Assignment 3

Question1: Spectrogram of Audio File (25 points)

The purpose of this question is to record a audio file and plot the spectrogram.

(a) First step is to record your voice in an audio file. For doing this, use any tools, software or android apps that are available. So, say a short sentence (like “My name is xxx”) and record the audio file.

(b) Now write a code (use any language, but do not use any tool directly) that will read this audio file, and draw the spectrogram of that file. Please feel free to consult any online resources to do so.

(c) Now report what you can observe in this spectrogram?

Question 2: Implementing a Human Posture Detection app (25 points)

The purpose of this question is to use the **accelerometer** sensor of your smartphone to find out some simple human posture.

(a) Use the **Physics Toolbox** in your smartphone. Now take the smartphone in your trouser pocket at any particular orientation. Record the accelerometer samples while you are sitting, standing and lying down straight, and plot them. Can you see any patterns while performing these actions?

(b) Can you use this pattern for "finding out among these three human postures" in real time? Please use the **PhonePI+** app for streaming your data to your computer. Please the setps in GitHub - priyankark/PhonePi_SampleServer: Companion servers in Node and Python for the PhonePi Sensor Streamer apps., and the attached code. Also please use Ubuntu/Linux environment to PhonePi+. Plaese, report your data (in graphs) and outcome in the report.