



## Software Tools and Services for chrono and psycho physiology

### PRANA Viewer

The PRANA® software for biosignal processing has powerful computing capabilities and modularity allowing multiple software plug-ins to be executed efficiently.

Various software plug-ins for general and specific purposes are already available:

- the artifact detection plug-in**
- the event detection plug-in**
- the sleep spindle detection plug-in**
- the rapid eye-movement detection plug-in**
- the sleep K-complex detection plug-in\***
- the respiratory event detection plug-in\***

All the software plug-ins can be executed in a single run by using the [software plug-in launcher](#). Additional plug-ins can easily be implemented using the [software developer kit](#).

### Artifact and Event Detection

The software artifact/event detection plug-in allows for automatic signal decontamination by localizing, marking and removing traces containing recording artefacts.

The software waveform detection plug-in allows for automatic waveform detection by analysing signals, localising waveforms and marking events from the corresponding traces.

With its graphical interface, this user-friendly and flexible software plug-in features:

- single-run multiple event and artifact detectors,
- detector adjustable settings (time resolution and interval, channel selection, frequency filtering, signal feature selection, threshold type),
- default detector settings for most common artifacts (movement, electrode detachment, over-flow, flat-line, power-line, muscular and ocular activity, etc.),
- default detector settings for most common waveforms (delta, theta, alpha, beta and gamma bursts),
- saving and loading detector settings,
- user-defined detectors using customised settings,
- detection supervision using adjustable artifact properties.



Artifact detection window

Thanks to the software artifact detection plug-in and to its integrated artifact removal procedure, the PRANA software enables high-quality quantitative analyses.

Thanks to the software event detection plug-in, the PRANA software allows analyzing biosignal by detecting events and measuring event densities.

### Sleep Spindle Detection

The software sleep spindle detection plug-in allows for the automatic detection of events such as sleep spindles from any EEG recordings.

With its graphical interface, this user-friendly and flexible software plug-in features:

- single-run analysis of multiple channels,
- adjustable settings (channel selection, frequency filtering, events duration and interval, threshold),
- default detector settings for human sleep spindles,
- user-defined detection using customised settings,
- detection supervision using adjustable events properties.



Spindle detection window

Thanks to the software sleep spindle detection plug-in, the PRANAi $\frac{1}{2}$  software allows the detection sleep grapho-elements and measuring event densities from any conventional PSG recording.

## Sleep K-Complex Detection\*



Page under construction, please check back later.

\*Plug-in under development.

## Rapid Eye-Movement Detection

The software rapid eye-movement detection plug-in allows for the automatic detection of events such as rapid eye-movements from any conventional EOG recordings.

With its graphical interface, this user-friendly and flexible software plug-in features:

- single-run analysis of multiple channels,
- adjustable settings (channel selection, frequency filtering, events duration and interval, amplitude and slope thresholds),
- default detector settings for human rapid eye-movements,
- user-defined detection using customised settings,
- detection supervision using adjustable events properties.



Rapid eye-movement detection window

Thanks to the software rapid eye-movement detection plug-in, the PRANAi $\frac{1}{2}$  software allows the detection sleep grapho-elements and measurement of event densities from any conventional PSG recording.

## Respiratory Event Detection\*

The software respiratory event detection plug-in allows for the automatic detection of respiratory events (apnea, hypopnea, blood oxygen desaturation, snoring and body position) from conventional PSG recordings.

With its graphical interface, this user-friendly and flexible software plug-in features:

- single-run analysis of multiple events,
- adjustable settings (channel selection),
- default detector settings for human respiration,
- user-defined detection using customised settings,



Respiratory event detection window

Thanks to the software respiratory event detection plug-in, the PRANAi $\frac{1}{2}$  software facilitates the diagnosis of sleep breathing disorders by detecting respiratory events from conventional breathing recordings.

\*Compatible only with specific recording settings.