**VST Plugin Writeup**

Part 1) design and technical features

I wanted to create a complex and great sounding synth using the powerful synthmaker software,

But after I started I soon realized that creating sounds is an incredibly abstract thing to do.

Trying to figure out what does what beyond the basics is something that would take quite a bit of research. Therefor, I decided to try to use what I had a grasp of to the best of my abilities.

The synthmaker lets you add virtual hardware pieces at the very low levels, but creating a synth this way would be extremely tedious and they provide you with some high level components that does most of what you are looking for. The first thing that you need is an input, which can be a midi input module or voice input module. Then, you need at minimum some kind of oscillator and an amplifier and an output, usually a to a sound device module. This will give you a basic sound with what ever wave form your oscillator generates. To make things interesting, I decided to use three oscillators, each with its own envelope controls as well as a detuner, and volume. The three signals are then fed through a filter, with various settings (low pass, high pass, band reject, and a few other) this filter has both a pre and post envelope control, to give you more options to shape your shounds. It is then fed through a combiner that “combines” the signals into one. This is then fed through a series of effects modules, a compressor which I put in parallel to add the compressed signal to the original since going straight through the compressor really killed a lot of the sound. Then it is put through a ping pong delay and a stereo chorus module and finally to a stereo amplifier and then the output device modules.

Part 2) how to use the synth

Using the synth is actually quite easy.

Create your waves

On the left side there are three sets of controls for the three oscillators. Each one has a graphical wave drawer and Envelope controller, which you can reshape with your mouse. On the bottom right corner of each oscillator’s section, there is a detuner which adds a “detuned” version of the source, you can change the detuned pitch with the octave and semitone drop menus and the “fine” knob for more hands on types. Right beside that there is a volume for each oscillator.

Filtering section

After you shape your waves, now we can put it through a filter. This is located on the top right side of the oscillator section. There are three controls, for this section. The top one is the pre-filter envelope control to control the enveloping of the filter. below it is the post-filter envelop, this envelope just shapes the signal after it has gone through the filter.

Compression

The compression section is enclosed in the its own box and has various controls for the compression effect. The best way to get a handle on how this affects your sound is to just play with them. Its actually quite fun.

Step LFO

This is an interesting effect, there is a part which you can reshape the wave with your mouse and this seems to reshape the signal to it. The top button which shows goes from 1/1 to 1/128 seems to control the frequency of dividing the signal by the shape of the Step LFO. Under that, is the “smooth” button,

This button seems to control how strongly the shape is applied to the signal.

Delay and Stereo Chorus

Lastly, we have our classic delay and chorus effects. The delay effect is very straight forward and does not need much explanation. The chorus is more interesting, as it can affect your sound very strongly. There are four controls. The rate controls the speed of the chorus effect. The depth controls how widely the signal is varied. The pre-delay is how much time before the chorus kicks in. finally we have to mix control, which controls how much of the chorused signal to add to the original.