

STIM²

STIM² Simple, Powerful, Accurate Stimulus Delivery and Experimental Control Solution.



STIM² is designed to deliver scientific stimuli with all the quality our customers have come to expect from Neuroscan.

Operating under Windows® 7, STIM² provides a familiar and simple interface to design and deliver stimuli with ease and, more importantly, accuracy. STIM² provides complete control of the experiment, while delivering the highest quality stimuli.

STIM² is a comprehensive stimulus presentation system consisting of a library of sensory, cognitive and neuropsychological tasks. It is a modern tool that provides well-defined and widely known paradigms that may be used as a stand-alone package, or integrated fully with the CURRY acquisition system, by providing synchronized trigger pulses. Whether the user's interests lie with basic sensorimotor and perceptual tasks, more complex recognition tasks, or the most sophisticated cognitive processes, STIM² can deliver the stimuli with the precision needed for accurate analysis.

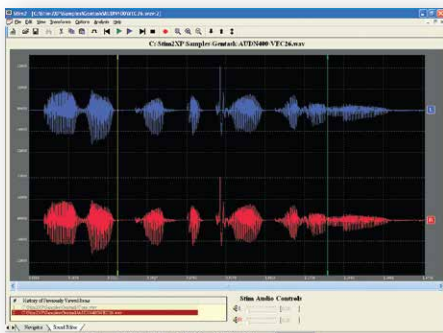
STIM² is fully integrated with the Cedrus StimTracker. This system uses photocells and auditory threshold detection to identify stimulus onset with the greatest accuracy possible.

Navigation	
Motor	
Perceptual	
Attention	
Memory	
Cognitive	
Gentask	
Sound	
Utilities	
Exit	

Principle categories of tasks.

Stim ² Stroop Results Version 4.0.08012003							
Trial	Word	Color	Type	Response	Correct	Latency	
1	1	3	2	-1	0	1000	
2	1	4	2	-1	0	1000	
3	3	2	2	-1	0	1000	
4	2	4	2	-1	0	1000	
5	4	3	2	-1	0	1000	
6	1	4	2	-1	0	1000	
7	3	3	1	1	0	394	
8	0	0	1	0	0	0	
9	2	1	2	-1	0	1000	
10	1	2	2	-1	0	1000	

Example of the behavioral results data file.



Audio files may be created, reviewed and modified in the Sound Editor. Trigger placement is as easy as positioning the mouse cursor.



STIM² is fully integrated with the Cedrus StimTracker to provide the most accurate timing possible

Timing and Accuracy Specifications

AUDIO TIMING

- Trigger to audio onset reliability ± 5 ms (Software Only, parallel port)
onset reliability ± 1 sample (with StimTracker)

VIDEO TIMING

- Trigger to video onset reliability ± 1 ms

STIM² Complete

AUDIO

- Noise 106dB SNR
- Resolution 24 bits
- Rate 192 kHz
- SPL 0-120dB with .75dB steps independent left/right channel control

VIDEO

- 1GB RAM Minimum
- Dual monitor support
- To available refresh rate of system
- Minimum resolution 1024 x 768 higher resolution graphics card dependent
- Built in hardware acceleration with Microsoft®DirectX™ Support

RESPONSE DEVICE

- Keyboard, Mouse & 7-button hardware latched response pad

STIM² Software Only

AUDIO

- Dependent on user's hardware*

VIDEO

- Dependent on user's hardware*

RESPONSE DEVICE

- Keyboard, Mouse & 7-button hardware latched response pad

*Neuroscan cannot guarantee timing with end-user supplied hardware.

Task Library - Fourteen tasks are pre-programmed into the STIM² software to provide a task library to build upon. Each task allows the user to modify parameters, such as, the duration, order of presentation, the interstimulus interval, performance feedback options, and many more. The programs are categorized into Motor, Perceptual, Attention, Memory, and Cognitive tasks. Some of the more common tasks include Finger Tapping, Stroop, Card Sorting, and Categories tasks from neuropsychology. Additional tasks include pattern reversal, Naming, Visual tracking, Spatial memory, Visual and Auditory continuous performance, Verbal learning, and Visual memory tasks.

Data Analysis - Behavioral data (performance results) from the tasks are available for review in the Internet Browser, and the ASCII file versions of these files can be transferred to CURRY for integration with the EEG data files.

Integration - STIM² will integrate with other recording devices, allowing the user to trigger external devices (such as an SEP stimulator). The seamless integration with Neuroscan data acquisition products allow on-line averaging, sorted averages based on trial type, accuracy and latency of responses, and sequence recognition.

Gentask - Creating custom tasks with ease is the most important element in a stimulus program. The Gentask utility program provides an effective tool to create the user's own tasks with no programming skills required.

It allows maximum control over stimulus presentation. The heart of Gentask is a "sequence file", a line-by-line program that governs many aspects of stimulus presentation. STIM² features a Gentask Editor that makes creating and modifying sequence files much easier.

In the sequence file, the user can set the duration of presentation, the time allowed for a valid response, the interval between stimuli, the position of the graphics file on the screen, the decibel levels for audio files (independent left and right channel settings), the correct expected response, and the trigger type code sent to the acquisition system, for each stimulus that is presented. A drag-and-drop feature allows the user to add lines to the file with maximum ease. Additional options with the sequence file include flow control and conditional branching commands, counters, ways to build more complex stimuli, increasing/decreasing difficulty levels based on past performance, mask options, noise options, and many more.

Label	Mode	Duration	Window	ITI	XPOS	YPOS	Response	Type	Filename
1	RESET	NC	0	0	0	0	0	0	
	CUT	100.00	1000.00	1500.00	250	0	2	2	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	MUTEON	100.00	1000.00	1500.00	250	0	2	2	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	NOISEOFF	100.00	1000.00	1500.00	250	0	2	2	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	NOISEON	100.00	1000.00	1500.00	-250	0	1	1	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	PAUSE	100.00	1000.00	1500.00	-250	0	1	1	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	PCX	100.00	1000.00	1500.00	250	0	2	2	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	RESET	100.00	1000.00	1500.00	-250	0	1	1	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	RESP	100.00	1000.00	1500.00	-250	0	1	1	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	RETURN	100.00	1000.00	1500.00	250	0	2	2	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	SND	100.00	1000.00	1500.00	-250	0	1	1	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	CUT	100.00	1000.00	1500.00	250	0	2	2	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	CUT	100.00	1000.00	1500.00	250	0	2	2	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	IF	NC	7	10	GOSUB	200	GOSUB	100	
	GOTO	1	0	0	0	0	0	0	
	CUT	1000.00	0.00	2500.00	0	0	-1	10	C:\Program Files (x86)\Neuroscan\Stim2\Pictures\Cut ima
	RETURN	0	0	0	0	0	0	0	

Example of an easily programmed file for controlling stimulus presentation.



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