特征具体名称

Spectral features	Note
chroma_stft	Compute a chromagram from a waveform or power spectrogram
chroma_cqt	Constant-Q chromagram
chroma_cens	Computes the chroma variant “Chroma Energy Normalized” (CENS)
melspectrogram	Compute a mel-scaled spectrogram
mfcc	Mel-frequency cepstral coefficients (MFCCs)
rmse	Compute root-mean-square (RMS) energy for each frame, either from the audio samples y or from a spectrogram S
spectral_centroid	Compute the spectral centroid
spectral_bandwidth	Compute p’th-order spectral bandwidth
spectral_contrast	Compute spectral contrast
spectral_flatness	Compute spectral flatness
spectral_rolloff	Compute roll-off frequency
poly_features	Get coefficients of fitting an nth-order polynomial to the columns of a spectrogram
tonnetz	Computes the tonal centroid features (tonnetz)
zero_crossi	

ng_rate	Compute the zero-crossing rate of an audio time series

特征类型

频谱特性

- chroma_stft
- chroma_cqt
- melspectrogram
- spectral_centroid
- spectral_bandwidth
- spectral_contrast
- spectral_flatness
- spectral_rolloff
- poly_features

能量特性

- chroma_cens
- rmse
- tonnetz

mfcc

- mfcc

时域特性

- zero_crossing_rate

实验结果

在gtzan数据集上

Index	Feature Fusion	Train	Dev	Test
1	mfcc,rmse,chroma_stft,spectral_centroid	0.86	0.58	0.62
2	mfcc,rmse,chroma_stft,spectral_bandwidth	0.83	0.71	0.67
3	mfcc,rmse,chroma_stft,spectral_contrast	0.96	0.64	0.53
4	mfcc,rmse,chroma_stft,spectral_flatness	0.99	0.62	0.53
5	mfcc,rmse,chroma_stft,spectral_rolloff	0.80	0.66	0.63
6	mfcc,zero_crossing_rate,chroma_stft,spectral_centroid	0.85	0.64	0.55
7	mfcc,zero_crossing_rate,chroma_stft,spectral_bandwidth	0.84	0.62	0.55
8	mfcc,zero_crossing_rate,chroma_stft,spectral_contrast	0.98	0.59	0.58
9	mfcc,zero_crossing_rate,chroma_stft,spectral_flatness	0.98	0.63	0.53
10	mfcc,zero_crossing_rate,chroma_stft,spectral_rolloff	0.80	0.66	0.55
11	mfcc,rmse,chroma_cqt,spectral_centroid	0.88	0.66	0.65
12	mfcc,rmse,chroma_cqt,spectral_bandwidth	0.80	0.61	0.53
13	mfcc,rmse,chroma_cqt,spectral_contrast	0.98	0.54	0.50
14	mfcc,rmse,chroma_cqt,spectral_flatness	0.98	0.68	0.50
15	mfcc,rmse,chroma_cqt,spectral_rolloff	0.86	0.62	0.65

16	mfcc,rmse,chroma_cens,spectral_centroid	0.86	0.67	0.68
17	mfcc,rmse,chroma_cens,spectral_bandwidth	0.81	0.63	0.52
18	mfcc,rmse,chroma_cens,spectral_contrast	0.98	0.56	0.52
19	mfcc,rmse,chroma_cens,spectral_flatness	0.99	0.63	0.48
20	mfcc,rmse,chroma_stft,spectral_rolloff	0.80	0.66	0.63
21	mfcc,spectral_centroid,chroma_cens,spectral_contrast	0.88	0.64	0.65
22	mfcc,spectral_centroid,chroma_cens,spectral_bandwidth	0.67	0.62	0.58
23	mfcc,spectral_centroid,chroma_cens,spectral_flatness	0.91	0.76	0.63
24	mfcc,spectral_centroid,chroma_cens,spectral_rolloff	0.61	0.60	0.47
25	mfcc,spectral_centroid,chroma_cqt,spectral_bandwidth	0.60	0.63	0.68
26	mfcc,rmse,spectral_centroid,chroma_stft,spectral_bandwidth,zero_crossing_rate	0.62	0.59	0.52
27	mfcc,poly_features,chroma_stft,spectral_centroid	0.88	0.63	0.52
28	mfcc,poly_features,chroma_stft,spectral_bandwidth	0.82	0.61	0.53
29	mfcc,poly_features,chroma_stft,spectral_flatness	0.98	0.60	0.53
30	mfcc,poly_features,chroma_stft,spectral_rolloff	0.77	0.58	0.48

31	mfcc,spectral_centroid,chroma_stft,spectral_contrast	0.84	0.71	0.73

在MOSI数据集上

Index	Feature Fusion	Train	Dev	Test
1	mfcc,spectral_centroid,chroma_stft,spectral_contrast	0.87	0.32	0.31
2	chroma_stft,chroma_cqt,chroma_cens,melspectrogram,mfcc,rmse,spectral_centroid,spectral_bandwidth,spectral_contrast,spectral_flatness,spectral_rolloff,poly_features,tonnetz,zero_crossing_rate	0.96	0.42	0.35