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Creating Effects From Scratch, Pt. 2 - Control Processing

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Creating Effects From Scratch, Pt. 2 - Control Processing (#p1998)

by **disasterarea** » Wed Dec 03, 2014 8:24 pm

The next entry in the series was inspired by some of the app notes written by the late Keith Barr. Keith has a couple of neat ideas about mashing up control inputs using SOF, ABSA, MULX, and more.

The effect in question is a tremolo with two controls, just like the last version. What's new, you ask? Lots of stuff!

First, we're using the updated LFO block set to 0-1.0 output instead of using a separate SOF. Next, we use the Clip block to generate a trapezioidal / square wave from the Sin LFO. We're also implementing a neat two-way "depth" control. Pot at noon is zero depth. Turn the pot counter-clockwise for more sine, turn clockwise for more square.

Here's the general setup:

Image

And here's how it's all configured:

POT0 controls LFO0 Speed.
LFO0 is set to 8Hz / 32767 depth, 0.0 -> 1.0 range.
Output splits to Clip and Crossfade input_1.
Clip is set to gain of 9.0
Clip output goes to Crossfade input_2.

What's going on here: Obviously POT0 changes the LFO speed from really really slow to 8Hz, which is pretty fast but sounds great for tremolo. The sine output goes to the crossfade input 1, and the same output feeds a Clip block which makes the sine wave into a very square / trapezoidal wave. That square output goes to the other crossfade input.

POT1 splits to two Scale / Offset blocks.

The upper SOF block is set to 0.2, 0.0. Then it goes to the Clip block with a gain of 10. We want the output of the Clip block to be 0 when the control is below noon, and 1 when it's above. The high-gain Clip block is there to make sure the output jumps right from 0 to 1 without a bunch of stuff in between. We use the SOF block with the gain down low because if we don't use it the output of the Clip will jump up high when the knob is about 1/4 of the way up.

POT1 also goes through the lower SOF block, then into an Octave and another SOF block. The first SOF is set to -0.5, 0.5. We want the output of the pot to range between -0.5 and +0.5. Then we run through the Octave block, which just makes all the negatives positive since it's just ABSA in disguise. Finally we run through a second SOF block set to 1.99, 0 to bump the gain back up on the control signal.

Still with me so far? Good! The rest of the chain is super-simple. Input to Volume to Output. The control signal feeds the Volume Control input, with an Invert block. Why do we need the Invert block? Well, when the control signal is zero / depth is all the way down, we want the volume to be full up. This makes the depth pot act like a traditional tremolo depth control.

So the end result is a very flexible tremolo with both sine and square options, with a free POT and plenty of space left over for another effect like reverb, compression, etc.

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Re: Creating Effects From Scratch, Pt. 2 - Control Processin (#p1999)
by **Digital Larry** » Wed Dec 03, 2014 9:03 pm

Awesome!

Encore!

😂😂😂

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Re: Creating Effects From Scratch, Pt. 2 - Control Processin (#p2000)
by **Digital Larry** » Thu Dec 04, 2014 10:52 am

I usually put a Scale/Offset in front of the LFO speed input to constrain the low end of the speed range.

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Re: Creating Effects From Scratch, Pt. 2 - Control Processin (#p2001)
by **disasterarea** » Sat Dec 06, 2014 6:34 am

Sure, that would be a good idea for tremolo. For phasers, flangers, etc. where slooooow is gold I don't usually bother.

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Re: Creating Effects From Scratch, Pt. 2 - Control Processin (#p2705)
by **raulduke** » Tue Apr 12, 2016 5:36 am

Hi guys,

First of all, thanks for the software Larry! It's fantastic (I'll be donating soon).

I've tried implementing the control processing scheme as shown above (running build 998) and my crossfade is not working correctly.

To double check I created a new simple patch with:

-> input going to crossfade input 1
-> crossfade input 2 left unconnected.
-> both crossfade input volumes @ 0db.
-> Pot1->Scale Offset (0.2,0.0)->Clip(Gain of 10, no invert and no flip)->Crossfade Control Input.

I would assume with this setup I should get an abrubt change from no signal at 0-0.5 on Pot 1, then signal present from 0.5-1 on Pot 1's rotation.

Instead I'm getting the input signal being gradually raised to unity volume from 0->0.5, then signal staying at unity at 0.5->1.

i.e. the crossfade is fading between channel 1 and channel 2 for the first half of rotation, then staying at channel 2 for the second half of rotation.

Am I missing something here (more than likely)?

Perhaps the clip function is operating differently to how it was implemented when this tutorial was

posted?

Any help would be most appreciated as I am pretty vexed by this.

I've attached a screenshot of the patch I have setup.

Attachments
(./download/file.php?id=153&mode=view)
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Re: Creating Effects From Scratch, Pt. 2 - Control Processin (#p2706)

by **Digital Larry** » Tue Apr 12, 2016 12:57 pm

Use the "Slicer" block instead of "Clip" (and get rid of the Scale/Offset). If you don't like the click when you pass 0.5 on the pot, add a control smoother between the slicer and crossfade control input.

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Re: Creating Effects From Scratch, Pt. 2 - Control Processin (#p2707)

by **raulduke** » Wed Apr 13, 2016 12:43 am

That works brilliantly.

Thank you so much!

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