**Project Title:** DriveSafe – A brain computer interface application to monitor driver drowsiness using EEG signals.

Advisor: Prof. Mohammad Al Faruque

Group Size: 2 to 3 students (minimum 2)

Requirements: This is a HW/SW design project. You already have the required knowledge from the class. The specific device is already selected. You do not need to look for HW or SW platform.
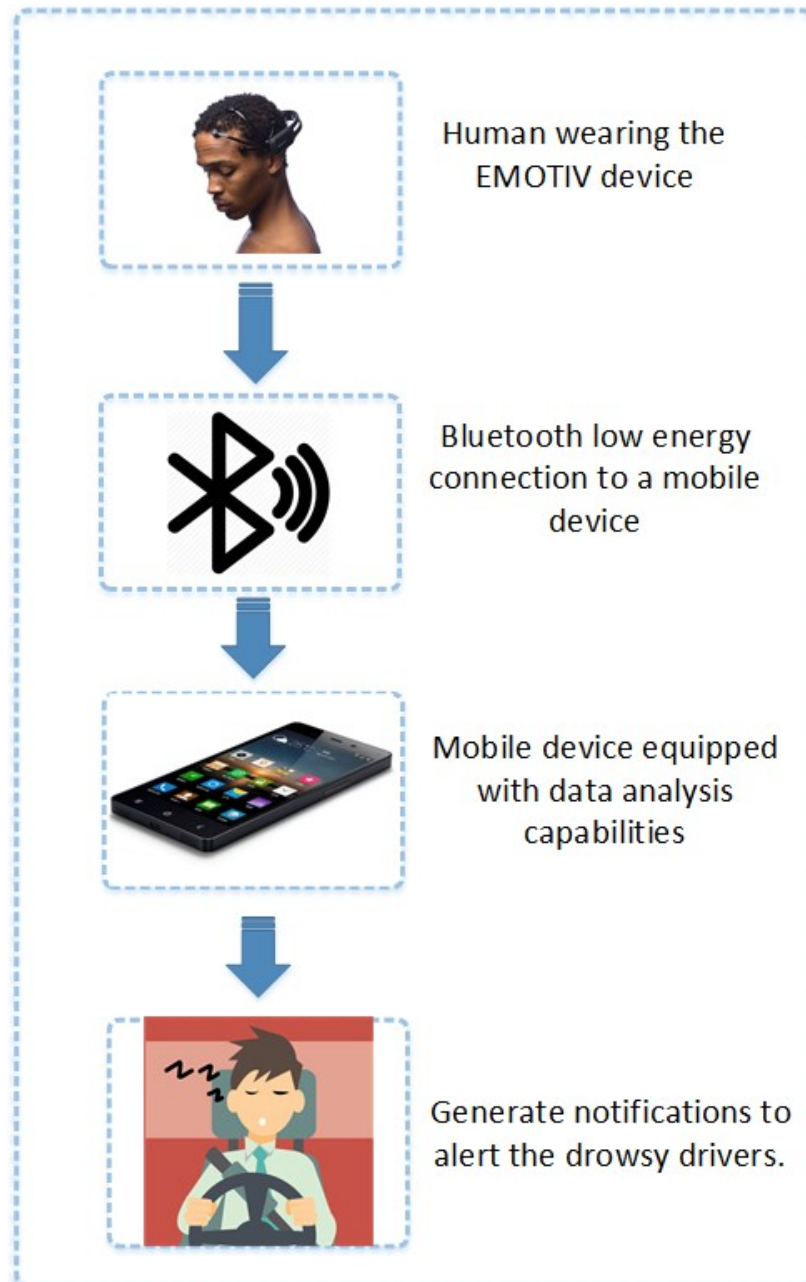
Figure 1: Overall Architecture

Project Objectives:

A wearable sensing system collecting brain signal through EMOTIV EPOC+ 14 channel mobile EEG. The device will be able to track the brain signal reflecting drivers' drowsiness in different situations (e.g. drowsy/alert) and generate notifications accordingly to alert them (e.g. May ring an alarm in the mobile).

Functional Specification:

Inputs:

- Time-series data from the EMOTIV EPOC+ 14 channel mobile EEG.

Functionalities:

- Performing data analytics on the input data.
- It will focus mostly on the following two functionalities of the brain computer interface applications:
  - ✓ Detection of drivers' drowsiness (drowsy/alert).
  - ✓ Generate notifications to alert the driver (play music or alarm).

Outputs:

- The system will be able to monitor brain signals on various situations and generate alerts accordingly to help the driver. Such a system will be very useful to avoid accident due to drowsy driving.