

Documentation for Event Detector algorithm (2019.08.05)

- Simultan: Check this if you have both electrophysiological and calcium data
 - If you uncheck 'Simultan', you can choose which type of data you are feeding to the algorithm
- Num of ephys chan.: Write here how many electrophysiological channels you have selected
- Ephys block: This specifies whether from the selected curves in your Curve Analysis window the electrophysiological data comes first or second
- Ca²⁺ delay vs ephys: Here you can set the maximum delay a Ca²⁺ event should have compared to the simultaneously occurring electrophysiological event
- Options:
 - Debug: If checked it returns various data to the Matlab workspace, which can help if there is a confusion about the detection results
 - Matlab figs: If checked the algorithm produces separate Matlab figures in addition to the new gors in the Curve Analysis window
- Ca²⁺ parameters: These are the parameters used for the event detection in your Ca²⁺ data
 - Sample rate: The sample rate of the provided data
 - Step size: Specifies by how much the peak detection window moves for each step, the detection window itself is twice the given size
 - Min event distance: This determines how close to each other two peaks can be
 - Event length: Here you can specify how the length of the events to be detected
 - Threshold: You can select whether the thresholding should be done at a fixed dF/F value or at a calculated mean+n*sd value
 - sd mult: This gives the multiplier of the sd value (the n in mean+n*sd)
 - quietsd mult: The same as sd mult, but for the determination of the quiet intervals
- Ca²⁺ processing: Here you can choose from a list of available processing options for the Ca²⁺ data
- Ephys parameters: These are the parameters used for the event detection in your electrophysiological data (the settings with the same names as in Ca²⁺ parameters operate the same way)
 - W1: The lower limit of the bandpass filter
 - W2: The upper limit of the bandpass filter
 - Quietint length: How long should the quiet interval be, on which the detection threshold will be based
 - Denoise: Useful for eliminating various artifacts, it subtracts the 'Refchan' from other channels
 - Refchan: Reference channel, for example in hippocampal recordings the cortical channel
 - 1s shift: This can be used when you have to shift your electrophysiological data forward by 1 second

- Disregard peaks coinciding with refchan: If you check this, peaks on your 'normal' channels will be deleted from the result if they are within the 'Min event distance' to a 'Refchan' peak
- Used for simult: Here you can choose which of the strongest channels should be used for the simultan detection
 - Maxnum: This option determines the strongest channel, based on the sum of the power of all peaks
 - Norm: This differs from Maxnum in that it divides the sum of power of all peaks by the number of peaks, thus normalizing the result
- Ephys processing: Here you can choose from a list of available processing options for the electrophysiological data

Documentation for the CSV spreadsheet

- Ephys & Ca²⁺ parameters: Here you can check which parameters were selected for the detection
- Ca²⁺ delay vs ephys: The user specified time window for the simultaneous detection
- Ephys normed leadchannel, Ephys non-normed leadchannel, Selected for simultan detection: The strongest electrophysiological channels with the two different calculation methods (see above) and the one which was selected for the detection
- Ca²⁺ & Ephys detection thresholds: The threshold value for each channel/ROI which was used for the peak detection
- Reference channel detections: The timestamp of peaks in seconds on the electrophysiological channel which was set as reference by the user
- Ephys & Ca²⁺ simultan events: The timestamp of peaks on the "Selected for simultan detection" electrophysiological channel which occurred simultaneously (in the given time window) with at least one Ca²⁺ peak
 - In this section even if multiple Ca²⁺ peaks coincided with an electrophysiological peak only one will be written here
- Delays between ephys and Ca²⁺: The time difference between the above listed simultaneous events in seconds
- Avg delay: The average of the delays in seconds
- All Ca²⁺ events grouped by ROI + simultan Ca²⁺ events: The timestamps of all the detected Ca²⁺ events grouped by the ROIs and the events which occurred simultaneously with an electrophysiological event are separately listed (e.g.: 0# simult means the simultaneous events from ROI number 0)
 - Here all the simultaneous events are listed even if they belong to one electrophysiological event
- Num of Detected/Simultan Ca²⁺ events grouped by ROI: This is a summation of the previous section
- Ephys events not associated with Ca²⁺: Timestamps of electrophysiological peaks which did not coincide with a Ca²⁺ event