SPECTRAL ROLLOFF

It defines the shape of the signal,It represents the frequency below which a specified percentage of the total spectral energy, e.g. 85%, lies(0.85 is by default when value is not defined using the spectral rolloff module of librosa). This can also be used to, approximate the maximum (or minimum) frequency by setting roll_percent to a value close to 1 (or 0).

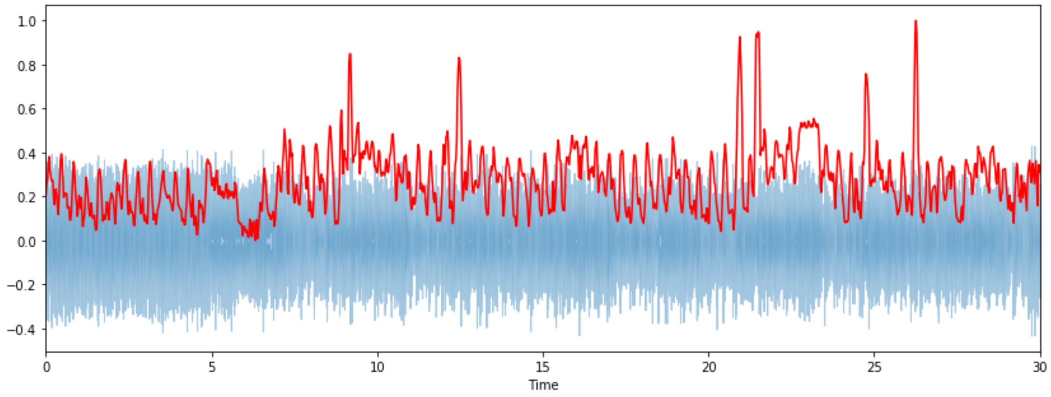
In [1]:
```
import librosa as lr
import librosa.display
import matplotlib.pyplot as plt
import sklearn.preprocessing
import matplotlib.style as ms
%matplotlib inline
import numpy as np
import os
```

Visualizing the roll off frequency and power spectrum,

In [2]:
```
audio='/home/vivek/Genre_Detection/genres/metal/metal.00001.au'
x , sr =lr.load(audio)
```

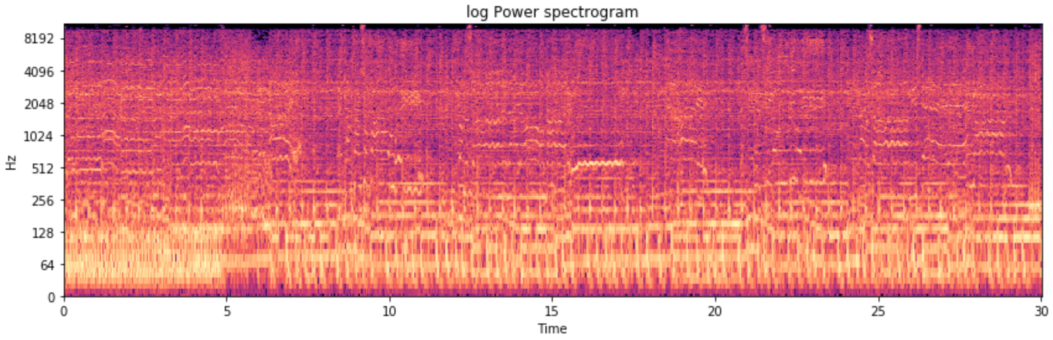
In [3]:
```
spectral_rolloff = librosa.feature.spectral_rolloff(x, sr=sr,roll_percent=0.
85)[0]

frames = range(len(spectral_rolloff))
t = librosa.frames_to_time(frames)

def normalize(x, axis=0):
    return sklearn.preprocessing.minmax_scale(x, axis=axis)

plt.figure(figsize=(14, 5))
librosa.display.waveplot(x, sr=sr, alpha=0.4)
plt.plot(t, normalize(spectral_rolloff), color='r')
```

Out[3]:
```
[<matplotlib.lines.Line2D at 0x7febdd78de48>]
```



In [5]:

```
S, phase = librosa.magphase(librosa.stft(x))
plt.figure(figsize=(12,4))
librosa.display.specshow(librosa.amplitude_to_db(S, ref=np.max),y_axis='log'
, x_axis='time')
plt.title('log Power spectrogram')
plt.tight_layout()
```



In [6]:

```
#mean of the spectral rolloff acts as a good feature for training the model
and predicting it
np.mean(spectral_rolloff)
```

Out[6]:

```
6037.074141712587
```

In [ ]: