**Lab 6/7: audio fx demo tape – Worksheet**  
ECE180: Introduction to Signal Processing

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| 1: Reverberation | %%  [y, Fs] = audioread('s2.wav');  y = resample(y,44100,Fs);  Fs = 44100;  audiowrite('s2.m4a',y,Fs);  y = y/max(abs(y));  a = audioread('s2.m4a');    %%    [y1, Fs1] = audioread('terrys.wav');  y1 = resample(y1,44100,Fs1);  Fs1 = 44100;  audiowrite('terrys.m4a',y1,Fs1);  b = audioread('terrys.m4a');    %% 1.a  y2 = conv(a,b);  audiowrite('Convolution\_reverb.m4a',y2, Fs);  y2 = y2/max(abs(y2));  c = audioread('Convolution\_reverb.m4a');      %% 1.b  af = flipud(a);  cf = conv(af,b);  cf = flipud(cf);  audiowrite('Reversed\_reverb.m4a',cf, Fs);  cf = cf/max(abs(cf));  d = audioread('Reversed\_reverb.m4a');    %% 1.c  m= 0.8;  a(length(c)) = 0;  wd = m \* a +(1-m) \* c;  audiowrite('Wet\_dry\_mix.m4a',wd, Fs);  wd = wd/max(abs(wd));    %% 1.d  [y3, Fs3] = audioread('terrys\_ortf.wav');  y3 = resample(y3,44100,Fs3);  Fs3 = 44100;  audiowrite('terrys\_ortf.m4a',y3,Fs3);  f = audioread('terrys\_ortf.m4a');  f1 = f(:,1);  f2 = f(:,2);    y4l = conv(a,f1);  y4r = conv(a,f2);  y4 = [y4l y4r];  audiowrite('Stereo\_convolution\_reverb.m4a',y4, Fs);  y4 = y4/max(abs(y4(:)));  e = audioread('Stereo\_convolution\_reverb.m4a'); |
| 2: *Echo chamber* | [x,Fs] = audioread('s2.wav');  echo = 0.2;  Duration = echo\*Fs;  y = zeros(size(x));  y(1:Duration) = x(1:Duration);  for i=Duration+1 : length(x)  y(i) = x(i) + 0.4\*x(i-Duration);  end  sound(y,Fs);  %work cited:  %http://dsp.stackexchange.com/questions/8066/adding-echo-to-audio-sample  %http://www.mathworks.com/matlabcentral/fileexchange/45523-echo-signal  %http://siyumsblog.blogspot.com/2012/06/simple-matlab-code-to-add-echo-to-audio.html |
| 3: *Modulation* | %% 3  f0 = 1000;  t = 0:3.0882/length(a):3.0882\*(1-1/length(a));  t = t';  x = cos(2\*pi\*f0\*t);  y5 = x.\*a;  audiowrite('Modulation.m4a',y5,Fs); |
| 4: *Haas effect* | [x,Fs] = audioread('s2.wav');  yL = audioread('s2.wav');  echo = 0.2;  Duration = echo\*Fs;  y = zeros(size(x));  y(1:Duration) = x(1:Duration);  for i=Duration+1 : length(x)  y(i) = x(i) + 0.4\*x(i-Duration);  end  yR = y  ystereo = [yL yR]  audiowrite('Hass Effect.wav',ystereo,Fs) |
| 5: Audio Recorder | record = audiorecorder;  disp('start speaking:');  recordblocking(record,5);  disp('End of Speaking');  record\_data = getaudiodata(record);  audiowrite('record\_data\_1.wav',record\_data,Fs)  %Work Cited  %http://www.mathworks.com/help/matlab/import\_export/record-and-play-audio.html?refresh=true |