

STFT (Short-Time Fourier Transform) Analysis of vowels

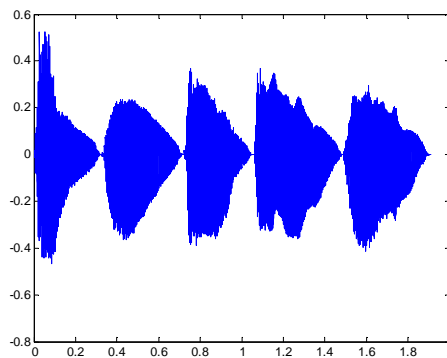
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※ Audio Source File: 'aeiou.wav'

Note: You can produce the above audio file at <http://atc.ccl.itri.org.tw/> for simplicity. (Welcome to the Text-to-Speech Engine demo Advanced Technology Center ICL/ITRI 【歡迎使用工研院(ITRI: Industrial Technology Research Institute of Taiwan, R.O.C)資通所前瞻技術中心研發的 中文文字轉語音合成系統】)

※ 'aeiou.m'

```
% Spectrogram of vowels A,E,I,O,U
[Y, fs, Nbits]=wavread('aeiou.wav'); % 1.9093 sec
N = length(Y); T=1/fs; % fs=16000; N=30548; Nbits=16
figure; plot([0:N-1]*T,Y);
```



```
soundsc(Y,fs); L = 256;
```

```
% Compute spectrogram by Matlab built-in function specgram.m (uses a Hanning window)
```

```
figure; specgram(Y, L, fs, 256, 128); % The bottom-left figure.
```

```
% Compute spectrogram by the f_specgram.m (a little changed by Tang) created by Schilling & Harris
```

```
L = 256; Hamming = 3; levels = 12;
```

```
[G,f,t] = f_specgram(Y,L,fs,Hamming);
```

```
figure; % The bottom-right figure.
```

```
contour(t,f(1:L/2),G(1:L/2,:),levels) % Original: contour(t,f(1:L/2),G(:,1:L/2),levels)
```

```
f_labels('Spectrogram of vowels: Hamming window','\itt} (sec)','\itf} (Hz)','\it{G(t,f)}')
```

