Holy City Audio Forum

Former Home of SpinCAD Designer
Skip to content

Search…   Search
Advanced search

[Moderator Control Panel]

compression

Post a reply

Search this topic…   Search

7 posts • Page **1** of **1**

- Edit post (./posting.php?mode=edit&f=31&p=3506)
- Delete post (./posting.php?mode=delete&f=31&p=3506)
- Report this post (./report.php?f=31&p=3506)
- Warn user (./mcp.php?i=warn&mode=warn_post&f=31&p=3506& sid=befaf904784df501ab581b011c284453)
- Information (./mcp.php?i=main&mode=post_details&f=31&p=3506& sid=befaf904784df501ab581b011c284453)
- Reply with quote (./posting.php?mode=quote&f=31&p=3506)

compression (#p3506)

by **gen.allenby** » Mon Jun 24, 2019 9:06 am

I've been working for a few days on an approach to compression. I've built several analog designs over the years, so my mind gravitates in that direction.

I came up with something using the volume blocks, controlling their volume through envelope generators. It compresses, but the problem is I can't figure out how to specify a way to create a time scale for attack/release, how to set a ratio or how to shift the knee behavior. I've noticed that if I pre-scale the audio input to the env gen stage I get different behaviors that sound (to my ear) like variations in knee, ratio, etc.

Has anyone else tackled this problem, and what were some solutions?

Top

- Edit post (./posting.php?mode=edit&f=31&p=3508)
- Delete post (./posting.php?mode=delete&f=31&p=3508)
- Report this post (./report.php?f=31&p=3508)
- Warn user (./mcp.php?i=warn&mode=warn_post&f=31&p=3508& sid=befaf904784df501ab581b011c284453)
- Information (./mcp.php?i=main&mode=post_details&f=31&p=3508& sid=befaf904784df501ab581b011c284453)
- Reply with quote (./posting.php?mode=quote&f=31&p=3508)

Re: compression (#p3508)

by **gen.allenby** » Tue Jun 25, 2019 4:49 am

NM, I figured out how to do ratio.

It's interesting because the pre/post scaling process really shapes the tone of the volume control. It's like that in the real world, too, although not as much. I notice that I can mimic diode, FET, and VCA compression just through scaling the control path, or by muxing several different controls

together and scaling the output. Very fun.

Top
- Edit post (./posting.php?mode=edit&f=31&p=3510)
- Delete post (./posting.php?mode=delete&f=31&p=3510)
- Report this post (./report.php?f=31&p=3510)
- Information (./mcp.php?i=main&mode=post_details&f=31&p=3510& sid=befaf904784df501ab581b011c284453)
- Reply with quote (./posting.php?mode=quote&f=31&p=3510)

Re: compression (#p3510)

by **Digital Larry** » Wed Jun 26, 2019 10:21 am

There should be some examples over at the Spin knowledge base regarding threshold and ratio on the FV-1.

http://spinsemi.com/knowledge_base/effe ... _expansion (http://spinsemi.com/knowledge_base /effects.html#Compression_expansion)

Unfortunately, as with many of the examples, the description/overview of how it works is not accompanied by a code example so you're left to your own devices to create or find something that matches.

To be honest I have not put a lot of effort into compression and to be even more honest, I hope it's obvious but I did not personally invent most of these algorithms, I just made it possible to connect them together in an object-oriented way.

Top
- Edit post (./posting.php?mode=edit&f=31&p=3511)
- Delete post (./posting.php?mode=delete&f=31&p=3511)
- Report this post (./report.php?f=31&p=3511)
- Warn user (./mcp.php?i=warn&mode=warn_post&f=31&p=3511& sid=befaf904784df501ab581b011c284453)
- Information (./mcp.php?i=main&mode=post_details&f=31&p=3511& sid=befaf904784df501ab581b011c284453)
- Reply with quote (./posting.php?mode=quote&f=31&p=3511)

Re: compression (#p3511)

by **gen.allenby** » Wed Jun 26, 2019 2:15 pm

I read through the Spin Semi knowledge base regarding compression. It's sort of helpful, but mostly it's vague in terms of approach.

What's interesting is how fast these volume blocks are in their response. In the analog world, the diode bridge is typically the fastest (think Neve 33609 or the EMI 12314, or that one Decca Germanium Compressor, I can't recall the name). The vol block is considerably faster than a diode-- so fast that it's almost unmusical. I had to experiment to slow down the turn-on time, and get something that sounded pleasing from an attack perspective.

But then the tone--that's where it gets interesting. Being able to model something that sounds like an SSL, or something that gives the drum sound like "when the levee breaks"…fun.

Once I get my audio analyzer back hopefully I can put some measurements together. This afternoon

I'm experimenting with low-frequency pulses to get a sense of how it behaves with kick attack.

I think your work is fantastic…it allows people like me to prototype rapidly in an environment where I normally couldn't.

Top
- Edit post (./posting.php?mode=edit&f=31&p=3512)
- Delete post (./posting.php?mode=delete&f=31&p=3512)
- Report this post (./report.php?f=31&p=3512)
- Information (./mcp.php?i=main&mode=post_details&f=31&p=3512& sid=befaf904784df501ab581b011c284453)
- Reply with quote (./posting.php?mode=quote&f=31&p=3512)

Re: compression (#p3512)
by **Digital Larry** » Wed Jun 26, 2019 7:59 pm

One of the envelope generators is taken from the autowah sample patch, and it really emphasizes the attack more than following the whole envelope.

My basic concept for an envelope would be to take an absolute value block and run it into two low pass filters, one for attack and one for decay. Then use the maximum block top pick off the highest output value of either of those. Normally you'd set attack faster than decay and so it's fine. It doesn't really work the other way around. Some of the examples do RMS processing and so that's in the realm of creatively scaling the envelope signal to the resulting gain. And like I said, I really have not messed with it that much. Glad you are getting somewhere with it!

Note: it's probably obvious, but the "Smoother" block under the controls menu is a low pass filter set up for the lowest frequencies you can get with single-precision processing. There are some code examples I've seen that extend the frequency range with another multiply but AFAIK that can't be used with the super compact RDFX instruction. And the "low pass" block is conceived for audio so it doesn't extend that low. So you may find it desirable to adjust coefficients to span between those ranges as there is a gap.

Top
- Edit post (./posting.php?mode=edit&f=31&p=3513)
- Delete post (./posting.php?mode=delete&f=31&p=3513)
- Report this post (./report.php?f=31&p=3513)
- Warn user (./mcp.php?i=warn&mode=warn_post&f=31&p=3513& sid=befaf904784df501ab581b011c284453)
- Information (./mcp.php?i=main&mode=post_details&f=31&p=3513& sid=befaf904784df501ab581b011c284453)
- Reply with quote (./posting.php?mode=quote&f=31&p=3513)

Re: compression (#p3513)
by **gen.allenby** » Thu Jun 27, 2019 3:26 pm

That's a very interesting approach--I'll experiment with that when I get some time. I use the smoother block on my pots because I like the effect it gives.

I found that Env 2 seems to give the most consistent results, sonically speaking. The attack and decay behave like attack/release (to my ears), and the sensitivity behaves enough like a threshold that it works. I was able to do some AB testing today with a few modern boxes--Distressor (which is sort of an 1176 copy), some 1176's (clones and a real UA box), a copy of that old PYE thing (which is a PWM comp), a diode bridge comp, and two old API boxes.

The modeled behavior is audibly similar to the real boxes, except it's quicker and smoother. At lighter settings you can't really tell the difference between the DSP and the real box, and once I finish winding my 600:600 output transformer (I'm waiting on the bobbin and laminates), I think it'll be very nice.

My model sounds a lot like the PYE, except the PYE *REALLY* struggles keeping up with heavy compression settings and shorter time constants. At least the copy I have access to does; I can't afford an original, LOL.

Under heavy compression, like 20:1 and higher, most real world components can't keep up with fast changes in transients, current draw, etc. and so there's often a slight 'lag' coupled with some kind of noise behavior (like a distortion product that gets multiplied by the gain control device). You can really hear it in the FET comps, it sticks out like a sore thumb. They have very fast turn on time, and quick rise time so the knee is sharper. But the feed through voltage...jeez.

I can sort of model that by adding an overdrive that's controlled in parallel and buried about 20dB down, but I haven't figured out how to copy the inaccuracies of the real device's level detection circuits as they struggle to keep up with the transient changes. Maybe a slow LFO that's driven by the audio source and generates a small noise output? That's probably gonna exceed the instruction count though...who knows?

Top
- Edit post (./posting.php?mode=edit&f=31&p=3514)
- Delete post (./posting.php?mode=delete&f=31&p=3514)
- Report this post (./report.php?f=31&p=3514)
- Information (./mcp.php?i=main&mode=post_details&f=31&p=3514&sid=befaf904784df501ab581b011c284453)
- Reply with quote (./posting.php?mode=quote&f=31&p=3514)

Re: compression (#p3514)

by **Digital Larry** » Sat Jun 29, 2019 6:11 am

If you are interested in discussing any details of the current envelope blocks please print out an ASM listing and I'd be willing to go over it to explain it. And of course if you invent something new and would like to share it with the world by including a block in SpinCAD let me know that too!

I'm not spending much time on SpinCAD these days but a lot of that is because I hardly ever get any questions about it.

Top

| Display posts from previous: | All posts | Sort by | Post time | Ascending | Go |

Post a reply
7 posts • Page **1** of **1**
Return to SpinCADBlocks

| Jump to: | SpinCADBlocks | Go |

| Quick-mod tools: | Lock topic | Go |

Who is online

Users browsing this forum: Digital Larry and 0 guests
Powered by phpBB® Forum Software © phpBB Group
Administration Control Panel