This repository contains the dataset of the power values for all human subjects who participated in the attention experiments carried out by Mr. Aritra Das and Ms. Nilanjana Nandi in Dr. Supratim Ray’s Lab.

**Analyzed Data:**

The ***analyzedData*** folder saves the power values of all human subjects who participated in the attention experiments in the following .mat file:

***powerData\_SRC-Long\_EEG\_allSubjects\_N26\_tapers\_1\_badTrial\_v10.mat.***

The data is saved in two formats inside the .mat file.

The variable ***powerData\_AllElecs*** contains the power values in 26 cell arrays (subjects). Each cell array contains the power values in two structures, one for baseline period (-1 second to first stimulus onset) and one for the pre-target period (-1 second prior to target onset to target onset). Inside each structure, the data is organized into 12 cell arrays corresponding to stimulus/attention conditions. Inside each of these 12 cell arrays, the data is organized in the format number of electrodes x number of trials x frequency ranges. Note that only good trials are included in this data. The bad electrode values have been set to NaN values.

The variable ***powerData\_GroupWise*** contains the power values in 26 cell arrays (subjects). Each cell array contains the power values in two structures, one for baseline period (-1 second to first stimulus onset) and one for the pre-target period (-1 second prior to target onset to target onset). Inside each structure, the data is organized into 2 x 12 cell arrays where the two rows correspond to the left and right hemispheric EEG electrodes respectively and the 12 columns correspond to stimulus/attention conditions. Inside each of these 12 cell arrays, the data is organized in the format number of electrodeGroups x number of trials x frequency ranges. Note that only good trials are included in this data. The bad electrode values have been set to NaN values.

**Data Codes:** The program named ***savePowerValsForAllSubjects.m*** under ***analysisCodes*** folder is used to save the intermediate data saved in the following data file.

***powerData\_SRC-Long\_EEG\_allSubjects\_N26\_tapers\_1\_badTrial\_v10.mat.***

This program needs the extracted and segmented data for each subject which are kept locally or Network Drive under the relevant project folder. This also needs ***allProtocolsAttentionEEGProject.m*** and ***dataInformationSRCProtocols\_HumanEEG.m*** in the folder named ***informationFiles*** this repository.

**Display Codes:**

The program ***displayResults\_AttVsIgn.m*** displays the scalp maps for different frequency ranges for both static and flickering stimuli. The MATLAB script ***runDisplayAttVsIgnData.m*** uses this function to generate the figures. These codes are located inside ***displayCodes*** folder of this repository.

**Other Codes used in this project**

**Display:**

1. **getPlotHandles:** creates subplot layout for figures. Copied from TLSAEEGProjectPrograms GitHub repository created by Supratim Ray.
2. **topoplot\_murty:** modified topoplot function from EEGLAB; copied from TLSAEEGProjectPrograms GitHub repository created by Supratim Ray. The original function has been modified by Dr. DVPS Murty to add different display options.

**InformationFiles:**

***allProtocolsAttentionEEGProject:*** contains information about EEG protocols recorded under this project.

***dataInformationSRCProtocols\_HumanEEG:*** provides information about relevant attention protocols (protocol index in ***allProtocolsAttentionEEGProject)***.

**Code Dependencies:**

All the required MATLAB Custom codes are placed inside relevant folders of this repository. The codes were written with MATLAB R2021a. A third-party toolbox, EEGLAB (Version 12\_0\_2\_5b) has been used which is the only external code dependency to generate scalp maps or topo plots in figures. To generate intermediate dataset ***powerData\_SRC-Long\_EEG\_allSubjects\_N26\_tapers\_1\_badTrial\_v10.mat,*** the extracted and segmented data files are required which is not available in this repository.