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News

US Training Days 2013

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Join us for two days of training in San Diego, prior to the Society for Neuroscience 43rd Annual meeting, and learn how to use Spike2 and Signal for your research needs. These sessions are suitable for both existing and prospective users.

Attendance is limited so please [register](#) early to reserve your place on the appropriate course.

Future meetings and events

IUPS 2013

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

11th International Congress of The Polish Neuroscience Society

Poznan, Poland
September 15th - 17th 2013

CED US Training Days 2013

Wyndham San Diego Bayside Hotel
San Diego, CA
USA
November 7th - 8th 2013

Society for Neuroscience 43rd Annual Meeting

San Diego, CA
USA
November 9th - 13th 2013
Exhibit dates: November 10th – 13th 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 7.12	06/13	Signal version 5.09	05/13
Spike2 version 6.17	10/12	Signal version 4.10	10/12
Spike2 demo	03/13	Signal demo	06/12



Scripts Spotlight

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When writing a script to generate off-line analysis, it is often the case that the end user wants to run the script on a sequence of data files, one after another. Of course it is possible for the user to open each file manually, but it is much more efficient if they can simply choose a folder full of files, and let the script open each in turn for analysis.

The script command, `FilePathSet()` can be used to prompt the user to select a folder as follows:

```
FilePathSet("",0,"Select directory of files to open");
```

The first argument can be set to an empty string, which opens a dialog for the user to select the required folder, or you can specify the path to the folder.

Once you have the path to the folder, you can get a list of the data files inside using the `FileList()` command. The following example prompts the user to select a folder, gets a list of the data files inside and then opens each in turn. If the file opens correctly, a message is displayed and the file is then closed again. You can replace this annotated block of code with your own analysis functions to apply to the files.

```
var file$;
var numFiles%;      'Number of files found
var c%;            'counters to loop through files and channels
var data%;         'Test if file opened correctly
var success$;      'Message to indicate file is good
var folder%;       'Checks that a folder was selected

folder%:= FilePathSet("",0,"Select directory of files to open");
                                'Prompts user to select directory
if folder% < 0 then
    halt;endif;

numFiles%:= FileList(file$,0);  'Get number of data files in directory

if numFiles%<1 then            'If no files found...
    Message("No data files in directory!");      'Display message
halt;endif;                    'and end script

var files${numFiles%};        'Declare array to hold the number of files
FileList(files$,0);          'Fill array with files

for c%:=1 to numFiles% do      'Loop through each file
    data%:= FileOpen(files${c%-1},0);  'Attempt to open
    if data% > 0 then          'If successful...
        View(data%);          'View the data

        '***REPLACE THE FOLLOWING BLOCK WITH YOUR OWN ANALYSIS CODE***/
        success$:= Print$("File %s OK",files${c%-1});
        Message(success$);
        View(data%);
        FileClose();
        '***ENDBLOCK*****/

    else
        Message("Unable to open file");
    endif;
next;
```

You can [download](#) a copy of this skeleton script to modify as required.

Spike2

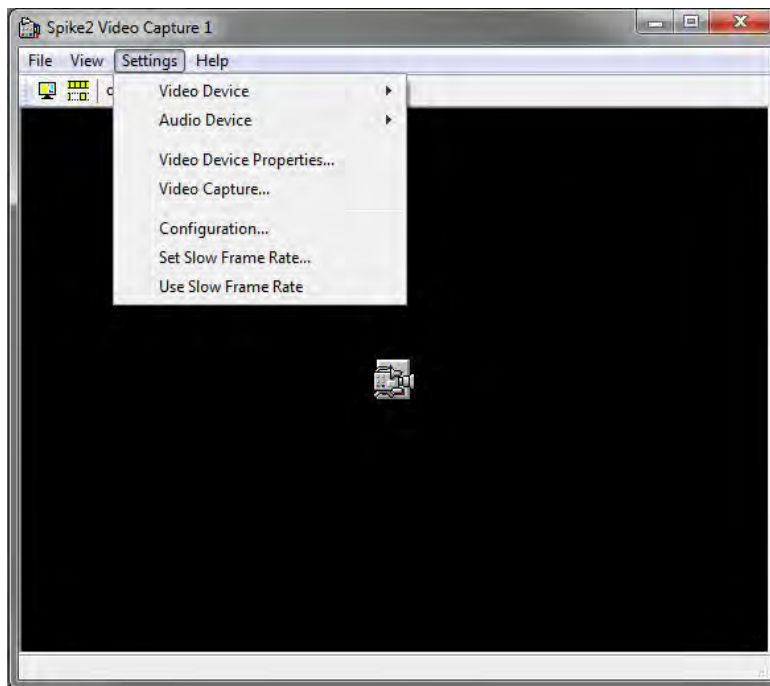


Show me How!

Click here to view a video tutorial on video recording in Spike2

- Q. I'm starting a new experiment and need to record video files of behavioural activity alongside physiological data.
- A. The s2video application, which is installed in your Spike2 folder, allows you to record up to four .avi format multimedia files automatically whenever you sample a Spike2 data file. The s2video application relies on the Microsoft DirectShow software, which is usually installed on all modern Windows systems as part of DirectX. Video devices can range from cheap web cams to much more expensive video cameras, but only those compatible with DirectShow will work with s2video.

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Settings menu in the S2video application

From the Settings menu Video Device option you can select from a list of the connected video sources. Once a device is selected, you will see a preview of the image, and new items for Video Device Properties and Video Capture may be added to the menu. The options available in these menus will depend on the selected video device. The Video Capture item is where you would normally set the frame rate and output resolution (if available) of your video recording. You should set the lowest frame rate and smallest image size that provides enough detail for your sampling tasks as the higher these settings, the larger the video file.



The Audio Device Properties menu may allow you to select microphone input from the camera, if available, or include settings for any other available audio devices.

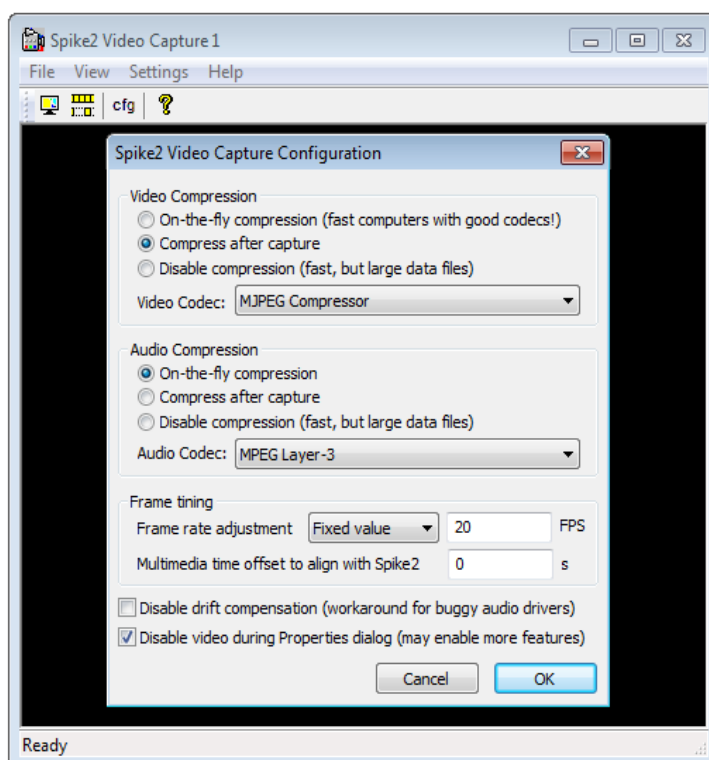
The Configuration menu gives access to video and audio compression options: On-the-fly compression is only really useful with a very powerful computer or specialised hardware, unless you are running at low frame rates. Compress after capture means that the data is recorded raw to a



temporary file, and when sampling is stopped and the user saves the data file, the temporary file is compressed and saved alongside the data. This is the recommended option for most users. If you decide to `Disable compression` (be aware of very large files!), there is a compression utility, `avicomp.exe`, included in your Spike2 folder which can be used to compress files after capture.

Codecs are used to `COde` the files when saving to disk, and `DECode` the files when loading them for playback. A standard set of codecs is usually included in Windows, and more may have been added by your video camera or web cam. The `s2video` on-line help gives a comparison of using `s2video` with some of the codecs that you are likely to find installed.

The `Frame timing` section of the `Configuration` dialog gives additional settings for `Frame rate` adjustment that can be used to improve the synchronisation of the video with the Spike2 data file by using the frame rate generated by Windows, dividing the number of frames in the video file by the sampling time or synchronising to a known clock input.



S2video application and Configuration menu

Once you have set-up your video and audio device(s), you are ready to record! The `s2video` application registers itself as a 'listener' program to a running copy of Spike2 and responds to Spike2 starting/stopping sampling and saving data to disk. The multimedia file is saved alongside the Spike2 data file, and with the same file name.

If an open data file has an associated multimedia file it can be viewed using the Spike2 `View` menu `Multimedia Files` command. The `Multimedia` view window that opens is then linked to the data file: When you scroll the time window, the multimedia file window(s) will scroll to the same point. If you rerun the time view, the video/audio file will also rerun. The multimedia window also includes its own controls to play/stop and step through frames and an option to track the position of `Cursor 0` in the data file. You can also copy the current frame image to the clipboard as a bitmap. Script writers can access further information, such as frame times and image data, using the `MMxxx ()` family of script commands.



Scripts: Spike2

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- Q. I would like to create separate averages of all four wavemark traces in a tetrode recording and then superimpose them for comparison.
- A. The script, [AverageNTrode.s2s](#), will generate a view showing the averages from each recorded trace superimposed. It does this by separating the traces into individual channels, to produce a multi-channel average view and then uses the `ChanOrder()` script command to overdraw the averaged traces.

Signal



Show me How!

Click here to view a video tutorial on measurements in Signal

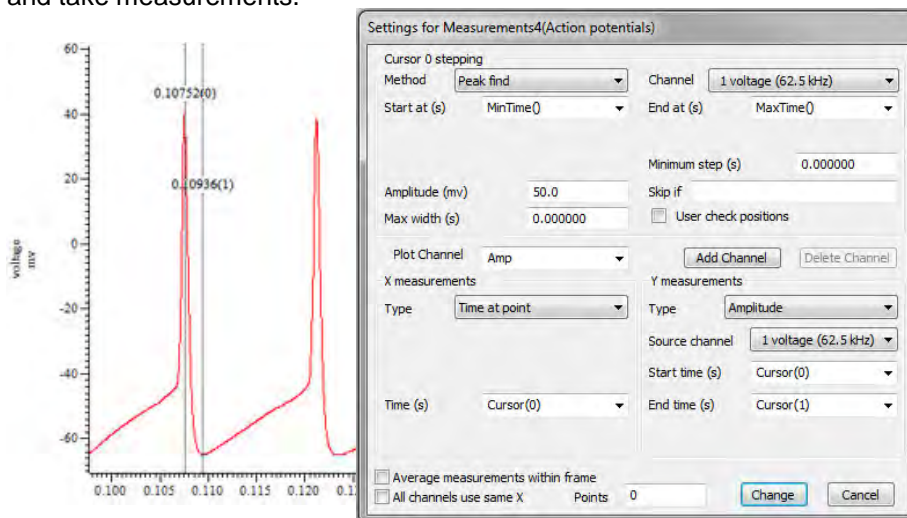
- Q. I have been experimenting with Active Cursors to detect and step through waveform features in a frame. Now I would like to start taking measurements based on this feature detection.
- A. Signal can generate automated measurements on or off-line based on cursors positioned by the results of feature detection as demonstrated in the previous eNewsletter (click [here to view eNewsletter #77](#) on our website). An XY view can process multiple measurement channels simultaneously and the results can be easily exported to spreadsheet programs using the `Copy as Text` command from the `Edit` menu.

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Having already set-up `Active Cursors` in the previous [eNewsletter](#), we could now use the `XY view - Measurements` function from the `Analysis` menu. Measurements such as mean waveform value, slope and time difference, as well as many others, can then be taken at cursor iteration and the results plotted to the XY view.



In this example, we will set up a measurement of the peak to peak amplitude based on the cursor positions in our example data. The `Settings` dialog includes a section that defines the stepping mode for `Cursor 0` (which uses the current `Active Mode` for the cursor if one is already set) as well as the type and time of each X and Y measurement value. The `Start at` and `End at` fields set the time range in the source data from which search for features and take measurements.

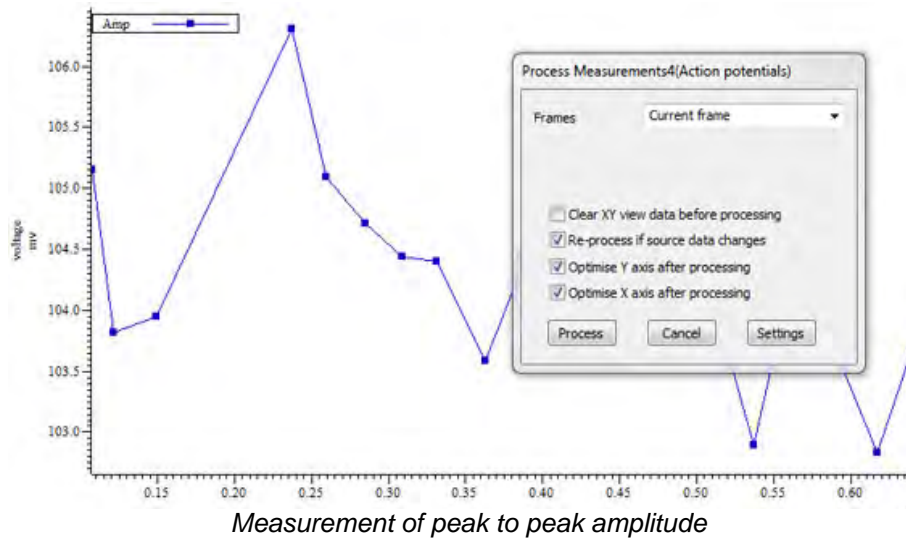


Measurement settings

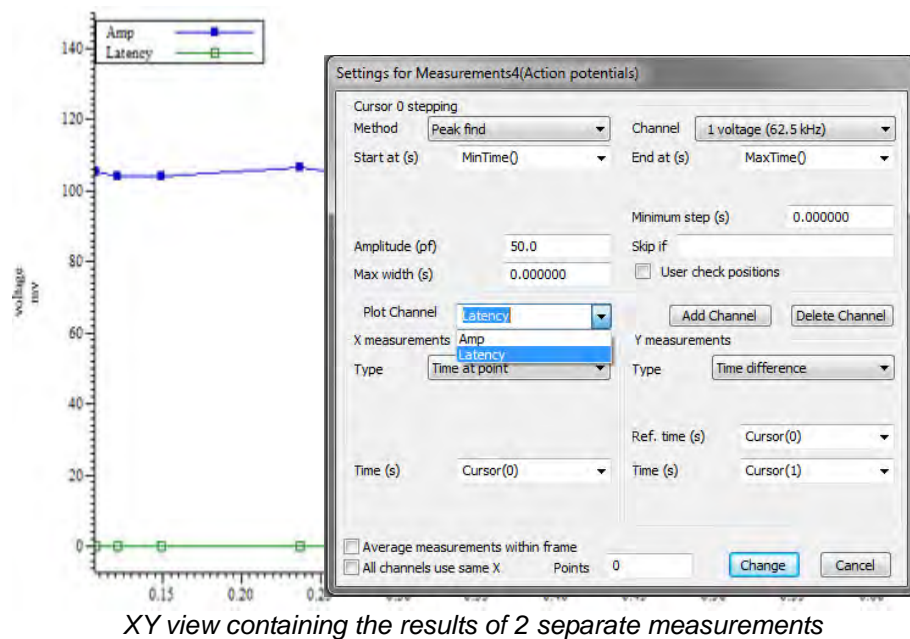
You can define the titles for the new `Plot Channel` as above by simply editing



the text in the dialog field. Our X Measurement takes the Time at point of Cursor 0 for each step. Our Y measurement takes the peak to peak Amplitude between Cursor 1 (AHP) and Cursor 0 (peak) for every step through the data. Pressing New creates the XY view and opens a dialog that sets the frames in the data file from which to take measurements. Taking measurements from the current frame in our source file gives the plot shown here.



By right-clicking on the XY view, we can make changes to the settings and add a second Plot Channel that will measure the time difference between Cursor 0 (peak) and Cursor 1 (AHP) for every step, for example.



The Measurements system can generate 32 Plot Channels holding the results of different measurements. For more information on using the measurement functions in Signal, see the manual or on-line help.



Scripts: Signal

- Q. I would like to export each frame of a Signal data file to individual Matlab files.
- A. The script, [FramesToMatlab](#), is an example script to export each frame of a data file to separate Matlab files, using the default Matlab export settings. If you want to define your own settings for the Matlab file, you can open the script and edit the external exporter settings argument in the `FileExportAs()` command.

Did you know...?

You can quickly copy data from a frame in Signal using the `Ctrl-C` shortcut and paste it to any other frame using `Ctrl-V`.

Recent Questions

- Q. Is there any way to take quick measurements in a data file using the mouse pointer?
- A. You can take measurements quickly from a data file by using the interactive measurement feature in Spike2 and Signal. Simply hold down `Alt` and left click, then drag the cursor. The measurements show the values that correspond to the X axis units of the data file, and the Y axis units of the channel being measured.

CED User forums

Try the [CED Forums](#) bulletin board for software and hardware support

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