NeuroPhys output into csv format

Version 2.0

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NeuroPhys output data in csv format

NeuroPhys output data can be converted to a comma-separated-value format that can be exported by SpikeSorter. There are two main sets of fields – header fields, and data fields:

Header fields:

These fields include basic file information, such as sample rate, bit resolution, file creation time/date, and maximum voltage range.

Data fields, in the following order:

1. Spikes, sorted first by channel ID, then timestamp
2. Events, sorted first by event ID, then timestamp
3. EEG/LFP, sorted first by channel ID, then timestamp

Data fields consist of one event per line. Each line containing the following comma-separated fields:

- Data type (spike/event/EEG). Spikes are waveform snippets detected by threshold detector. Events are entered manually via timestamp tool, or programmatically via DLL. EEG packets are ~50ms
- Timestamp, in ticks (to convert to seconds, divide by the sample rate in the header)
- Channel ID
- Unit name (if spike data) or event name (if event). Unit name is either “unsorted”, or “a”, “b”, “c”, etc., corresponding to sort categories.
- Voltage values, separated by commas. These are for spike or EEG waveform. Units are in “quanta”. To convert to millivolts, multiply by “Max voltage for spikes” * 2 / 65536. For example, JAGA device has max voltage range of +/- 6 mV, so voltage data * 6 * 2 / 65536 = millivolts.

Example

Sample rate (Hz), 28070 Number of spike channels, 16 Number of event channels, 211 Number of EEG/LFP channels, 32 Points per spike waveform, 25 Spike wave points pre-threshold, 6 Recording Date (month/day/year), 4/5/2015 Recording Time, 00:34 Last timestamp in ticks, 124461 Bits per sample (spikes), 16 Bits per sample (EEG/LFP), 16 Max voltage for spikes (+/- mV), 6 Min voltage for EEG/LFP (+/- mV), 6 Spike channel, 1, unit, unsorted, total items, 10

Event channel, 200, total items, 8 Event channel, 201, total items, 8 Event channel, 206, total items, 8 Spike channel name, Spike1, channel ID number, 1, reference channel, 0, Spike detection threshold (mV), -1 Event channel name, PreStim, event ID number, 200

Event channel name, StimOnset, event ID number, 201 Event channel name, Offset, event ID number, 206

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Data type, Timestamp, Channel ID, Unit/Name

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Header

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Spike, 732, 1, unsorted,0,0,0,0,-1,-2,-5,-4,-3,-2,-1,-2,-2,-1,-1,0,1,0,-1,-1,-2,-1,0,-1,-3

Spike, 791, 1, unsorted,1,1,0,0,-1,-3,-4,-2,-1,-2,-2,-2,-1,0,0,1,2,0,0,0,0,0,0,0,1

Spike, 833, 1, unsorted,0,1,1,0,-1,-3,-5,-5,-5,-3,0,1,2,0,-1,0,0,2,0,0,0,0,0,-1,-1

Spike, 928, 1, unsorted,4,2,0,0,-1,-3,-4,-3,-2,-2,-1,1,2,2,1,0,-1,-1,0,1,0,0,0,0,0

Spike, 1130, 1, unsorted,-2,0,1,1,0,-2,-4,-3,-1,0,0,0,0,-1,0,0,1,0,0,-1,-2,-3,-4,-2,0

Spike, 1146, 1, unsorted,1,0,0,-1,-2,-3,-4,-2,0,0,0,2,2,2,1,0,1,2,2,1,-2,-4,-4,-1,0

Spike, 1162, 1, unsorted,1,2,2,1,-2,-4,-4,-1,0,0,1,0,0,1,1,1,0,0,0,1,1,1,3,2,0

Spike, 1655, 1, unsorted,3,2,1,0,-1,-3,-4,-4,0,0,0,0,0,0,-1,-1,-1,-1,-2,-4,-3,-2,0,0,1

Spike, 1774, 1, unsorted,0,0,-2,-3,-3,-4,-5,-4,-2,-3,-2,-1,0,0,1,0,-1,-1,-1,0,0,1,-1,-2,-2

Spike, 2066, 1, unsorted,0,0,0,0,-2,-3,-6,-4,-2,0,3,3,1,0,0,2,3,2,1,-1,-2,0,1,0,0

Event, 7731, 201, StimOnset

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Event, 23398, 201, StimOnset

Event, 39056, 201, StimOnset

Event, 54679, 201, StimOnset

EEG/LFP, 78,1,-515,-482,-528,-578,-557,-532,-558,-592,-600,-594,-578,-554,-543,-486,--148,-117,-1179, -2231,-2167,-
1777,-1644,-1552,-1463,-1379,-1275,-1188
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Note: For JAGA16, sampling rate here is 2 x hardware sampling rate (14035/S per channel). With the timestamp value of 78, it translates to 78/28070 ~ 2.7 msec.