Pheel GUI input file requirements

The input file should be a MatLab .mat file containing the following variables:

**ECG-Breath Analysis:**

|  |  |
| --- | --- |
| sig\_ECG | Numeric Array |
| Numeric Array of ECG signal values (in mV) | |
| sig\_respiro | Numeric Array |
| Numeric Array of Breath signal values | |
| tempo\_auto | Numeric Array |
| Numeric Array of time | |
| eventi\_ecg (or eventi) | Numeric 2D Matrix (optional) |
| Columns: event code, event time (as tempo\_auto index) | |
| events\_label | Struct Array (optional) |
| Struct fields: event code (numeric), event label (string) | |

**EEG Analysis:**

|  |  |
| --- | --- |
| sig\_EEG | Numeric 3D Matrix |
| Columns: samples, Rows: EEG channels | |
| canali | Cell Array |
| Names of the EEG channels (strings) | |
| tempo\_eeg | Numeric Array |
| Numeric Array of time | |
| eventi\_eeg (or eventi) | Numeric 2D Matrix (optional) |
| Columns: event code, event time (as tempo\_eeg index) | |
| events\_label | Struct Array (optional) |
| Struct fields: event code (numeric), event label (string) | |
| eventi\_reject | Numeric 2D Matrix (optional) |
| Columns: start time, end time (both expressed as tempo\_eeg indexes) see below for further information | |

eventi\_reject meaning:

during eeg preprocessing it may be necessary to delete some parts of the signal (e.g. blinks). This is handled updating the variable tempo\_eeg (the variables sig\_EEG and eventi\_eeg should be updated consequently) in order to maintain its consistency (i.e. constant difference of its values) and adding a new row of eventi\_reject with the information about where this deletion took place.

Example  
tempo\_eeg = 0:1/fs:100; % 100s of data sampled at fs [Hz]  
% we need to reject from 2s to 4s  
idxRejStart = round(2\*fs);  
idxRejEnd = round(4\*fs);  
% update of variables  
tempo\_eeg = [tempo\_eeg(1:idxRejStart), tempo\_eeg(idxRejEnd:end) - (idxRejEnd-idxRejStart-1)/fs];  
sig\_EEG = sig\_EEG(:,[1:idxRejStart, idxRejEnd:end]);  
for eventIdx = 1:size(eventi\_eeg, 1)  
 eventTime = eventi\_eeg(eventIdx, 2);  
 if eventTime > idxRejStart && eventTime < idxRejEnd  
 eventi\_eeg(eventIdx,2) = idxRejStart;  
 elseif eventTime >= idxRejEnd  
 eventi\_eeg(eventIdx,2) = eventTime – (idxRejEnd-idxRejStart);  
 end  
end  
eventi\_reject = [eventi\_reject; [idxRejStart, idxRejEnd]];

**EDA Analysis:**

|  |  |
| --- | --- |
| sig\_EDA | Numeric Array |
| Numeric Array of EDA signal values | |
| tempo\_eda | Numeric Array |
| Numeric Array of time | |
| eventi\_eda (or eventi) | Numeric 2D Matrix (optional) |
| Columns: event code, event time (as tempo\_auto index) | |
| events\_label | Struct Array (optional) |
| Struct fields: event code (numeric), event label (string) | |