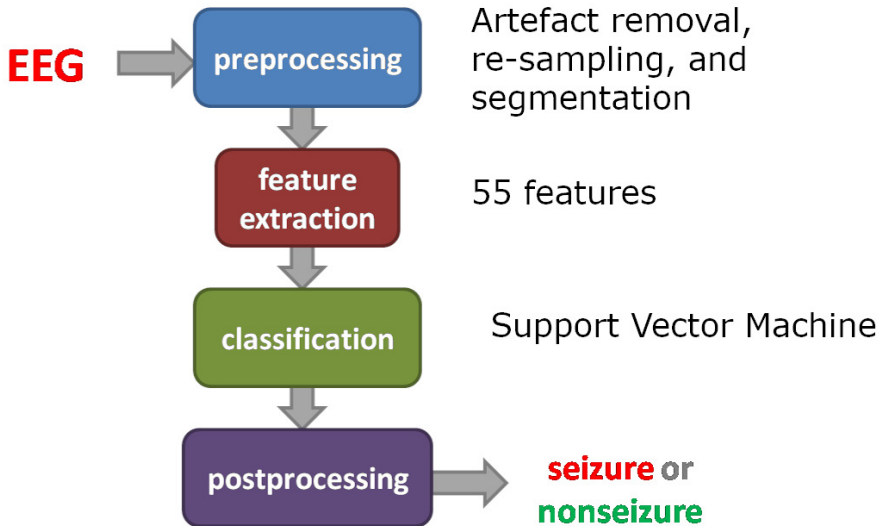
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# Assignment 3

- Open Ended Project
- Opportunity for you to demonstrate what you have learned in EE6024.
- Provided with dataset of neonatal EEG recordings with seizure annotations
- Develop a Neonatal Seizure Detection Algorithm
- No Minimum or maximum requirements
- **Due Date: Study Week, Wednesday 26th April 17.00.**

# Neonatal Seizure Detection



# ANSeR ALgorithm

- Paper on canvas describing the algorithm.
- 8 channels of pre-processed data which has been filtered and down sampled to 32Hz is provided.
- The ANSeR algorithm uses 55 Features to detect a seizure. You may develop as many as you require. Paper on canvas describing EEG Features.
- The ANSeR algorithm uses a Support Vector Machine. You may use any appropriate classifier.
- The ANSeR algorithm detects seizures in each channel, but reports a global result.

# EEG Data Set

- Multi-channel EEG was recorded from 79 term neonates admitted to the NICU at the Helsinki University Hospital.
- The dataset can be used for the development of automated methods of seizure detection.
- The presence of seizures in the EEGs was annotated independently by three experts.
- 17 EEG recordings have been selected for the Project
- The EEG has been pre-processed and per-channel annotations have been created to clearly identify where there is a seizure

# Process

- DATA:- Training, Testing, Validation:- Provided with code to read in and display the EEG. You will need to develop code to select Epochs (segments) of seizure and non-seizure data.
- FEATURES:- Provide some example code. Will need to develop your own to generate the features that distinguish seizure from non seizure for each of the training/testing epoch.
- CLASSIFICATION:- What ever you think is appropriate
- METRICS, METRICS, METRICS
- Demonstrate

# Python Assignment

- **Submission** is a File that can be Run in:-
- Jupyter Notebooks     `filename.ipynb` OR
- Google Colaboratory     `filename.ipynb`  
with COMMENTS, EXPLANATION and JUSTIFICATION.
- Treat this as a report with some code.