Jinga-hi,Inc
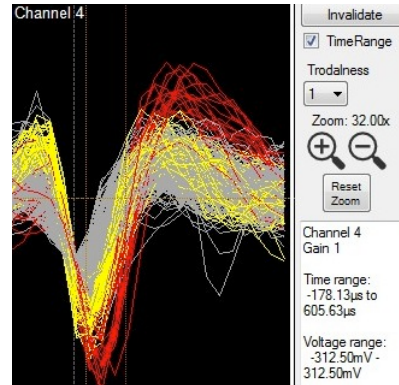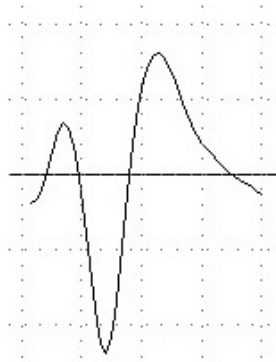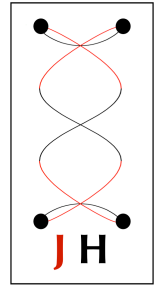
JAGA Sample Neural Recordings

Oct, 2015b
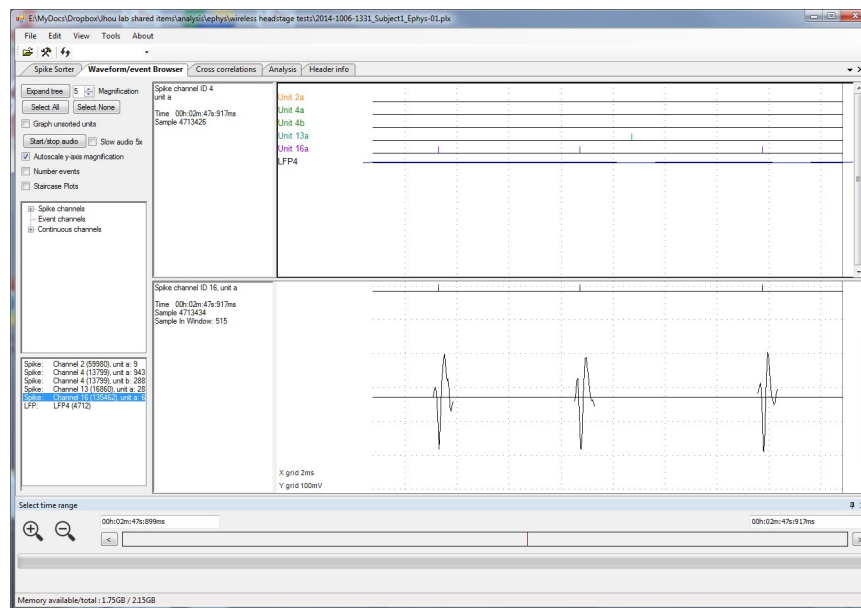
## Unit recording & Time aligned Spikes & Time Series Events

In vivo extracellular recording of rat striatal neurons performed with JAGA16 (with RHA2116 chip). The amplifier was configured with a lower cut off frequency of 300 Hz and an upper frequency of 6.75 kHz. The sampling rate was 14035 S/s per channel. The total 16 channels were used. For the unit recording, the x grid is 2msec and the y grid is 100mV (output x200 gain). The packet transmission rate was 43 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.2%. NeuroPhys/SpikeSorter software (Neurosys, LLC) was used to obtain the data. The spike sorting was performed using the 4th order spline function. (Courtesy of Prof. Thomas Jhou at Medical University of South Carolina).
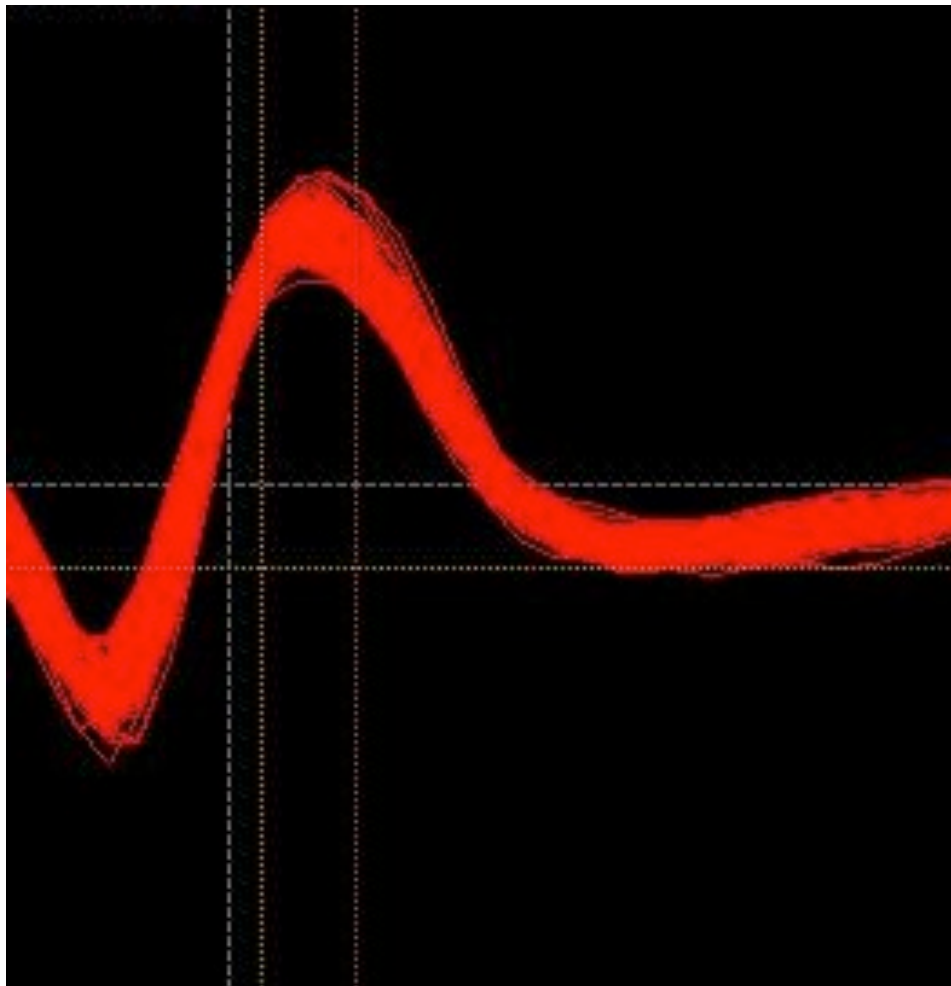
Unit Recording obtained with JAGA16 (with RHA2116 chip) from an awake non-human primate. The recording was obtained by inserting an epoxylite-coated tungsten microelectrode (fh-co.com) with a measured impedance of 1.2 MΩ into the Globus Pallidus External Segment (GPe). The amplifier was configured with a lower cut off frequency of 300 Hz and an upper frequency of 6.75 kHz. The sampling rate was 20000 S/s per channel and 1 channel was used. The packet transmission rate was 500 samples per packet with each channel having 2 bytes. The packet drop rate was 0.6 %. NeuroPhys/SpikeSorter were used to obtain data. (Courtesy of Dr. Michelle Morrow and Prof. Peter Strick at the University of Pittsburgh).
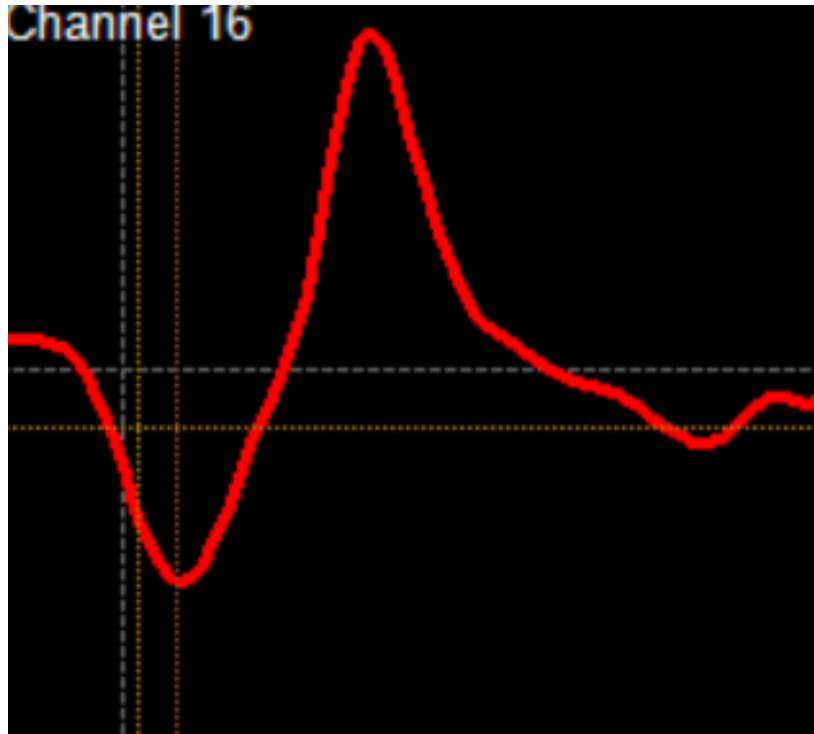
Unit recording (Above) obtained with JAGA16 (with RHA2116 chip) from a freely behaving rat. The recording site was dentate gyrus (AP:-3.84; ML:2.5; DV: 3). The amplifier was configured with a lower cut off frequency of 300 Hz and an upper frequency of 6.75 kHz. The sampling rate was 14000 S/s per channel and the total 16 channels were used. The packet transmission rate was 86 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.2%. NeuroPhys/SpikeSorter were used to obtain data. (Courtesy of Keming Zhang, Fei Li and Prof. Guoqiang Bi at University of Science and Technology at Hefei, Anhui in China).
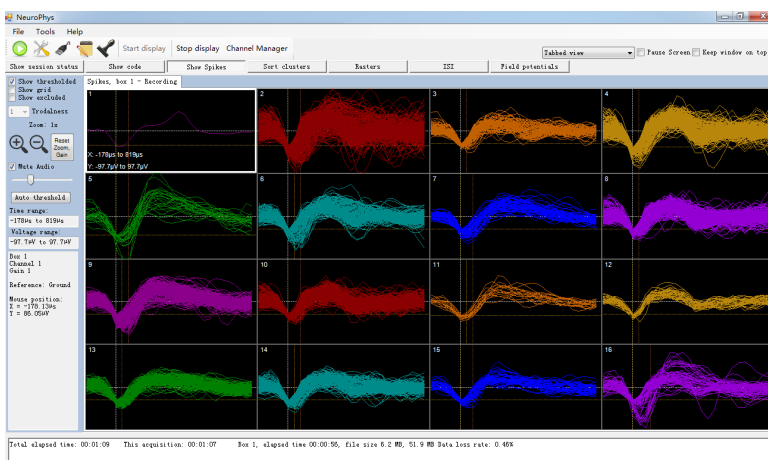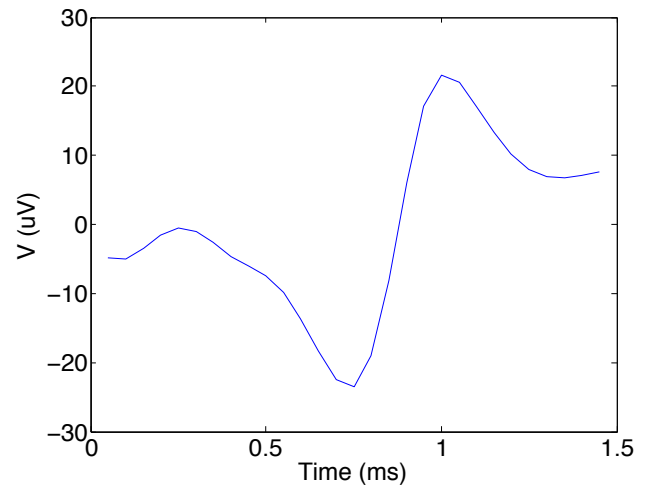

Unit recording (Left) obtained with JAGA16 (with RHA2116 chip) from a freely behaving rat in pyramidal area during fear conditioning. The amplifier was configured with a lower cut off frequency of 300 Hz and an upper frequency of 6.75 kHz. The sampling rate was 14000 S/s per channel and the total 16 channels were used. The packet transmission rate was 86 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.2%. NeuroPhys/SpikeSorter were used to obtain data. (Courtesy of Fei Li and Prof. Guoqiang Bi at University of Science and Technology at Hefei, Anhui in China).
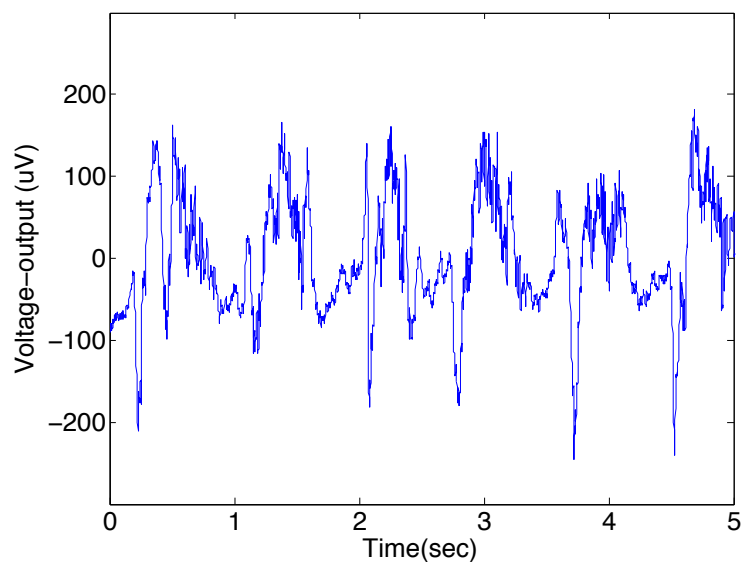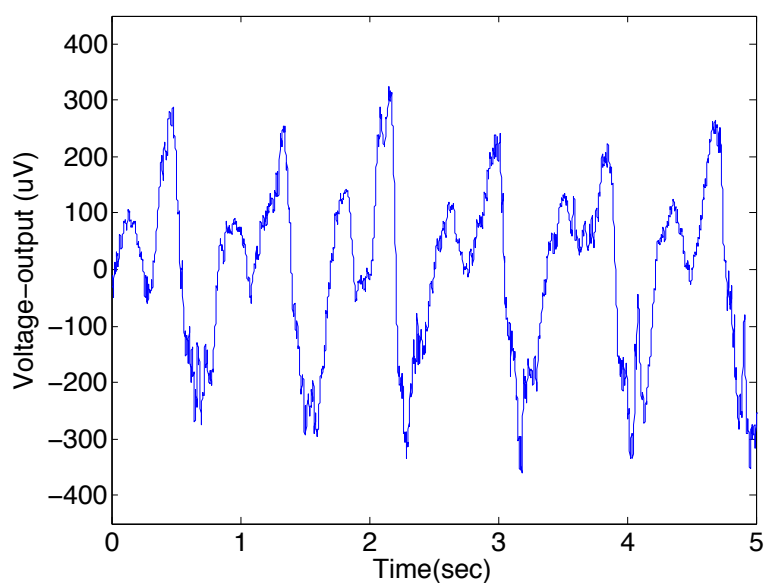
EEG signal (Left) recorded with JAGA16 (with RHA2116 chip) on an anesthetized mouse. The measurement was taken as a difference between the frontal cortex (+1 Anterior-Posterior, + 1.5 Medial-Lateral) and the cerebellum (-1.5 AP from lambda on the middle line). A strong delta wave (~ 0-2 Hz) is shown. The amplifier was configured with a lower cut off frequency of 0.1Hz and an upper frequency of 300 Hz. The sampling rate was 1000 S/s per channel. The packet transmission rate was 500 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.2%. The data captured with our Python code capture.py (Courtesy of Jesse Marshall at Stanford).

LFP signal (Right) recorded with JAGA16 (with RHA2116 chip) on an anesthetized mouse. The amplifier was configured with a lower cut off frequency of 0.1Hz and a upper frequency of 300 Hz. The sampling rate was 1000 S/s per channel. The packet transmission rate was 500 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.2%. Other conditions are similar to the above (Courtesy of Jesse Marshall at Stanford).
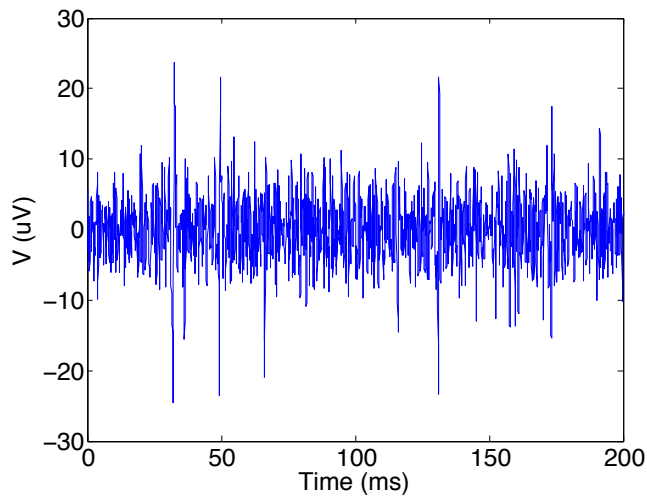
Unit recording obtained with JAGA16 (with RHA2116 chip) from a freely behaving rat in the Thalamic/Ventrobasal complex area. The amplifier was configured with a lower cut off frequency of 0.1Hz and an upper frequency of 6.75 kHz. The sampling rate was 20000 S/s per channel and the total 8 channels were used. The packet transmission rate was 86 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.2%. The data was obtained from our Python code capture.py and MATLAB code jaga_ephys.m and the spike form was identified with a butterworth 2nd filering with (FL=300, FH=3000 Hz) (Courtesy of Jordan Sorokin and Prof. John Huguenard at Stanford).
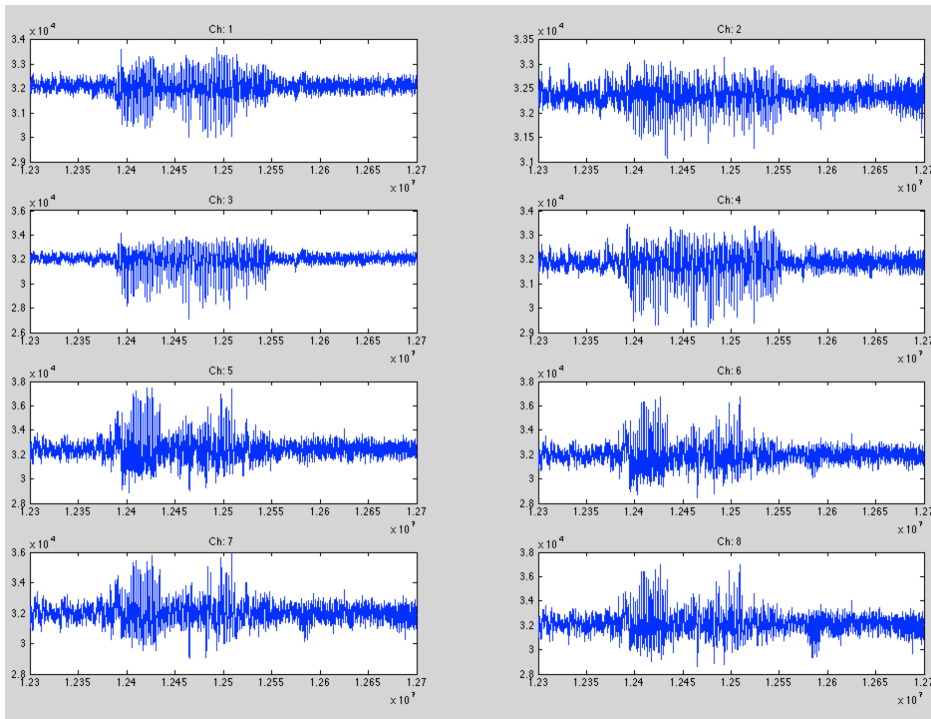
LFP and EEG obtained with JAGA16 (with RHA2116 chip) from a freely behaving rat experiencing a seizure. Channel 1-4: LFP in the thalamic area and Channel 5-8: EEG in the cortical area. The amplifier was configured with a lower cut off frequency of 0.1Hz and an upper frequency of 6.75 kHz. The sampling rate was 20000 S/s per channel and the total 8 channels were used. The packet transmission rate was 86 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.2%. The data was obtained from our Python code capture.py and MATLAB code jaga_ephys.m and the spike form was identified with a butterworth 2nd filering with (FL=300, FH=3000 Hz) (Courtesy of Jordan Sorokin and Prof. John Huguenard at Stanford).
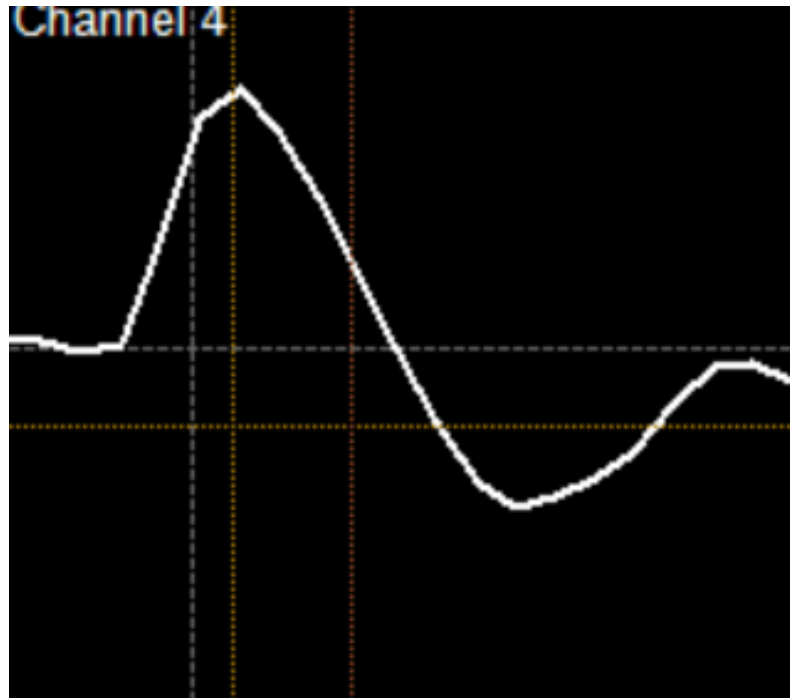
Unit recording obtained with JAGA16 (with RHA2116 chip) from a freely behaving rat in the amygdala area. The amplifier was configured with a lower cut off frequency of 300 Hz and an upper frequency of 6.75 kHz. The sampling rate was 14053 S/s per channel and the total 16 channels were used. The packet transmission rate was 86 samples per packet with each channel having 2 bytes. The packet drop rate was less than 0.05%. NeuroPhys/SpikeSorter were used to obtain data. (Courtesy of Dr. Eunjoo Kim and Prof. Jeansok Kim at University of Washington).