Neo Reverb

Revolutionary Hybrid Algorithm and Convolution Reverb

Developed by

Operational Manual

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Version 1.0

Introduction

Nowadays, when musicians and technicians are talking about reverb, Convolution Reverb is considered to have the best sound - it's more realistic. At the same time, Algorithm Reverb is viewed as more alive and dynamic, with better playability.Combining the advantages of both has remained a dream - until now.

Sound Magic brings this dream into the real world. By converting the True Stereo IRs of specific spaces to Algorithms, Sound Magic is the first to accomplish this impossible mission. Opening a whole new doorway for digital reverb, we present Neo Reverb.

A new way always needs revolutionary ideas. In order to have the same realistic sound as Convolution Reverb, Neo Reverb has a new model which we have named the Ba gua Model. This new model is different from the famous Schroeder/Moore Model, adding the ability to generate millions of early reflections, and then holding thousands of delay lines for at least 15 seconds. (A typical Algorithm Reverb only utilizes hundreds of early reflections, which has proven, well, satisfactory at best.) This huge difference puts a lot of pressure on your CPU and RAM. Further, in order to avoid the static sound of most convolution reverbs, you need to modulate these millions of Early Reflections in real time. That's even more of a challenge for your typical computer setup.

To overcome this issue, Sound Magic uses ASM (assembly language) in its core. ASM is the native language of your CPU and it's far more efficient than common C++. By doing so, Neo Reverb keeps your CPU usage around 20%, while giving you 200 times the reverb calculations of a typical algorithm reverb.

Another great obstacle to making software reverb sound as good as hardware reverb is that of efficiently using the cache. Remember that a reverb has to hold thousands of delay lines for a few seconds. This fills up the cache quickly and it's easy to run out of resources. Today's CPUs typically have only an 8MB cache fast enough (usually L2/L3 Cache of the CPU) to do this hard job, but the FPGA inside those hardware reverbs have at least 128MB - or even 256MB!

Sound Magic has developed an innovative Cache Compress and Reallocate Technology that will efficiently compress the data in the cache in real time, making the 8MB cache have the efficiency of 200MB. Neo Reverb can easily hold thousands of delay lines for 15 seconds which produces a really smooth reverb tail.

Another breakthrough technology that Neo Reverb uses is the Cascade True

Stereo technology, which emulates the natural blending process when sound resonates in a huge hall. In a real space, such as a concert hall, the left and right channel sounds are blended together, but it is a continuous process, not a one time blend. Traditional True Stereo tends to blend them immediately but Sound Magic Cascade True Stereo technology makes this blending an ongoing process in real time, creating a beautiful spatial sound.

Neo Reverb features around 40 controls allowing you to tweak the sounds. Neo Reverb gives you the realistic sound of a Convolution Reverb AND the playability and aliveness of an Algorithm Reverb. You also get over 100 converted Algorithm IRs (called REF Files) which cover different types of space, such as Hall, Room, Plate, Chamber, Concert Hall, etc. And, in order to be friendlier to its end users, Sound Magic contains a detailed help hint system inside Neo Reverb, along with a very detailed and in-depth manual.

Features

Internal 64-bit floating point precision

Innovative Hybrid Convolution and Algorithm Reverb Engine

Innovative Cascade True Stereo technology

Powerful modulation system helps to achieve a dynamic sound

Over 40 in depth controls on the Reverb

Over 130 algorithm IRs in 6 different categories for your uses

Support up to 32 Bit/384KHz resolution.

Quick Start
Install Neo Reverb
You need copy the Neo Reverb.dll along with Neo Reverb folder to your VST folder
You **CAN NOT**
1. Rename the Neo Reverb folder
2. Delete the content inside Neo Reverb Folder
3. Put the Neo Reverb folder in a directory without the dll file
4. Put Neo Reverb.dll into Neo Reverb folder

Register Neo Reverb
Neo Reverb must be registered before it could sound.
You have to enter keycode into the text box.
First, please find the text box named Enter Your KeyCode Here

Then paste the keycode into the box

Press Enter, you will see Authorized to XXXXXXXX

If the text box still shows the keycode, it means the keycode is not correct, You need to contact customer service to get a new keycode. Please note 95% of the failures are caused by copy one more **SPACE** at the beginning or at the end of the keycode.

What if YOU enter the keycode incorrectly?
The only solution for this problem is for the customer to delete the Windows Registry Entry.
Click "Start" on the windows desktop.
Click "Run" and type in 'regedit' then press enter. A window will appear.
Click the 'Edit' tab and select 'Find..." and type in "NEOMIXING "then press enter.
Right click on the folder highlighted in the Left window and select 'Delete' and click 'Yes' to confirm to delete this item.
Close the window.

Load the VST and it should show " *Enter Your KeyCode Here *"
If it does not show this message you should follow the above procedure again taking care to follow every step.

Panels
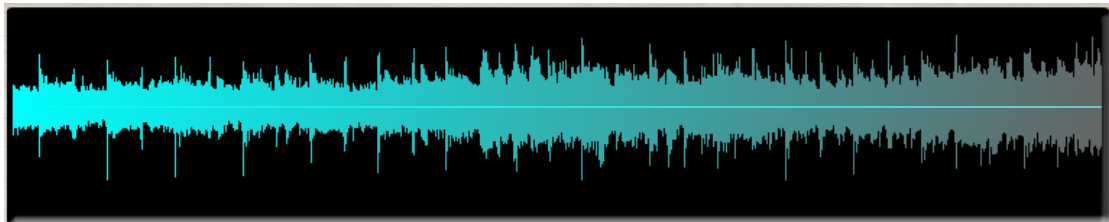**Neo Reverb has over 40 controls so we have to group them into 3 panels, here they are.**

Main: This group of controls are the most important one to the whole sound The default GUI open with main panel so you can have a quick way to adjust overall sound..

Advance: This group of controls are more detailed controls. If you need meticulous controls on the sound. Here is the place to go.

Filters: All filters are in this group of controls. You can use them to shape the final sound. Neo Reverb usually does not need filters to have a better sound but you can use them to have some special effects.

Scope: The scope will show incoming audio signal, shown as below

A/B Dual Core Setting System: Neo Reverb has a dual core A/B system. You can use this system to AB comparison different settings. By Default, Setting A is damped while Setting B is not damped. You have to click the buttons shown below to switch between A and B

Presets: By default, Neo Reverb opens with Default Hall Algorithm preset. Different presets has different algorithms which you can not tweak through the controls on the GUI. They are a good start point when you deal with different kinds of Reverb. If you need a totally blank reverb, then the last preset, Factory Default is the right one for you, which enable the maximum playability.

Controls

ER and LR: ER states Early Reflection and LR states Late Reflection.
ERs are the reflections most happens within 100ms while late reflection, sometime also known as Reveb Tail, is mostly happens after 100ms. Some famous guru in Reverb field, such as Lexicon, are against these definition. They argued that they took the whole reverb as one process, not divided them into ER and LR period.
In Neo Reverb. ER means the discrete and apparent reflections falls within 800 ms and LR means the continuous and obsolete reflections in the whole reverb period

Main Panel
Room Size: This controls the size of the whole reverb space, in times of the original size. Bigger room size tends to have a more spatial sound.

Predelay: The predelay for ER, in milliseconds. It will help you to generate more space feelings. Please note we do not predelay the LR part of the sound. For the ER sound will go to LR period to resonant, this part of LR sound actually be predelayed but the rest part the LR sound does not, which will not influence and the space feeling and it will be more natural if it is not predelayed.

Reverb Time: The RT60 in seconds, the most important factor for the reverb.

Input Level: How much the input signal goes to the Reverb Unit, in percentage. This control acts much like the Wet amount control.

Dry Signal: How much the dry signal will mix with the reverb sound, in percentage.

Stereo: Controls the Stereo field of the reverb. This is a combined control which has a knob and an option for the mode above the knob. Move the knob clock wise will decrease the stereo field. And there are 10 stereo modes wait for your choice. You can click the title to bring up the down drop menu.

Blend: How much the ER blend with each other. If fully blended, the true stereo field will disappear. So the default minimum position is True Stereo. If you think the sound is too wide, you can increase the knob.

Mod Depth: The modulation depth for LR. If no modulation, the reverb will have a static sound which may result metallic sound. Suitable amount of Mod depth will bring the reverb into dynamic and prevents metallic sound. Neo Reverb has a complex and huge modulation system inside so we highly recommend you keep the mod depth open.

ER Damp: The damp amount for the ER sound. Will generate a smoother sound.

REF FILE: REF Files are the wave files that have been converted from IRs into algorithms. Other convolution reverb can not use it while only Neo Reverb can. Neo Reverb comes with a whole basic bundle of REF file, which has over 130 IRs. You need to load REF Files to make Neo Reverb works. You can click **Load File** button to load REF files. These files will be installed into Neo Reverb default folder so after you click load file button, you will first go to default folder and see them in first place.

In order to prevent failure to load REF file, we have an indicator on the left of the load file button. If the REF File actually loads, it will show SUCCESSFUL!. If not, it will show "FAILED!"

Algorithm: You can choose Algorithm type here. You have Neo Reverb and Old Style, two algorithms to choose.

Clipping Indicator: Reverbs tends to clips when you use it in a full and busy mix. Neo Reverb has a special algorithm which acts like hardware reverb, it has more headroom than common situation. But we put this indicator before this algorithm so that it can warn you before the sound go bad. If the signal tends to clip, you will find the indicator changes from "Normal" to "CLIPPING!".

ADVANCE Panel

ER Volume: The volume of Early Reflections, in percentage.

LR Volume: The volume of Late Reflections, in percentage.
ER Volume and **LR Volume** together controls the wet amount of the reverb. Input Level has a similar effect but this one is the wet amount by definition.

Time Ratio: Time ratio for ER, from 50% to 150%, which will stretch ER in percentage. Default is 100%

Density: The density for LR/Reverb tail.

LR Delay: The delay amount for LR, in milliseconds. LR Delay together with Predelay, is the predelay in definition which we common seen in other reverb.

Feedback: This is a combined control. The knob controls the feedback amount of ER, while the option (down drop menu) controls the mode of feedback for LR. There are 6 modes for you to choose

Spatial: This is a combined control. The knob controls the spatial amount of LR, while the option (down drop menu) controls the mode of spatial for LR.
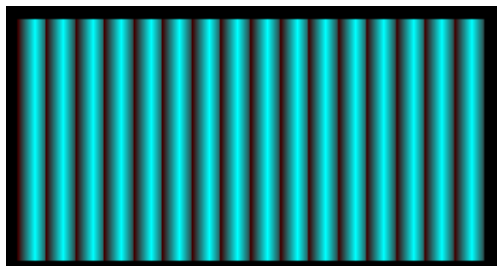
Diffusion: This is a combined control. The knob controls the diffusion amount for LR, while the option (down drop menu) controls the mode of Diffusion for LR. The material for the walls/floor/ceiling will influence this parametric a lot. Different material will have different diffusion rate.

LR Damp: The damp amount for the LR sound.

LR Type: The algorithm for LR part of sound. There are 9 modes wait for your choice on down drop menu.

Allpass: The stage for the allpass filter, from 0 to 9. The more stage, the more "blur "of the signal.

ER Modulation Input: This is a 16 steps' input. You can control the shape of ER through this control. By default it is no modulation. There are 2 controls, one for left channel and one for right channel.

FILTERS Panel

The powerful filter system of Neo Reverb is complex, a 3 bands (LPF HPF and Parametric) for the whole reverb plus 1 biquad filter for ER.

LPF FREQ: The cutoff frequency for Low Pass filter, apply to the whole reverb sound.

HPF FREQ: The cutoff frequency for High Pass filter, apply to the whole reverb sound.

EQ FREQ: The cutoff frequency for Parametric EQ, apply to the whole reverb sound.

BANDWIDTH: The bandwidth/Q for Parametric EQ, apply to the whole reverb sound.

GAIN: The boost/cut amount for Parametric EQ, apply to the whole reverb sound.

ER FREQ: The cutoff frequency for the filter, apply only to the ER sound.

BANDWIDTH: The smaller knob, the bandwidth/Q for the filter, applies only to the ER sound.

GAIN: The smaller knob, the boost/cut amount for the filter, applies only to the ER sound.

ER Filter Type: Select the filter types for ER, by default it is bypassed.