Summary of steps performed in MATLAB scripts

1st: document "analyze.m"

In this document two lists were created , sublist_CTR and subjlist_ASD where we will extract the name of each participant and add them into the two lists, as it will be necessary to take each participant in turn and go through several steps, where the necessary information for the studies will be extracted, for both connectivity at the sensor and source level.

2nd: documents

- "doSingleSubjectAnalysisCTR_FACES"
- "doSingleSubjectAnalysisASD_FACES"
- "doSingleSubjectAnalysisCTR_NOFACES"
- "doSingleSubjectAnalysisASD_NOFACES"

Each participant will go through 2 of these steps (face and noface), the CTR and the ASD in their corresponding ones.

In this summary description, I will analyze only "doSingleSubjectAnalysisCTR_FACES", since the execution of the others is the same, just with the change in the group and condition to be used. I created several scripts just for the sake of organization.

"doSingleSubjectAnalysisCTR_FACES":

In this script, the initial step is to take the EEGLAB document corresponding to the selected participant (in the ''for'' loop in "analyze.m") and transform it into a FieldTrip format document with the help of the "eeglab2fieldtrip" function. Then I extracted the electrodes from each participant and transformed their unities into mm (millimeters), for them to be well configured with standard heads, this would be the unit of choice.

Then, knowing that I would need some standard files (for the brains recreation), I immediately extracted the following files: dkatlas, headmodel_eeg, and sourcemodel.

In sequence, I ran several scripts for analysis at the sensor and source level, extracting the necessary information for a specific folder, in this case: face -> parts_CTR -> results_faces_ ("participant name") for alpha frequency, or even results_faces_theta_("participant name"), for theta frequency range.

There will be explanations of the steps performed in the scripts along the scripts located into "faces -> parts_CTR" folder.

Sensor Analysis:
- "sensor_layoutpower2D_CTR.m"
- "sensor_electrodesstandardhead_CTR"
- "sensor_connectivitystudies_CTR"

Source Analysis:
- "source_reconstruction_CTR.m"
- "source_alpha_CTR.m"
- "source_differences_CTR.m"
- "souce_connectivityanalysis_CTR.m"

The same process was done for CTR_nofaces, ASD_faces e ASD_nofaces, only changing the group and the condition.

3rd: group analysis

In the first place, I load the components from "dkatlas", "headmodel_eeg" and "sourcemodel".

Then I created lists to put information about each participant. Then went through each participant and removed the information I wanted to use in group studies, using "for" loops.

In these scripts, I took the information and created the averages, since there are no specific fieldtrip functions to average the information, I need. I ran the averages for: Sensor layout, lead field matrix, source connectivity e sensor connectivity.