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News

European Training Days 2013

Our annual training days on April 4th and 5th were well attended and attracted Spike2 and Signal users with a wide range of research interests. We hope that all the attendees found the programme of tutorials and workshops useful.

Our next training days will take place in San Diego, prior to the Society for Neuroscience 43rd Annual Meeting.

Future meetings and events

BNA 2013 Festival of Neuroscience
The Barbican Centre,
London, UK
April 7th - 10th 2013

Experimental Biology 2013
Boston Convention & Exposition Center,
Boston, MA, USA
April 20th - 24th 2013

IUPS 2013
The International Convention Centre,
Birmingham, UK
July 22nd - 26th 2013

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 7.11c	03/13	Signal version 5.08	11/12
Spike2 version 6.17	10/12	Signal version 4.10	10/12
Spike2 demo	03/13	Signal demo	06/12

Scripts Spotlight

When it comes to accepting user input in a script, one of the most common methods is to use a dialog, the concept of which we introduced back in eNewsletter #73. As your dialogs become more complex, you may often find that different sections of the dialog should only be made available (or unavailable!) in response to other selections that are made by the user.

The `DlgAllow()` function can be used to keep track of dialog items and enable/disable them in response to user input.
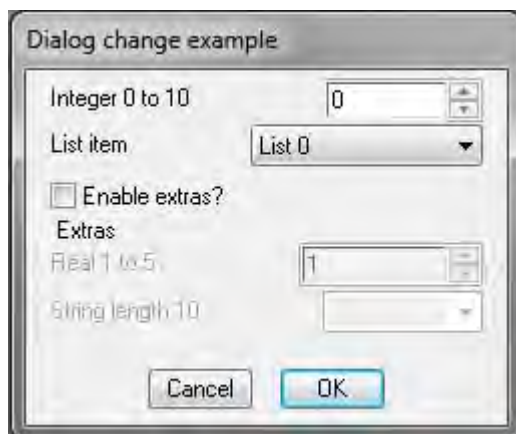
The generic example dialog above has a selectable checkbox that enables and disables the 'Extras' group section of the dialog. The code to create this dialog box can be downloaded here.

The `DlgAllow()` function should always be called before `DlgShow()` in your code, as in the example above. Full details can be found in the Spike2 and Signal on-line help.


Q.   I have run out of ADC connections on my 1401 and would like a few more channels. I have another 1401 available, so would like to know if it is possible to run multiple 1401's on a single PC?

A.   Multiple synchronised 1401 interfaces can be run on a single PC to record many channels at high sampling rates. Each 1401 is controlled by a separate running copy of Spike2 and the data is saved to a separate data file per copy of Spike2. You should set the sampled data to save to different locations in the `Automation` tab of each sampling configuration. Files recorded with separate 1401's can be combined off-line (up to a maximum single file size of 2GB) using the `MergeFiles.s2s` script. This is included in your Scripts folder, which can be found in the Spike2 directory on your PC.

To open multiple copies of Spike2 and assign them to individual 1401's the command line of Spike2 needs to be edited, which can be done via the Spike2 desktop shortcut icon. Whenever you double-click the Spike2 shortcut, it automatically checks to see if there is already a running copy open and, if so,

the new one quits. You can remove this check by adding the character /M to the end of the command line for the Spike2 program. The command line can be accessed by right-clicking on the Spike2 shortcut icon from the desktop, selecting the shortcut tab in the dialog and editing the `Target` field.
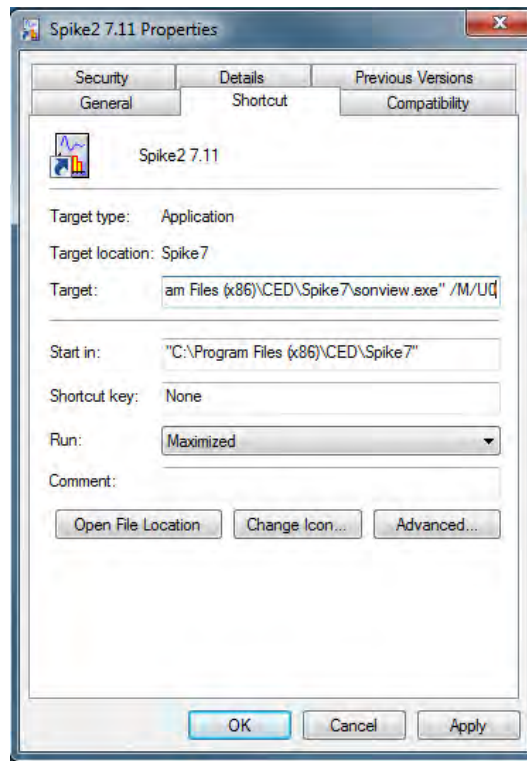

Spike2 shortcut properties

You can also specify which connected 1401 the new copy of Spike2 should control. This is done by adding /U*n* to the end of the command line, where *n* is a number between 1 and 8. To make sure that the new Spike2 uses the lowest numbered available 1401 the default /U0 is used. Each time Spike2 is run, a new copy is opened and assigned to the next available 1401.

Scripts: Spike2

Q.   I am sampling using Spike2 during a complex, multi-stage protocol. The timing of each stage is critical and I am currently using timers to alert me when the next stage is due. Is there a 'stopwatch' function within Spike2 which I can use to remind me when each step is due?

A.   The attached script, ProtocolPrompt.s2s can be used to inform you when any particular time point is reached during sampling. The script allows a defined number of protocol steps to be programmed into the software, including short descriptions and the time at which each protocol step should be initiated. Spike2 will then remind you of each protocol step, during sampling, a specified time before a particular protocol section is due.
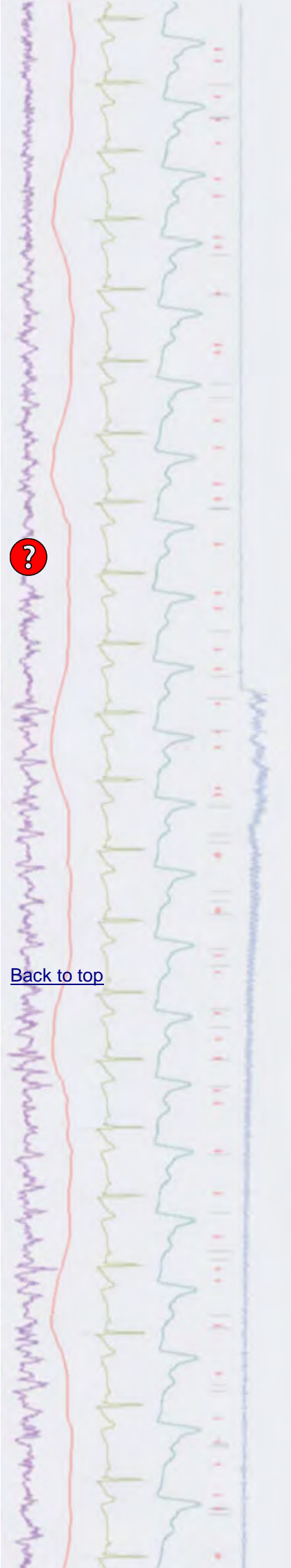
Q.   Can you help my students produce averages in Signal? They are familiar with turn-key clinical EMG machines but these do not offer the flexibility that we need.

A.   You can generate a waveform average both on-line and off-line by selecting the `Waveform Average` function from the `Analysis` menu, `New memory view` option. This method will generate an average of the waveform channels using the start of the frame as a reference time.
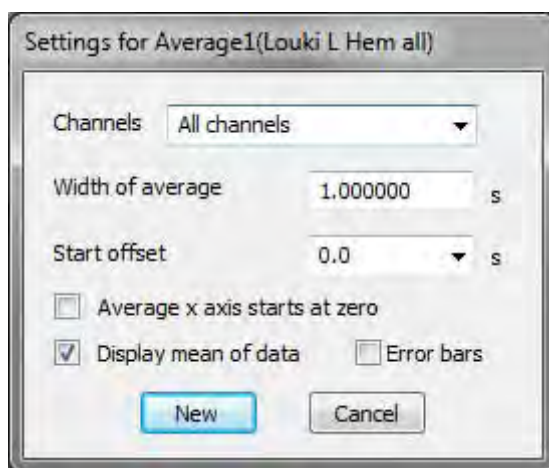

Process settings dialog

The `Process settings` dialog allows you to select the channels to include, the width of the average within the source frame time range and an optional offset from the start time of the frame. By default the average is set to display the mean value of the data, unchecking this option will show the sum of all the sweeps added to the average. There are also check boxes to set the x-axis of the average to start at 0 and to display the standard deviation and standard error of the mean of the resulting data with error bars.

Clicking New creates the memory view to hold the average and presents a process dialog. Here you can select which frames should be included in the average. You can select frame sets from the drop-down list, or enter values by hand, for example: 1..10 or 1,3,5,7,. You can further qualify subsets of frames to include using the second drop down list.
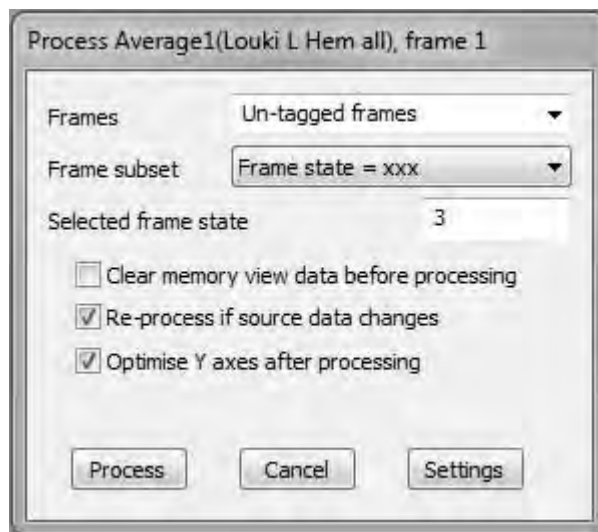
Process dialog for average

The Clear memory view before process checkbox will clear any existing data in the view before adding the results of the currently selected frames. The Re-process if source data changes checkbox enables automatic re-processing. The Optimise Y axes after processing option will automatically re-scale the data after the new results are added to the memory view

Clicking Process will then display the average of your selected frames in the new memory view.

Scripts: Signal

Q.   I need to create a grand average from existing waveform averages I have saved as result view files.

A.   The script, Grand Average.sgs, allows you to 'build' a summed average of multiple waveform averages in Signal. The script opens a file selection dialog where you select the first and then subsequent average files.
The grand average is displayed in a new window and is updated each time you select a new file to add. Click Cancel in the file selection dialog to quit the script.

Did you know...?

The dynamic clamping capabilities in Signal require a suitable current clamp amplifier. So far, we have tested the following models, which have been seen to work correctly with Signal dynamic clamping:

- Molecular Devices Multiclamp 700A and 700B

- NPI BA-03X

- A-M Systems 2400

Right-click the script icon and save to disk

- HEKA EPC 800

Other amplifiers will be tested and added to this list in due course. If you have a particular model that you would like us to test, please contact us directly.

Recent Questions

Q.   I have an amplifier for a piezoelectric bender which takes an input of 0 to 10V, with its movement proportional to the input voltage. I have tried setting my 1401 to use +/-10V, but this sets both my DAC outputs and ADC inputs to use the 10V range. Is there any way to only set the DAC's to drive a 10V input?

A.   Switching between +/-5V and +/-10V operation on a modern 1401 interface will set all inputs and outputs to the selected voltage range. If, as in this example, you only need to generate a 10V output but still want to record +/-5V on the ADC inputs, we can offer a modular solution. The CED 4302 5V signal offsetter adds or subtracts an accurate 5V offset to an analogue input and is designed for recording a 0 to 10V (or -10 to 0V) source to a +/-5V ADC input, or for driving equipment that requires a 10V input range, using a +/-5V output device.

CED 4302 precision offset unit

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Right-click the sequencer icon and save to disk