Login: [username] [password] Log in   Join With Facebook

gearslutz.com

THE NO.1 WEBSITE FO
PRO AUDIO

HOME   EVENTS   COMPETITIONS   NEWSLETTER   CLASSIFIEDS   REVIEWS   DEAL ZONE

Today's Posts   Support Us   FAQ   Advertise   Our Advertisers   [Search Gearslutz...]

Home > The Forums > Electronic Music Instruments and Electronic Music Production ›

Digital vs Analog Modulation and more

Login / Join

New Reply   Thread Tools ▾   Search thread

Page 1 of 3   **1**   2   3   >

Limb BoY 🎤   #1
                                                  15th October 2014

Digital vs Analog Modulation and more

What is the general feeling of Digital vs Analog Modulation?

Scientifically speaking, Digital modulation only interprets sound as 1 or 0; while Analog modulation takes every morsel of sound and static.

And I was also wondering what is the opinion of modulation?

Would you be happy with a Volca for special FX? An MS-20 for more? Or a NASA Houston level setup? Why?

👍 Share   Quote

Top Mentioned Products

Yamaha DX7   Korg Oasys   Fairlight CMI   MOTU Volta   Show More

---

Limb BoY 🎤   #2
                                                  15th October 2014

Thats just what I read in an article. I was hoping to avoid "analog is like a ferrari, digital is my civic" type of answers.. so don't start there

Yoozer

Quote:

> Originally Posted by **Limb BoY** 🔄   **+**
> *What is the general feeling of Digital vs Analog Modulation?*
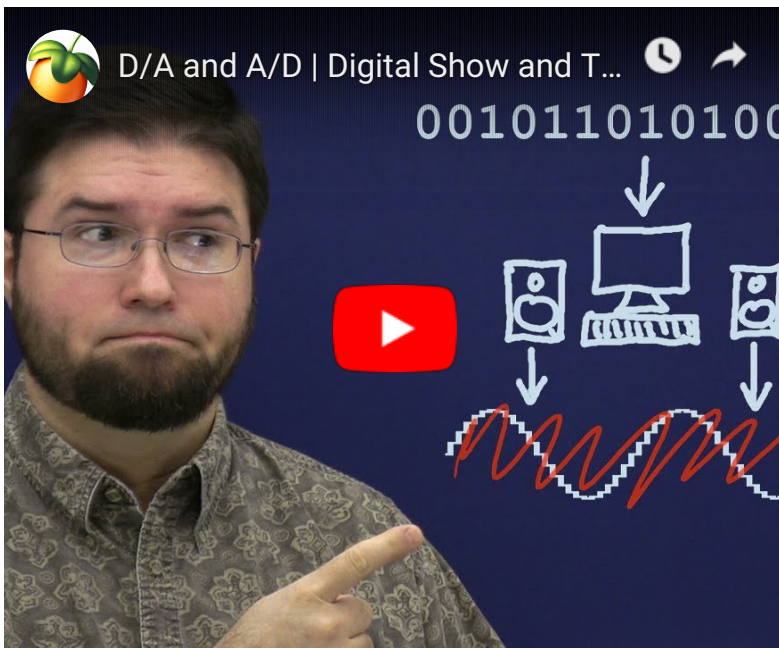
People's heads are still filled with the slow Z80s of 30 years ago that generated software envelopes.

Quote:

> Scientifically speaking, Digital modulation only interprets sound as 1 or 0;

Scientifically speaking: view this to clear your head of misconceptions about digital and analog:

then read this page specifically where it concerns the speed of modulation.

https://www.gearslutz.com/board/elec...ysynth-21.html

In short, analog designs can be fast but come with tradeoffs, for modern processors that have to generate control voltages it's not really an issue anymore if you choose a chip that's fast enough.

3   👍   Share   Quote

robotunes

a related question that i've been too embarrassed to ask:

my fave modulation is cross-mod, found on many real and digital analogs.

forgive my ignorance, but why isn't x-mod available on sample-based synths? many offer ring mod using a fixed waveform but that just doesn't do it for me. amplitude modulation nearly satisfies me because the fundamental is still there. (or am i showing my ignorance?)

i'm curious to hear a complex waveform x-mod another complex waveform.

👍 **Share** **Quote**

---

acreil

Quote:

> Originally Posted by **Yoozer** ➡ ➕
> *People's heads are still filled with the slow Z80s of 30 years ago that generated software envelopes.*

I think analog polysynths hit a sort of low point when they started to get more affordable. Using an 8 bit microprocessor to generate all modulation really wasn't the best idea ever. But it varies a great deal from synth to synth. Digital synths vary a lot too. The DX7 has extremely fast envelopes (only the pitch modulation is done in software), while the Kurzweil K2xxx series has a miserably slow 50 Hz modulation rate.

Smooth, high quality modulation is something that designers often neglected until they had processor power to spare.

Quote:

> Originally Posted by **robotunes** ➡ ➕
> *forgive my ignorance, but why isn't x-mod available on sample-based synths? many offer ring mod using a fixed waveform but that just doesn't do it for me. amplitude modulation nearly satisfies me because the fundamental is still there. (or*

For one thing, "cross modulation" isn't really well-defined. It means different things in different synths. In VCO-based synths, it's usually some sort of FM. This could be done with samples, but it would be very noisy and suffer from terrible aliasing. You might find it a lot less useful than what you're imagining. It also may have risked patent infringement lawsuits from Yamaha. Ring modulation, on the other hand, is nearly trivial to do in sample-based synths, and it's less prone to aliasing because at most it can only double the signal bandwidth. In DCO synths, oscillator to oscillator frequency modulation is impossible, and cross modulation is instead something else entirely, like some combination of oscillator sync

and simple amplitude modulation. This isn't applicable to sample-based synths at all.

5 👍 Share Quote

Looping Loddar

Quote:

> Originally Posted by **acreil** ↪
> *The DX7 has extremely fast envelopes (...)*

Afaik the DX7 (and also the SY99) has a *separate* processor to compute the envelopes.

👍 Share Quote

Deleted User
Thread Starter

The JX-8P comes to mind with OFF, Synch 1, Synch 2 and crossmod

Quote:

> Originally Posted by **acreil** ↪ ➕
>
> *In DCO synths, oscillator to oscillator frequency modulation is impossible, and cross modulation is instead something else entirely, like some combination of oscillator sync.*

1 👍 Share Quote

Limb BoY 🎤

Very interesting, I will look into this!

👍 Share Quote

Sharp11

Quote:

> Originally Posted by **Limb BoY** ↪ ➕
>
> *Scientifically speaking, Digital modulation only interprets sound as 1 or 0; while Analog modulation takes every morsel of sound and static.*

This is completely wrong ... you need to educate yourself on how digital works, then ask questions.

lechszcz

I talked with the guy at Synthspa in WI, and he explained the analog/digital thing pretty well.
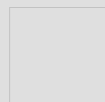
Think of a color wheel, with Red at the top, green at the bottom. Red is the fat and hot analog synths (junos, jupiters, Moogs), Purple blue is the hybrids, Blue/green is the cold Digital synths, Yellow/orange is the sample based synths, which takes us back into analog.

That kinda blue my mind...

RobotsVsChildren

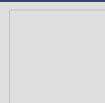Can expand on your question about using a Volca for efx?

Do you mean just those weird blips, wooshes and stabs? Which Volca? keys, bass?

If so, my opinion would be no, that is not a good choice for fx. They're more or less performance based, phrase synthesizers. For trippy effects, you'd be better off with the monotrons.

Sharp11

Quote:

> Originally Posted by **lechszcz** ➡ ➕
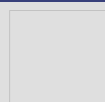> *I talked with the guy at Synthspa in WI, and he explained the analog/digital thing pretty well.*

😵 Sigh .... educators still have a LOT of work to do.

antto

that post blue my mind..
i need moar red nao

BTByrd

Quote:

> Originally Posted by **Limb BoY**
> *What is the general feeling of Digital vs Analog Modulation?*

What do you mean by these terms? While there are many analog synths that use hardware generated (analog) control voltages, there are also lots of analog synths that have digitally generated control voltages. LFOs and envelopes are often created digitally and then run through a D/A converter because it's cheaper than building out a discrete hardware LFO or envelope. Then there are purely digital synths in which the actual modulation takes place in the digital domain. So the difference is between analog/digital modulation *sources* and actual analog/digital modulation.

Quote:

> Originally Posted by **Limb BoY**
> *And I was also wondering what is the opinion of modulation?*

I like it.

foodeater

Quote:

> Originally Posted by **robotunes**
> *a related question that i've been too embarrassed to ask:*
>
> *my fave modulation is cross-mod. found on many real and digital analogs.*

Isn't that what kawai does from k1 on? I think maybe they call it am, but it doesn't really sound like am.

Kinda what emu EIV line does too, but not realtime?

roland's sample based synth let you do some stuff like this too, although I forget what they call it.

Whatever they call it, I like how it sounds with lofi digitals, you get some odd distortions.

robotunes

My Studio

> Quote:
>
> Originally Posted by **foodeater** ➡️ ✚
> *Isn't that what kawai does from k1 on? I think maybe they call it am, but it doesn't really sound like am.*

that's what i thought too! sounds "better" than am

> Quote:
>
> roland's sample based synth let you do some stuff like this too, although I forget what they call it.

FXM, you mean? roland calls it frequency crossmodulation and claims that it's a fixed waveform frequency-modulating the sampled waveform(s). sounds ok but doesn't hit as hard as xmod to me.

and for point of referencem by xmod i'm talking about brostep-style wub wub sounds. easily done on VAs by xmod + distortion.

227861
Thread Starter

> Quote:
>
> Originally Posted by **lechszcz** ➡️ ✚
> *I talked with the guy at Synthspa in WI, and he explained the analog/digital thing pretty well.....*

Since you were chatting with them can you tell them to give everybody's synths back? 😖

Limb BoY 🎤

It seems I have a few questions answered. Im sure I misquoted the original article I was referencing but it seems that Analog modulation simply allows a slightly more expressive sound. All in all I don't think its going to add anything but Valhalla.. I think for me the convenience of the digital modulars outshines the extra attitude.

I was really pleased to hear about some "AM" type of effects because I occasionally turn to AM radio and search static for modulating AM sounds; some can be quite inspiring and cool sounding with a nice thick subwoofer.

ignorantape

Quote:

> Originally Posted by **acreil** ➡️ ✚
> *I think analog polysynths hit a sort of low point when they started to get more*
> *affordable. Using an 8 bit microprocessor to generate all modulation really wasn't the*
> *best idea ever. But it varies a great deal from synth to synth. Digital synths vary a lot*

Are you suggesting the DX7 had analogue envelopes?

As far as I know the entire DX7 sound is generated in software.

fiddlestickz

Quote:

> Originally Posted by **Limb BoY** ➡️ ✚
> *I think for me the convenience of the digital modulars outshines the extra attitude.*

wtf...???

ignorantape

Quote:

> Originally Posted by **Limb BoY** ➡️ ✚
> *It seems I have a few questions answered. Im sure I misquoted the original article*
> *I was referencing but it seems that Analog modulation simply allows a slightly more*
> *expressive sound. All in all I don't think its going to add anything but Valhalla.. I think*

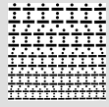Modulation is modulation, why would analogue be any more expressive?

Expressive for me is bending a note on a guitar, or hitting a key harder to make it louder.
Sure, a filter opening may sound expressive, but that's down to the quality of the filter
irrespective of whether the filter is analogue or digital.

acreil

Quote:

> Originally Posted by **ignorantape** ➜
> *Are you suggesting the DX7 had analogue envelopes?*

No, they're digital, but they're generated on a per-sample BASiS, and are capable of extremely fast attacks (probably faster than most analog envelope generators).

Quote:

> As far as I know the entire DX7 sound is generated in software.

It's digital hardware, not software.

1 👍 Share Quote

major7th

My opinion is that modulation is awesome. Digital or analog, both generally feel awesome.

I am also really into this idea of taking "every morsel of sound and static."

But it begs the question:

You take every morsel of sound and static...than what?

3 👍 Share Quote

Sharp11

Quote:

> Originally Posted by **acreil**
> *No, they're digital, but they're generated on a per-sample BASiS, and are capable of extremely fast attacks (probably faster than most analog envelope generators).*

There's no such thing as "digital hardware" - the DX7 was just a box with a computer in it, as is any digital synth.

Sure, there are I/O's and the like, but that part of the unit is separate from its brain - and the DX7's brain was early 80's micro-processors.

👍 Share Quote

---

steveman

Quote:

> Originally Posted by **Sharp11**
> *There's no such thing as "digital hardware" - the DX7 was just a box with a computer in it, as is any digital synth.*

Wrong, The DX7 used a micro-processor for voice assignment and patch storage only, sound generation was done using Yamaha's own custom VSLI - and these weren't uProcessors. Early 80s processors weren't nearly fast enough to generate 16 voices of FM. As being discussed here they were barely good enough to generate decent mod sources.

BTW "There's no such thing as "digital hardware" 🖐 - you have heard of TTL / CMOS logic haven't you?

6 👍 Share Quote

Jon Hodgson

Quote:

> Originally Posted by **Sharp11**
> *There's no such thing as "digital hardware"*

Yes there is

No it wasn't, well not a general purpose computer anyway, a set of custom designed ICs which computed certain specific functions.

There was a CPU to act as the overall "boss", but early 80s micro-processors would never have handled the required processing, not even TIs dsp released in 1983 would have managed it.

https://code.google.com/p/music-synt...ki/Dx7Hardware

3 👍 Share Quote

Jon Hodgson   **#27**
                                                                24th November 2014

Quote:

> Originally Posted by **Limb BoY** 🔁   ➕
> *Scientifically speaking, Digital modulation only interprets sound as 1 or 0; while Analog modulation takes every morsel of sound and static.*

Digital doesn't only do 0 or 1, depending on the choice of the designer, it can do ANY range of numbers at ANY level of precision. Want to deal with bigger values? Use more bits. Want to deal with the same range of values, but with greater resolution? Use more bits.

Analogue can have an infinite number of values, but it is not infinitely precise. There's an upper limit set by the power supply rails, above which things will clip, and a lower limit set by thermal noise, below which detail is lost, you get an infinite number of values, but they are all wrong to some degree.

These days, bits are cheap, so it's easy to exceed both the range and precision of analogue values.

1 👍 Share Quote

Yoozer   **#28**
                                                                24th November 2014

The funny thing is that even a budget audio interface can pump out 24 bits at 96 kHz which is trivial to convert to a control voltage if you have a DC-coupled interface (see also: Volta, Expert Sleepers, etc.). Should be good enough for digital modulation, right?

---

enossified

My Studio

Digital modulation works great and saves money.

Most of the new breed of analog monos use digital modulation. That includes all three Volcas, Micro/MiniBrutes and BS2.

Top Mentioned Products

| Yamaha DX7 | Korg Oasys | Fairlight CMI | MOTU Volta | Show More |

---

shponglefan

My Studio

Quote:

> Originally Posted by **Jon Hodgson** 📷   ➕
> *Digital doesn't only do 0 or 1, depending on the choice of the designer, it can do ANY range of numbers at ANY level of precision.*

At the risk of being pedantic, when it comes down to individual bits they are either 0 or 1 (i.e. on or off).

2 👍 Share Quote

Forum Jump | Electronic Music Instru | Go

HOME   CONTACT US   TERMS OF USE   PRIVACY POLICY   ALL ADVERTISERS   TOP

-- Gearslutz Logo

Subscribe to our Newsletter

Gearslutz.com LTD - UK Company Number 7597610 (England & Wales).
Registered Office - Suite 19, Maple Court, Grove Park, Maidenhead, Berkshire SL6 3LW.

By using this site, you agree to our use of cookies.
Code by Port Forward. Hosted by Nimbus Hosting.