**数字均衡器说明**



实现方法：

1. 通过按钮打开文件的路劲，并打开文件；
2. 将文件的路径显示在可编辑文本框内；
3. 将所有滑动条的初始值设为中间值；
4. 调用编写的IIR带通滤波器：

function [ Y ] = fx\_FIR( fs, wc1 ,wc2 , signal)

%===============IIRÉè¼ÆÂË²¨Æ÷===============

Wn=[wc1\*2 wc2\*2]/fs;

[b,a]=butter(1,Wn);

Y=filtfilt(b,a,signal);

%===============FIRÉè¼ÆÂË²¨Æ÷===============

%b = fir1(50, [wc1\*2/fs wc2\*2/fs]);

%Y = filtfilt(b,1,signal);

end

1. 对每个滑动条调用带通滤波函数：

audio\_33=fx\_FIR(Fs,1,33,audio);

audio\_44=fx\_FIR(Fs,34,44,audio);

audio\_63=fx\_FIR(Fs,45,63,audio);

audio\_88=fx\_FIR(Fs,64,88,audio);

audio\_125=fx\_FIR(Fs,89,125,audio);

audio\_180=fx\_FIR(Fs,126,180,audio);

audio\_250=fx\_FIR(Fs,181,250,audio);

audio\_355=fx\_FIR(Fs,251,355,audio);

audio\_500=fx\_FIR(Fs,356,500,audio);

audio\_710=fx\_FIR(Fs,501,710,audio);

audio\_1000=fx\_FIR(Fs,711,1000,audio);

audio\_1400=fx\_FIR(Fs,1001,1400,audio);

audio\_2000=fx\_FIR(Fs,1401,2000,audio);

audio\_2800=fx\_FIR(Fs,2001,2800,audio);

audio\_4000=fx\_FIR(Fs,2801,4000,audio);

audio\_5600=fx\_FIR(Fs,4001,5600,audio);

audio\_8000=fx\_FIR(Fs,5601,8000,audio);

audio\_11300=fx\_FIR(Fs,8001,11300,audio);

audio\_16000=fx\_FIR(Fs,11301,16000,audio);

audio\_22000=fx\_FIR(Fs,16001,22000,audio);

1. 获取各个滑动条的值并\*2（使得滑动条的值为0-2，中间值为1）

%»ñÈ¡¸÷¸ö»¬¶¯ÌõµÄÎ»ÖÃ

a = 2\*get(handles.slider33 , 'Value');

b = 2\*get(handles.slider44 , 'Value');

c = 2\*get(handles.slider63 , 'Value');

d = 2\*get(handles.slider88 , 'Value');

e = 2\*get(handles.slider125 , 'Value');

f = 2\*get(handles.slider180 , 'Value');

g = 2\*get(handles.slider250, 'Value');

h = 2\*get(handles.slider355 , 'Value');

i = 2\*get(handles.slider500 , 'Value');

j = 2\*get(handles.slider710 , 'Value');

k = 2\*get(handles.slider1000 , 'Value');

l = 2\*get(handles.slider1400, 'Value');

m = 2\*get(handles.slider2000 , 'Value');

n = 2\*get(handles.slider2800, 'Value');

o = 2\*get(handles.slider4000 , 'Value');

p = 2\*get(handles.slider5600, 'Value');

q = 2\*get(handles.slider8000 , 'Value');

r = 2\*get(handles.slider11300 , 'Value');

s = 2\*get(handles.slider16000, 'Value');

t = 2\*get(handles.slider22000 , 'Value');

1. 合成新的声音，将滤波后的声音相加

audio\_new=a\*audio\_33+b\*audio\_44 +c\*audio\_63 +d\*audio\_88 +e\*audio\_125 +f\* audio\_180+g\*audio\_250 +h\*audio\_355 +i\* audio\_500+j\*audio\_710 +k\*audio\_1000 +l\*audio\_1400+m\* audio\_2000+n\*audio\_2800 +o\*audio\_4000 +p\*audio\_5600 +q\*audio\_8000 +r\*audio\_11300 +s\*audio\_16000 +t\*audio\_22000;

1. 对声音信号进行傅里叶变换，画出滤波后的图；
2. 播放新的声音信号

play=audioplayer(audio\_new,Fs);

playblocking(play);