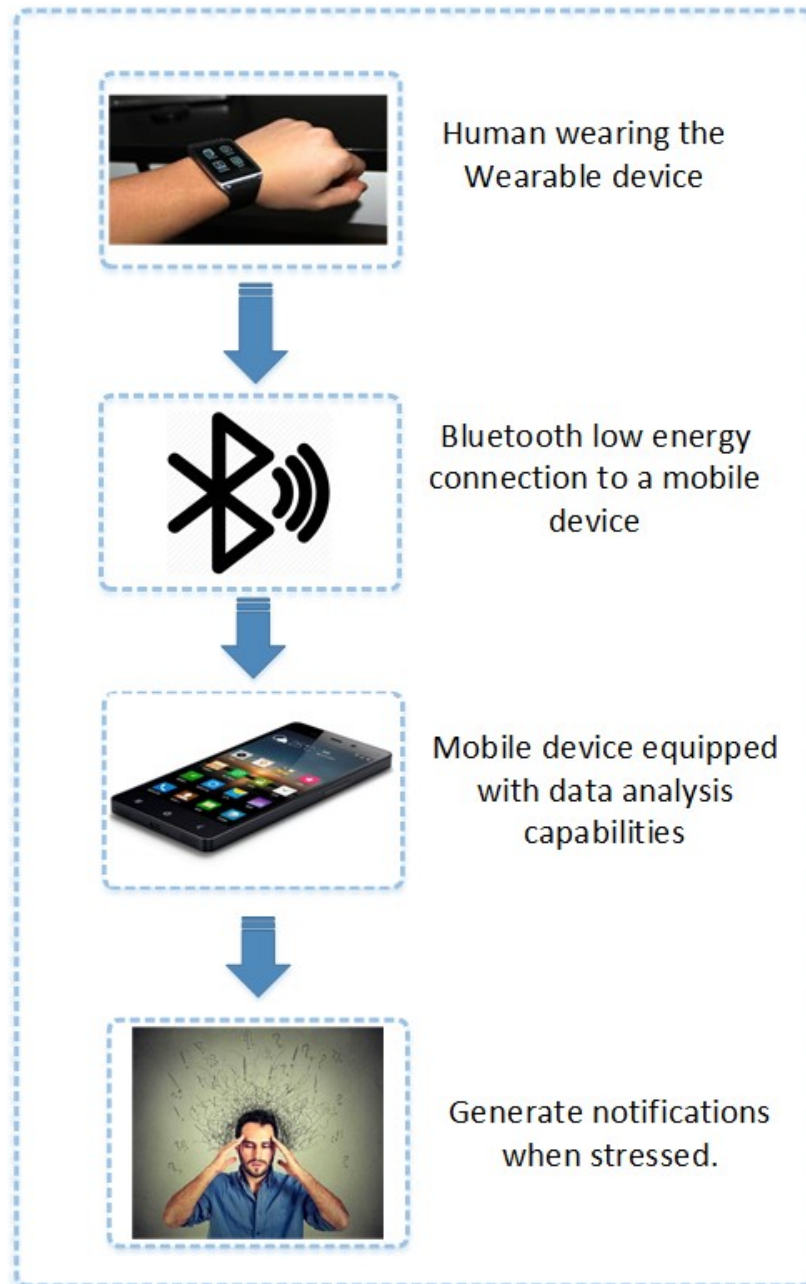**Project Title:** Well & Calm – A wearable device application to avoid stress and remain calm.

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 wrist worn biosensors collecting electrodermal activity (EDA), temperature, acceleration, heart rate (HR), and arterial oxygen level (SpO2). The device will be able to track the physiological signals reflecting various neurological status (including physical stress, cognitive stress, emotional stress and relaxation) and generate notifications accordingly to help user to be calm (e.g. play soft music or suggest breathing).

Functional Specification:

Inputs:

- Time-series data from the Affectiva wearable device.

Functionalities:

- Performing data analytics on the input data.
- It will focus mostly on the following two functionalities:
  - ✓ Detection of neurological status (including physical stress, cognitive stress, emotional stress and relaxation).
  - ✓ Generate notifications to calm the users when stressed (e.g. play soft music or suggest breathing).

Outputs:

- The system will be able to monitor neurological status and generate notifications accordingly to help user. Such a system will be very useful for persons suffering from hypertension or stress problems.