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News

Signal version 4.08 released

The latest revision of Signal is now available and includes the following new features:

- The clamp control bar can either display total electrode resistance or access and membrane resistance
- The Magstim control system now detects the version of firmware used in Rapid systems and will work with all versions.

For a full list of new features, see the revision history in the on-line help.

Future meetings and events

[Society for Neuroscience 2010](#)

San Diego Convention Center,
San Diego, CA, USA
November 13th – 17th 2010

If you are organising or attending a conference at which you feel CED would be interested in exhibiting please let us know about it by notifying sales@ced.co.uk

US Training Days at SfN

Our US training days are now confirmed for the 11th and 12th of November at the [Holiday Inn San Diego - On The Bay Hotel](#), prior to the Society for Neuroscience annual meeting. The training days are offered at \$250 per day, including buffet lunch, materials and coffee and tea, and are suitable for both existing and prospective users of Spike2 and Signal. Places are filling up quickly so if you or any of your colleagues would like to attend, please follow the links to view the [training day program](#) and complete the [registration form](#). Please give a short description of the type of research that you do and analysis that you are interested in. This will allow us to tailor sessions for specific requirements.

Latest versions of Spike2 and Signal

Updates for Spike2 and Signal are available from the [CED downloads](#) page, or by clicking on the links in the table below. Demonstration versions of the latest software are also available.

Spike2 downloads	Released	Signal downloads	Released
Spike2 version 7.04	07/10	Signal version 4.08	08/10
Spike2 version 6.15	08/10	Signal version 3.13	05/10
Spike2 demo		Signal demo	

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Spike2

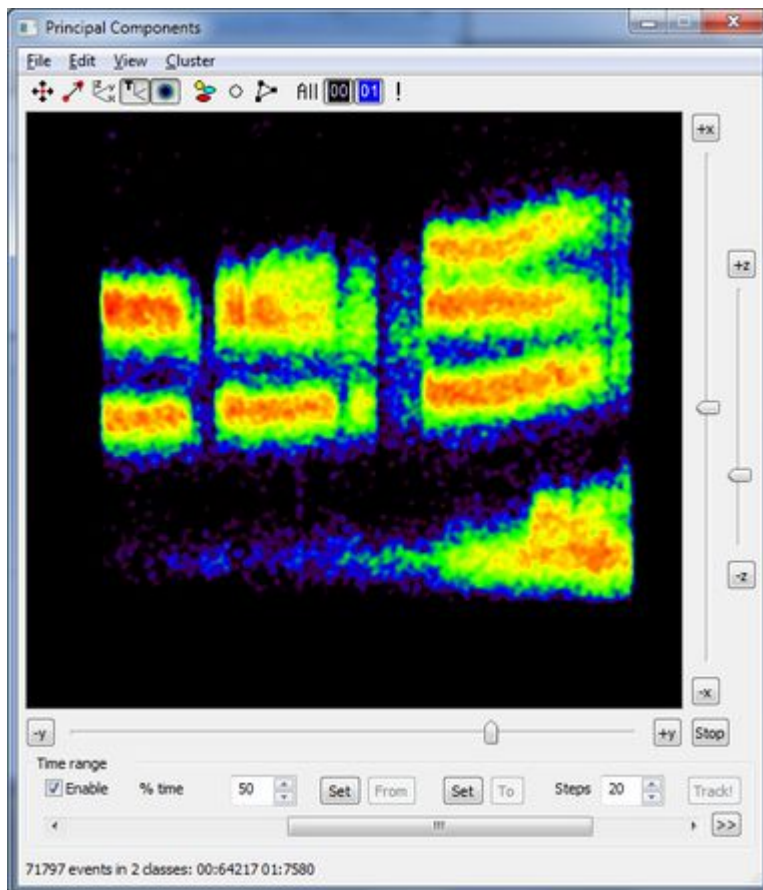
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Q. I am using PCA (principal component analysis) clustering to sort my spikes and occasionally see what appears to be two separate clusters for what I believe to be a single spike. There is a change in the shape of the spike following addition of a drug, is there any way for me to tell if this cluster does indeed belong to the same spike?

A. It may help if you were to use the time range option in the clustering dialog. Under the View menu there is the option to Show Time Range. If you show this and check the Enable box it will only display the dots relating to a specified percentage of the time range. There is then a slider which allows you to move through the file showing how the dots are positioned through time. If you see a cluster moving position, or one cluster disappearing as another appears, this could indicate a change of shape of the same spike.

Another useful feature is the option to view event times as the z axis. If you view the clusters along the X axis you can align the view so that you can see changes in the principal components through time.

From version 7.04 there are new toolbar buttons within the clustering window to give you fast access to the following useful features: Auto-scale, Link items closer than the minimum time, Display the axes, Use event times as the Z axis and Display as density plot.



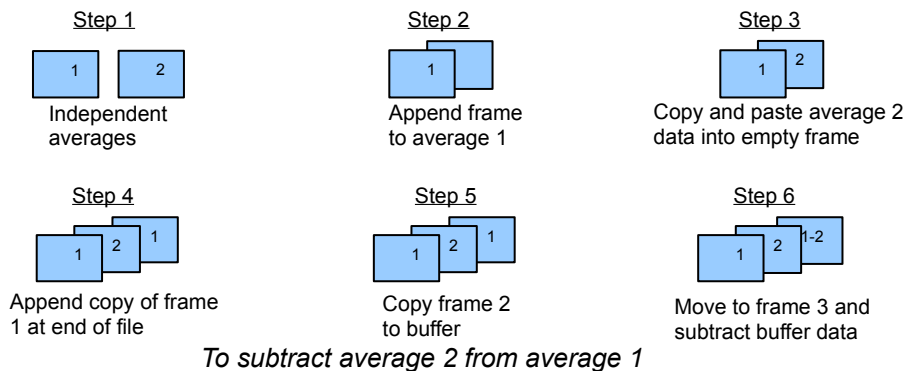
Cluster dialog with the z axis as time and viewed as density plot. Example shows cluster shapes changing through time



Signal

- Q. I have two single frame average files containing responses before and after adding a drug to the preparation. Is there a way in Signal to subtract one average from another?
- A. What you need to do is to get the averages into the same file in different frames. The following solution assumes you are working from saved average files rather than averages just created from an open source data file. Open both averages then select one and press `Ctrl+C` to copy the data into the clipboard. Click on the other average and, from the analysis menu select 'Append frame' to add an empty frame to the file. Press `Ctrl+V` and it will paste the clipboard data into the new frame, leaving you with a file containing both averages.

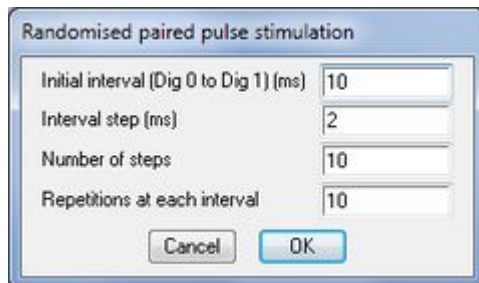
From this point you can subtract one from another using the buffer. Ideally you would want to end up with a file containing both initial averages in the first two frames and the subtracted result in the third, so select the frame from which you wish to subtract the other and from the analysis menu use `Append copy` which will put a copy of this into a new frame at the end of the file. Go to the frame you wish to subtract and copy to the buffer (either from the analysis menu or by pressing the `Ins` key). You can then go to the third frame and subtract the buffer data (either from the `analysis` menu or simply by pressing the `-` key). The steps are illustrated below.



Scripts: Spike2



- Q. I have an experimental preparation where I need to stimulate two sites and record from a third. I would like to be able to stimulate with a set number of repeats at varying inter-stimulus intervals with fixed step sizes but randomising the order in which they are presented. A typical example would be 10 repeats each of intervals between -10ms and +10ms at 2ms steps giving 110 stimulus sets in total.
- A. The attached script `RandPairPulse.s2s` and output sequence `RandPairPulse.pls` provide this functionality. First you must load the output sequence into your sampling configuration. When you then run the script this will control the sampling. The script will initially open a new data file ready to sample and has a toolbar with buttons from which you control it.



At any time the file is open (either before pressing `Sample start` or when it is sampling) you can press `Pulse settings` to set up the stimulus parameters. Pressing the `Stimulate` button during sampling will start the output. You can test it by simply connecting the digital outputs to the associated event inputs and recording these in a couple of event+ channels.

When the pulses have stopped, if you press `Stimulate` again it will generate the same randomised pattern, however if you wish to change the order just redo `Pulse Settings` and it will generate the same intervals in a different random order.

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Right-click the script icon and save to disk. If you have any problems opening the embedded scripts in this newsletter please let us know.



Scripts: Signal



- Q: I record long sweeps of 100 seconds in Signal and would like to display the last 10 seconds during recording with the data scrolling as it does in Spike2, is this possible?
- A: The attached script `ScrollLongFrames.sgs` uses an idle routine to update the view as often as possible to create this effect. If the displayed x axis range is shorter than the frame length it will update the displayed x axis range to show the current time range up to the last available sampled data point. You can toggle the scrolling function on and off using a toolbar button created by the script.

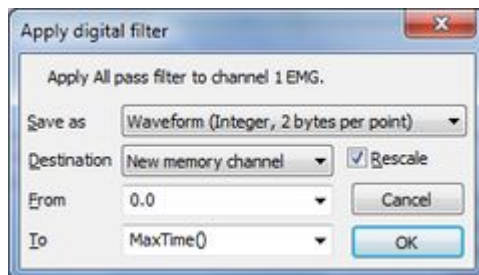
Did you know...?

The maximum frame length in Signal is related to 1401 memory. As a general rule, approximately 90% of the 1401 memory can be used within a single sweep in most sampling modes. However, for fast sweep modes this memory is split into 4 parts so the possible sweep length is reduced accordingly.

When using a Power1401 with a large amount of memory, consideration must then be given to the available RAM in the host computer. The data file records 2 bytes per point, however when Signal displays this it actually requires 10 bytes per point, therefore trying to display very long sweeps holding a large amount of data can cause problems.

Recent questions

- Q. I have recorded a signal which I would like to play through the sound card of my computer. I have tried this but the volume produced is very low even with the speaker volume turned up high. Is there a way to increase this?
- A. The amplitude of the output waveform is proportional to the ADC range taken up by the signal. You can get an idea of the overall size of your signal by showing the Y range dialog for the channel and pressing `Show All`. If this shows the signal is actually quite small, a simple way to rescale the signal so that it fills the available range is to apply an all pass FIR filter and ensure the `Rescale` box is checked. If you then output this channel you should find it is much louder.



Digital filter application dialog

User group

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