

Project Title: Brainiac – A brain computer interface application to give commands using brain 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.

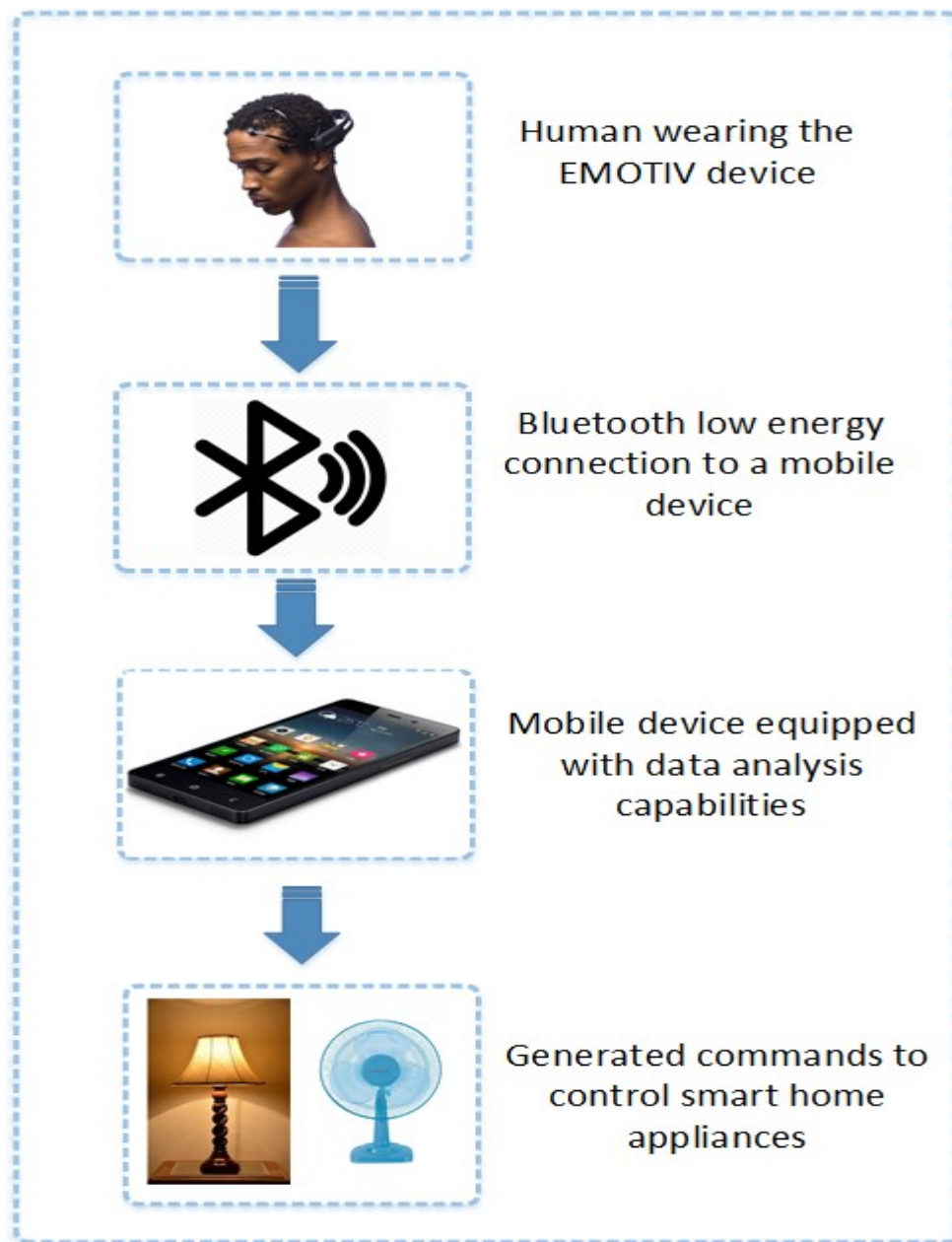


Figure 1: Architecture of Brainiac

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 various human moods in different situations (e.g. feeling dark) and generate commands accordingly to meet user requirements (e.g. turn on the lights).

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 human moods in different context (feeling dark, feeling warm, feeling excited).
 - ✓ Generate commands to meet the user requirements (turn on the lights when its dark or fan when its warm, play a party song in your mobile when you are excited).

Outputs:

- The system will be able to monitor brain signals on various situations and generate commands accordingly to help user. Such a system will be very useful for physically disabled persons like those who cannot talk and move at the same time.