

Join the Stack Overflow Community

Stack Overflow is a community of 4.7 million programmers, just like you, helping each other.

Join them; it only takes a minute:

Sign up

How to plot a wav file



I have just read a wav file with scipy and now I want to make the plot of the file using matplotlib, on the "y scale" I want to see the amplitude and over the "x scale" I want to see the numbers of frames! Any help how can I do this?? Thank you!

```
from scipy.io.wavfile import read
import numpy as np
from numpy import*
import matplotlib.pyplot as plt
a=read("C:/Users/Martinez/Desktop/impulso.wav")
print a
```

[python](#) [audio](#) [matplotlib](#)

asked Sep 4 '13 at 22:52



what does `print a` output? – [mtpain](#) Sep 4 '13 at 22:56

Is this a single or multi-channel wavfile? – [Phillip Cloud](#) Sep 4 '13 at 23:02

The `print a`, just show a tuple with the raw data of the audio file. And it is a mono wavfile. – [Diego Martínez Giardini](#) Sep 5 '13 at 19:23

2 Answers

Hi you can call wave lib to read audio file !

To plot waveform use "plot" function from matplotlib

```
import matplotlib.pyplot as plt
import numpy as np
import wave
import sys

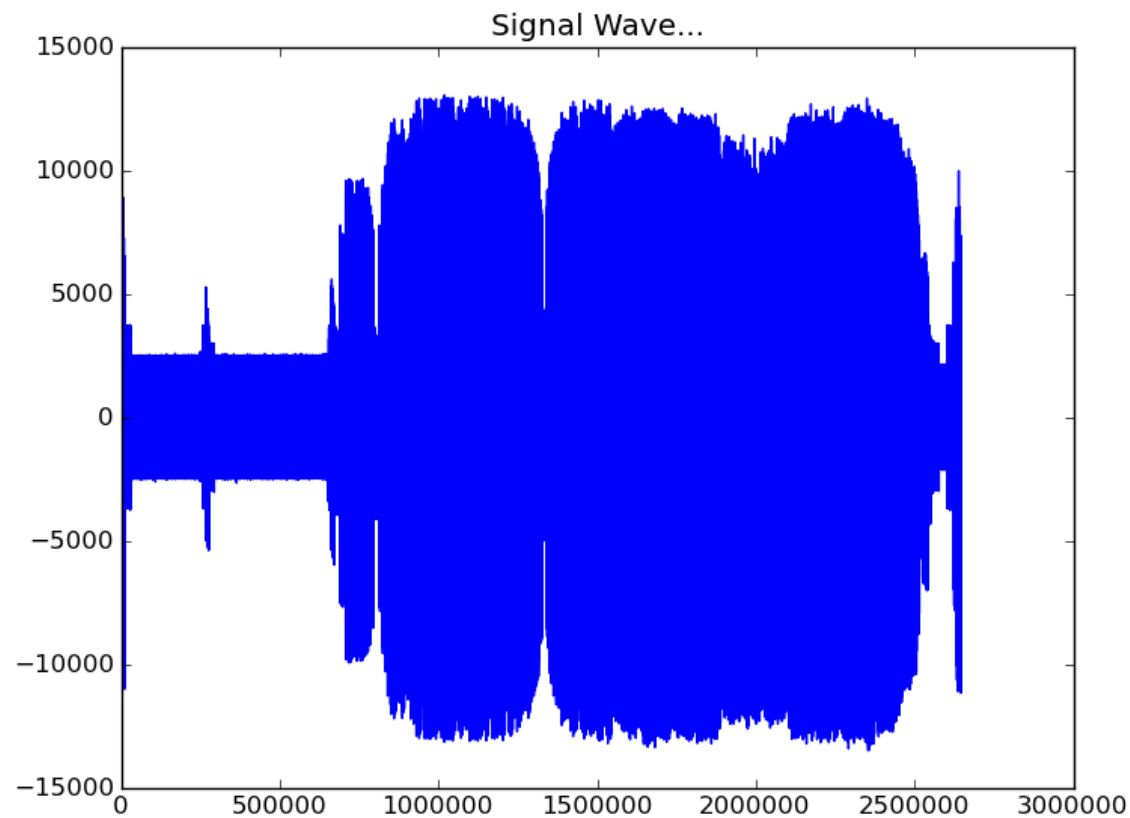
spf = wave.open('wavfile.wav', 'r')

#Extract Raw Audio from Wav File
signal = spf.readframes(-1)
signal = np.fromstring(signal, 'Int16')

#If Stereo
if spf.getnchannels() == 2:
    print 'Just mono files'
    sys.exit(0)

plt.figure(1)
plt.title('Signal Wave...')
plt.plot(signal)
```

you will have something like:



To Plot x-axis in seconds you need get the frame rate and divide by size of your signal, you can use linspace function from numpy to create a Time Vector spaced linearly with the size of the audio file and finally you can use plot again like `plt.plot(Time,signal)`

```
import matplotlib.pyplot as plt
import numpy as np
import wave
import sys
```

```
spf = wave.open('Animal_cut.wav','r')
```

```
#Extract Raw Audio from Wav File
```

```
signal = spf.readframes(-1)
```

```
signal = np.fromstring(signal, 'Int16')
```

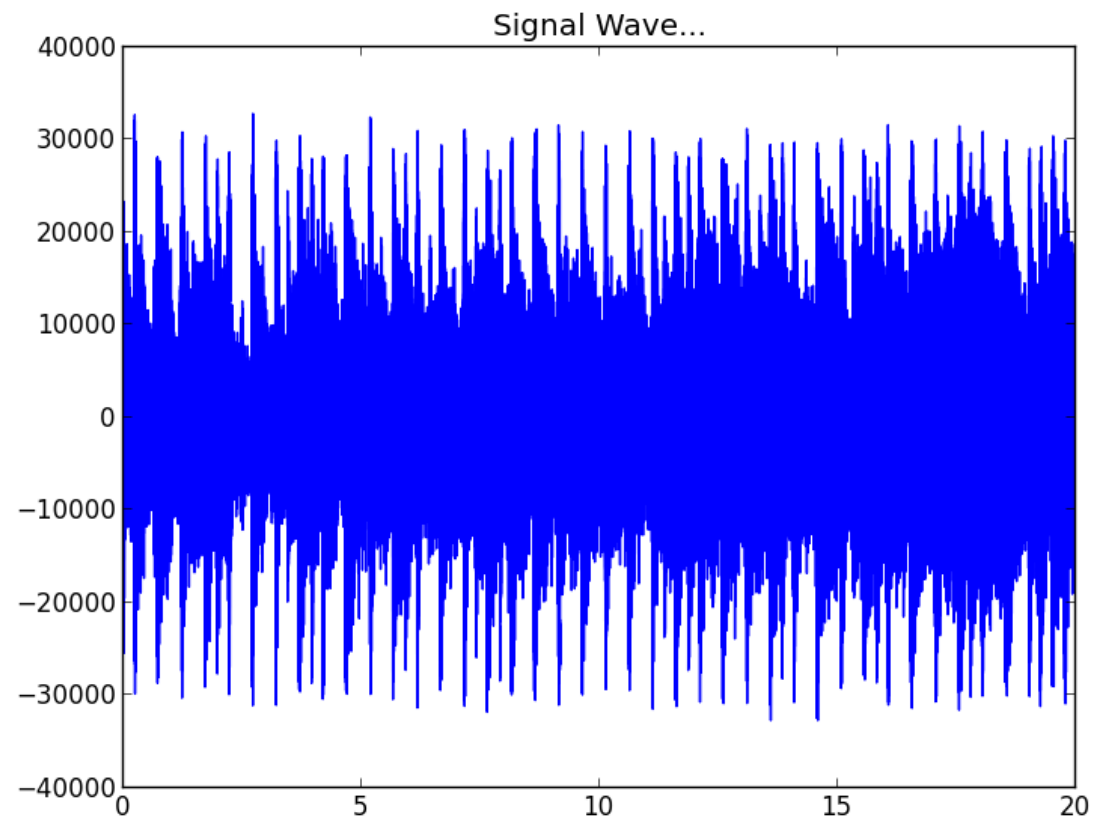
```
fs = spf.getframerate()

#If Stereo
if spf.getnchannels() == 2:
    print 'Just mono files'
    sys.exit(0)

Time=np.linspace(0, len(signal)/fs, num=len(signal))

plt.figure(1)
plt.title('Signal Wave...')
plt.plot(Time,signal)
plt.show()
```

New plot x-axis in seconds:



edited Sep 5 '13 at 20:25

answered Sep 4 '13 at 23:15



[ederwander](#)

1,776 9 15

That's perfect man, but what if I want to see the time over the x-axis, in seconds?? How do I make that possible?? – [Diego Martínez Giardini](#) Sep 5 '13 at 19:42

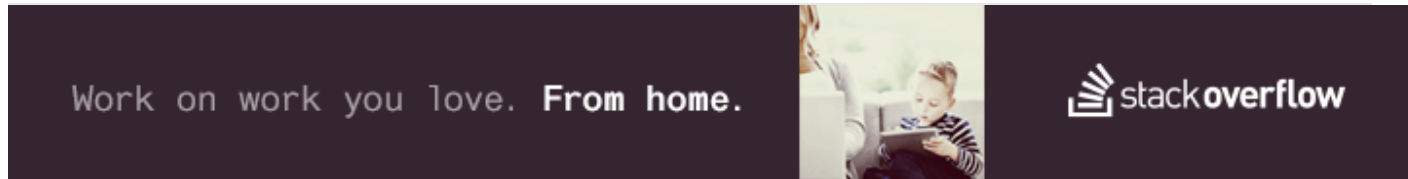
see the update ! – [ederwander](#) Sep 5 '13 at 20:26

Ederwander, for some reason I don't know when I plot my file it just shows the data backwards! [enter image description here](#): I have copied the same that you have write! Any suggestion? – [Diego Martínez Giardini](#) Sep 5 '13 at 21:05

does not make sense, if you really think that the data is inverted, use any function of numpy to transposed

your vector – [ederwander](#) Sep 5 '13 at 21:36

out of curiosity I compared the results with the plot in python and Audacity, you can see The Same waveform [here](#) – [ederwander](#) Sep 6 '13 at 12:44



Alternatively, if you want to use SciPy, you may also do the following:

```
from scipy.io.wavfile import read
import matplotlib.pyplot as plt

# read audio samples
input_data = read("Sample.wav")
audio = input_data[1]
# plot the first 1024 samples
plt.plot(audio[0:1024])
# label the axes
plt.ylabel("Amplitude")
plt.xlabel("Time")
# set the title
plt.title("Sample Wav")
# display the plot
plt.show()
```

answered Aug 2 '14 at 14:16



[CuriousCoder](#)

71 1 5