Convolver – User Manual
Version v1

Introduction

Convolver is a plugin designed to do realtime convolution, which is the process of mapping a signal to reflect the frequencies of an *impulse response* (IR), also sometimes referred to as an "impulse curve". An IR is basically the set of frequencies that define how sound reacts in a certain environment, and the process of mapping these two frequencies together is convolution. The convolution algorithm is very useful for many common audio-processing tasks, such as room-modelling and filtering.

The Convolver plugin offers users the ability to use IR's from the user's hard drive. Unlike other convolution plugins, it does not have built-in IR's, nor does it use a proprietary IR format. For a complete list of file formats suported by Convolver, please see the section "Loading Impulse Responses". This plugin is currently supported on Mac OSX and Microsoft Windows 2000 and XP, and is distributed as a VST-effect plugin.

Installation

To install this plugin under Mac OSX, simply uncompress it, and drag the file "Convolver-v1.vst" to the desired installation directory. Under OSX, there are two common locations where plugins are located, the first being in the global context (/Library/Audio/Plug-ins/VST), and the other in the user's context (in your home directory under Library/Audio/Plug-ins/VST). Either location is acceptable.

To install this plugin under Windows, uncompress this plugin and drag the "Convolver-v1.dll" file to the system's plugin directory. On Windows, this is generally located under C:\Program Files\Steinberg\VST Plugins or C:\Program Files\Steinberg\vstplugins.

After this, rescan or restart your VST host, and the plugin should be instantly available.

Plugin Usage
The following screenshot details the user controls of
Convolver:
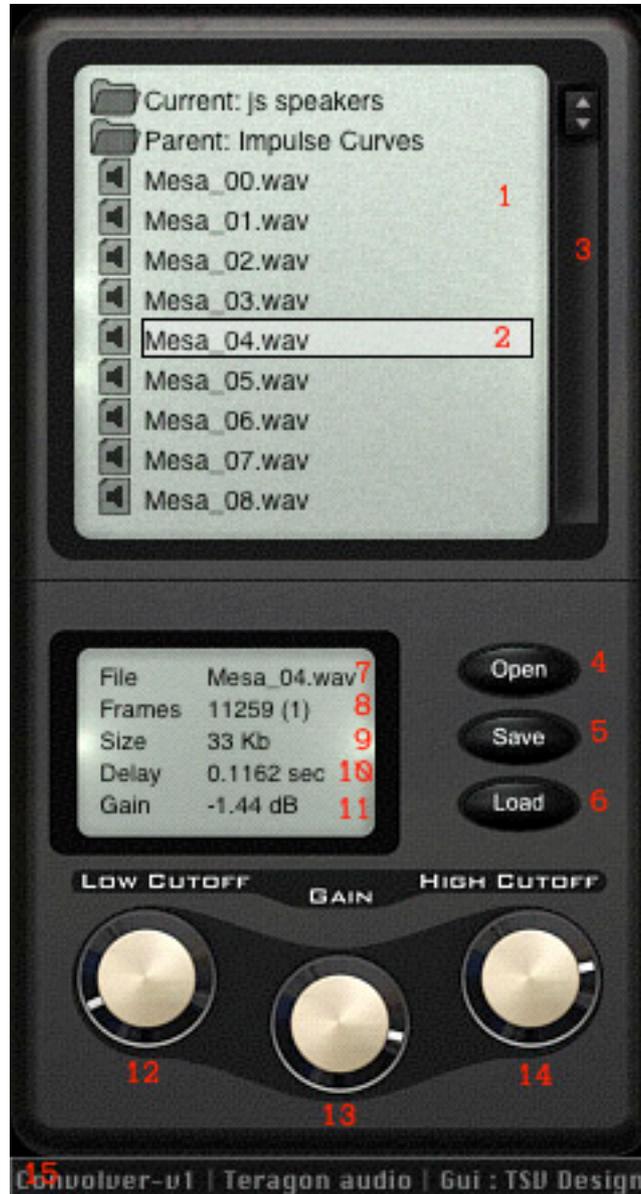
Main Controls
1. File browser
2. Currently selected file or directory
3. Scrollbar for file browser
4. Open a file or directory. If a file is selected, the IR
   will be loaded by the plugin. In the case of a
   directory, the new directory will be loaded into the
   file browser.
5. Save the current settings to a user preset file
6. Load a previously saved user preset
15. Plugin credits

LCD Display Fields
7. Filename of running IR
8. Number of frames for the IR. The first number represents the sample count for a single channel, and in parenthesis, the number of channels
9. File size, in Kilobytes
10.   Delay factor, in seconds. Since this plugin uses an internal buffer for reading input, it will have a small amount of delay. For hosts that support plugin delay compensation, this is the number that should be used.
11.   Info window. When parameters are set in the plugin, their values will be shown here. Likewise, if the plugin encounters an error, it will also be displayed here.

Processing Parameters
12.   Locut filter. This will remove all frequencies below a certain point and is applied to the IR pre-processing.
13.   Gain factor applied to signal post-processing
14.   Hicut filter, to remove all frequencies above a certain point. Also applied pre-processing.

Loading Impulse Responses
Using the file browser control, select the desired IR and press the "Open" button. Files that Convolver can read will be represented in the file browser as a small file icon with a speaker inside. The Convolver can load the following types of files:

- Microsoft WAV
- SGI/Apple AIFF
- Sun AU
- Headerless RAW
- Paris Audio PAF
- Amiga IFF/SVX
- IRCAM SF
- Creative VOC
- SoundForge W64
- Octave MAT4/MAT5
- Portable Voice Format PVF
- Fasttracker 2 XI
- HMM Tool Kit HTK
- Apple CAF

For a complete listing of bit compatibility formats, please see the following page:

http://www.mega-nerd.com/libsndfile/#Features

Due to realtime processing constraints, Convolver limits the
maximum filesize to 32,768 frames. IR's larger than this will
not be loaded, and an error message will be displayed on the
info panel. This restriction may be removed in future
versions of the plugin.

Loading and Saving Presets

To save the current settings of the plugin for later, use the
"Save" button to create a new preset. A file browser window
native to the host operating system will prompt for the
filename. Although presets are saved as simple text files,
any file extension is permitted. To use this preset at a
later point in time, simply use the "Load" button, and browse
to the desired user preset.

To share presets between users, it will be necessary to
manually modify the preset file. This is because the full
path of the IR is used in the preset, and this will obviously
differ when transferred to another computer. The format of
the preset file is quite simple, and can be edited in any text
editor such as TextEdit on Mac, or Notepad on Windows. Only
the third line, containing the full path of the plugin, should
be changed. Since the actual IR data is not stored with the
preset, this will of course need to be indendently transferred
to the receiving user as well.

Credits

Convolver was created by Nik Reiman. It was developed in C++.
The artwork and user interface was created by Toni Simonen,
and original idea came from Adam Jay. I would also like to
thank the following people for their support and testing
efforts: Peter Kerns, Keith Marriott, and Bjorn Vayner.