# Final Year Project 2017-2018 Group 31

### SSVEP Classification

- Guide: Mrs. Vidya T V
  Assistant Professor, PESIT-BSC
- Prashanth H C1PE14EC099
- Pavan kumar D
  1PE14EC094
- Sawan Singh Mahara
  1PE14EC128
- Lakshmiraj1PE14EC412

#### PROBLEM DEFINITION

Classifying EEG signals from SSVEP using statistical approaches.

- Understanding the stages of standard BCI systems.
- Exploring known SSVEP classification algorithms.
- Namely CCA, Riemannian manifold approaches.

# Prerequisites

- Linear Algebra
- Digital Signal Processing
- Biomedical Signals

Time frequency Analysis

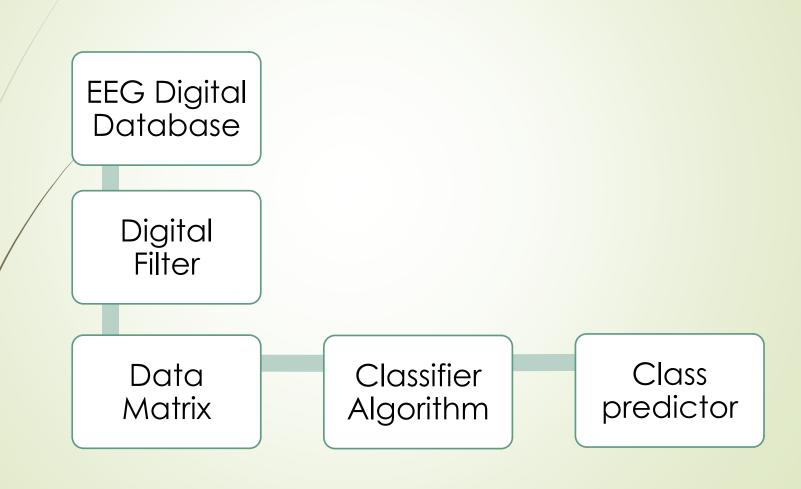
### Digital Signal Processing

Result Signal Source **Employment** Objective Preprocessing Algorithm Digital Filtering Digitisation

## SSVEP Processing

Classifier Class **EEG Source** Algorithm Predictor Result 100Hz LPF Data Matrix **Employment** Preprocessing Digitisation Filter

#### Offline SSVEP Classification



#### Online SSVEP Classification

Digital EEG Stream

Windowing

Finite Buffer

Result Employment

> Class Predictor

Offline SSVEP Classifier

## Project Plan

SEP

- Literature Study
- Algorithm Study

OCT

Implementation

FEB

Verification with Database

MAR

• Performance characterisation of contrived code

APR

Testing the code with new datasets

### References

- [1] M. Congedo, A. Barachant, A. Andreev, A new generation of brain-computer interface based on Riemannian geometry
- [2] Emmanuel Kalunga, Sylvain Chevallier, Quentin Barthelemy, Karim Djouani, Eric Monacelli, Yskandar Hamam- Online SSVEPbased BCI using Riemannian geometry
- [3] Francois Benoit Vialatte, Monique Maurice, Justin Dauwels, Andrzej Cichocki- Steady-state visually evoked potentials: Focus on essential paradigms and future perspectives

# Thank You