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1. Real time processing

2. FrAid scripts used in the demo

2.1. 300Hz low-pass filter

cutoffF = 300; controlVar(cutoffF,200); fil(x)= if x < cutoffF then 1 else 0; //fil(x)= if (x < 500) | (x > 2000) then 1 else 0; plot(fil,-1,1.5,5000,-1); sf=10000; f(x)=recordSound(sf,2048); fff(x)=fft1(f); g(x)=ifft1({fff*fil}); plot(f,g); //fft to the signals plot({abs(fff)},{abs(fft1(g))},0,.01,1,-.01); //spectrum spectrum(f, 512); spectrum(g, 512); plot(histogramS(f, 19), histogramS(g, 19)); playSound(g); //now change cutoffF=1000; //listen for the change //then make a high-pass 1000Hz by just fil(x)= if x > cutoffF then 1 else 0;

2.2. Function generator

A=.1; F=200; controlVar(A,.1,F,100); fun(x) = if isNextIntEven(x) then 1 else 0; //squares //fun(x)=sin(x); //sine s(x)=A*fun(F*2*Pi*x); Fs=10000; //make sure Fs >= 2 * F*2*Pi to avoid aliasing sampleLength=1; ss(x)=sampleL(s,0,sampleLength,sampleLength*Fs); plot(ss); playSound(ss);

2.3. Triangle wave (use with the generator above)

line(x, X1 ,Y1, X2, Y2)=((Y2-Y1)*x + Y1*X2 - Y2*X1)/(X2 - X1); //line through (X1,Y1) and (X2,Y2) nextDivPoint(x, d) = if isNextIntEven(x) then nextInt(x) - d else nextInt(x) - 1 + d; d = .5; controlVar(d, .5); triangleWave(x) = if x < nextDivPoint(x, d) then line(x, nextInt(x) - 1, 0, nextDivPoint(x, d), if isNextIntEven(x) then -1 else 1) else line(x, nextDivPoint(x, d), if isNextIntEven(x) then -1 else 1, nextInt(x), 0); //plot(triangleWave); //in the fuction generator above just do fun(x)=triangleWave(x);