**SVKM’s NMIMS**

**Mukesh Patel School of Technology Management & Engineering**

**Computer Engineering Department**

**Program: MBA Tech EXTC**

**Course: MBA. Tech (EXTC)**

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**Aim:- Feature extraction of EEG Signals**

**Frequency domain feature:** Apply the FFT transform and extract the spectral features

Delta: 0.5 to 4Hz

Theta 4 to 8 Hz

Alpha 8 to 16 Hz

Beta 16 to 32 Hz

Gamma 32 to 99 Hz

**Instructions and Objective:**

1. Open the data base of Neuromax Select any subjects between 3-9
2. Set the gain 30 μ V/mm, page speed 30 mm/sec, lower freq. 0.5 and higher 99 Hz enable the notch filter 50 HZ and Mont 3
3. Export the data from in excel for 10 secs, samples 2560 (both filtered and unfiltered)
4. Import the CSVs in google collab
5. Remove NaN values if any from the data
6. Perform FFT analysis (for both dataset)
7. Plot the graphs of statistical feature for both filtered and unfiltered data
8. Plot the spectral graphs representing magnitude and frequency bands

**Conclusion:** In this experiment, we extracted Patient 5’s EEG data, plotted the data in time series. After that, we applied Fast Fourier Transform on all columns, then plotted the data in Frequency Domain. While doing this, we have also separately visualised different spectral features, i.e., Delta, Theta, Alpha, Beta, Gamma, based on their frequency ranges. These are all visible in frequency plots of both filtered and unfiltered data. All the output images and graphs can be found below in the python notebook.