panverb.m

Convolves Mono Dry Signal with an Impulse response to give a wet signal. Wet signal is sent to a panning function to create movement in the stereo field. Panned wet signal is then added to dry signal with a variable ratio.

Syntax

\[\text{pannedwetdry}=\text{panverb}(\text{input\_signal}, \text{impulse\_response}, \text{initial\_angle}, \text{final\_angle}, \text{ratio}, \text{fs})\]

Description

- \text{input\_signal} = Signal to be Processed
- \text{impulse\_response} = Impulse Response to be convolved with
- \text{initial\_angle} = Starting point of panning of wet signal
- \text{final\_angle} = End point of panning of wet signal
- \text{ratio} = Wet:Dry mix (0-1, 0.5 recommended)
- \text{fs} = Sample of Rate in Hertz

Process

Utilizes freqconv function as well as the panorama function (in which chunkymovie function is contained).

Input signal and impulse response must first be imported to the workspace as data.

Freqconv function performs a fast Fourier transform to the input signal and impulse response to convolve them in the frequency domain and then an inverse fft back into the time domain.

Figure 1. Dry:Wet Signal

The 100% wet mono signal is then outputted to the panorama function. The panorama function, through changes in amplitude between both left and right channels, creates a sense of movement from one ear to the other.

The mono dry signal is then summed to the panning wet signal. The ratio is a wet amplitude variable multiplier. 1 gives a 1:1 ratio 0.5 gives a 1:0.5 ratio of dry to wet.
**Output**
The panverb function outputs data as an N by 2 Matrix and play the stereo sound at a specified sample rate. The data can also be written to disk as a wave file using the wavwrite function.

**Examples**
A working example of a L-R, panning, convolution reverb effect on a flute is achieved as follows (Impulse response taken from a starter pistol fired in a castle in the Czech republic):

```matlab
[input_signal, fs, nbits] = wavread('flute.wav');
[impulse_response, fs, nbits] = wavread('humprecht.wav');

[pannedwetdry] = panverb(input_signal,impulse_response,90,-90,0.5,fs);
```

**References**

**MATLAB CODE**
DaFX – Udo Zoler
Panorama Function – 6.2.1

Luis Alejandro Miranda Joffre
Chunkymovie function
Myconv function

**Context**
Making The Most Of The Stereo Panorama, Sound on Sound March 2009 – Paul White
http://www.soundonsound.com/sos/mar09/articles/stereotechnique.htm