

Anthony Tuttle's

Slew-Sampled Audio Codec

A lesson in critical thinking

I am in the process of inventing my own audio codec, which is based on the theory that using an equal number of samples per frequency will help even out the quality in the signal. This will be done by measuring the rate of change ($t(\Delta)$), or in engineering terms, the slew rate.

Processing Methods

I have considered a problem with just this being the main concept, however. If the number of samples per second was increased proportionally with the slew rate, then since lower-volume sounds have less slew rate than louder sounds at the same frequency, then there would be a strange exponential volume increase (though perhaps not exponential, definitely noticeable) relative to the actual volume. Thus, since a triangular wave has a perfectly constant slew rate therefore not being affected by this strange volume phenomenon, this could be called the **Triangular Method of Processing**. This method could perhaps be used also as a form of non-fundamental filtration!

The next processing method I will discuss is based on square waves. Since a square wave is perfectly square, it would have a completely steady *or* unpredictable slew rate! When the magnitude of the wave rises, it rises infinitely fast because it is a completely straight line! Thus, the slew rate would be infinite. Then, when the magnitude leveled out to a straight line, The slew rate would be zero. The slew rate would be infinite for an infinitely small fraction of time (because the rise upward is an infinitely straight line and takes an infinitely small amount of time to reach the level portion of the wave) and then it would be 0 for a while ad infinitum. This could also be interpreted better by assuming that a square wave has no slew rate at all, so a square wave could not be captured by using the **Triangular Method of Processing!** Thus, a square wave could only be captured easily by using the **Square Method of Processing!** Can you guess what this tells us? This means that **a square wave can only be captured by**

using an nonlinear form of processing!

This codec would nominally be programmed so that a pure sine wave of one frequency would have a constant sample rate. A sine wave has a constantly varying but predictable slew rate. This would be called the Sinusoidal Method of Processing. This method of processing is nonlinear, so it has no problem capturing a perfect square wave! Although this would require an equation other than the conventional slew rate philosophy because the slew rate of a pure sine wave is not constant like that of a triangular wave and also increase the possibility of distortion because it would have to be programmed very carefully, this method of processing will perfectly reproduce any wave you can imagine if programmed right!

Think! Just by doing this simple thing called thinking, we proved Fourier's theory correct, which states that any and every single wave in the universe is composed of many sine waves at once that mix together to create it.

Now where do you think we would be now if we harnessed the power of critical thinking every day? I cannot begin to describe the endless possibilities of what we could do or become!

Let this be a lesson to the reader about the potential of any determined person regardless of intellect.