

Musical Genre Classification



AutoML 연구실
석사 과정 조성현
21.12.07

To Do List

➤ Last Week

- 비교 모델 정리
- MIRToolbox 정리

➤ This Week

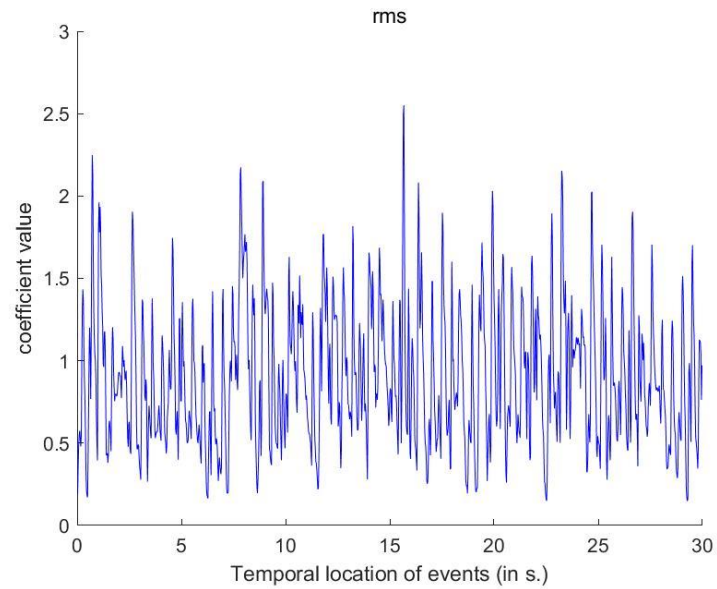
- MIRToolbox 이미지 데이터 추출
- 비교 논문 추가

The standard statistics of the datasets

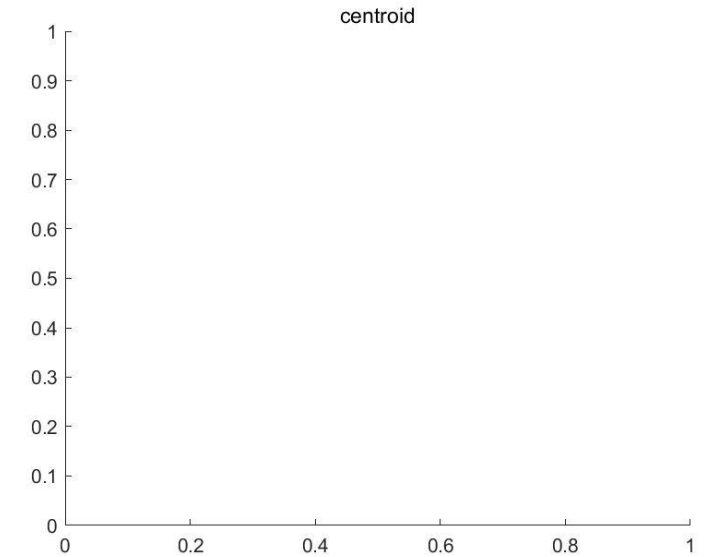
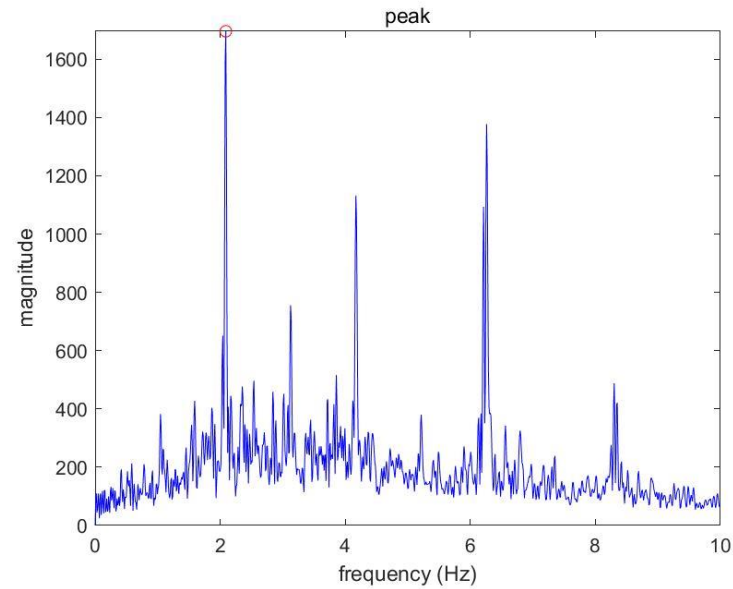
Author	Year	Neural Network	# of employed datasets	Employed Dataset	Input Type	Evaluation Metric	Ref.
Massoudi	2021	CNN	1	Urban Sound Classification Challenge	MFCC	Accuracy	[1]
Ghildiyal	2020	CNN	1	GTZAN	Mel-Spectrogram	Accuracy	[2]
Palanisamy	2020	CNN	3	ESC-50, GTZAN, UrbanSound8K	Log Mel-Spectrogram	Accuracy	[3]
Yu	2019	CNN	2	GTZAN, Extended Ballroom	STFT Spectrogram	Accuracy	[4]
Won	2020	CNN	3	MagnaTagATune, Million Song Dataset, MTG-Jamendo	Mel-Spectrogram	ROC-AUC, PR-AUC	[5]
Bisharad	2019	CNN	1	GTZAN	Mel-Spectrogram	Precision, Recall, F1 score	[6]
Zhang	2019	RNN	1	GTZAN	MFCC, chromagram	Accuracy	[7]
Chillara	2019	CNN	1	FMA-SMALL	Spectrogram	Accuracy	[8]
Zhang	2016	CNN	1	GTZAN	STFT Spectrogram	Accuracy	[9]
Choi	2017	CRNN	1	Million Song Dataset	Log Mel-Spectrogram	AUC-ROC	[10]
Su	2019	CNN	1	UrbanSound8k	Log Mel-Spectrogram, MFCC	Accuracy	[11]
Choi	2016	CNN	2	MagnaTagATune, Million Song Dataset	Mel-Spectrogram, MFCC, STFT	AUC-ROC	[12]
Li	2018	CNN	3	ESC-10, ESC-50, UrbanSound8k	Log Mel-Spectrogram	Accuracy	[13]

MIRToolbox

Dynamics

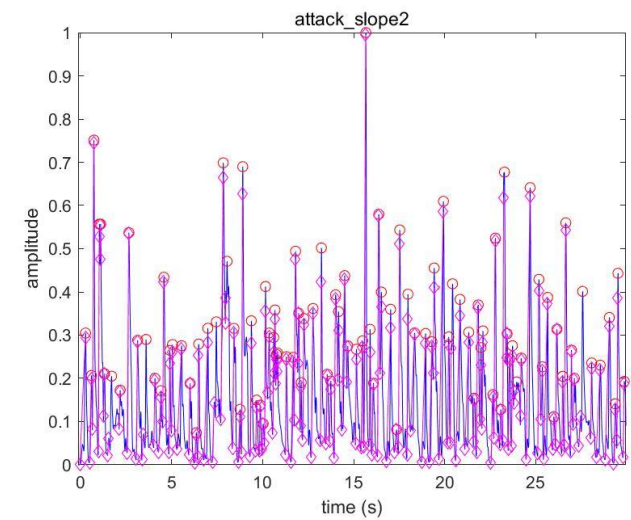
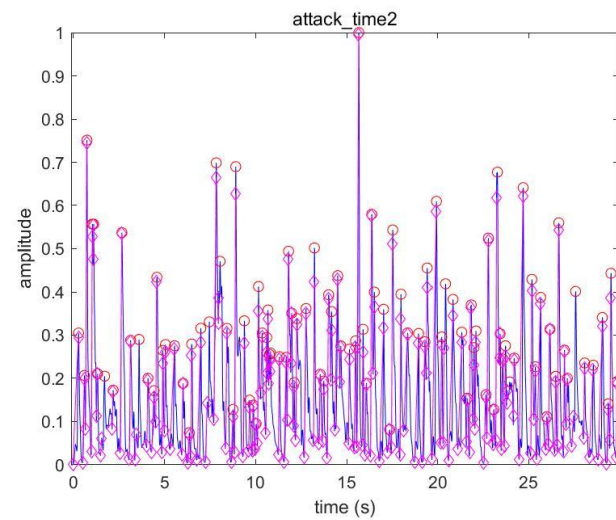
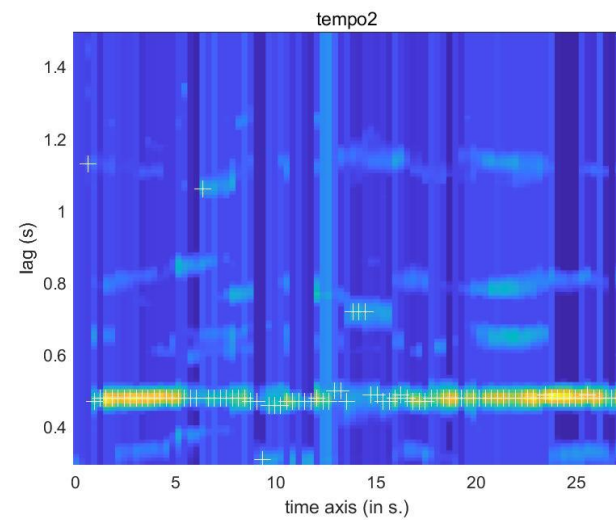
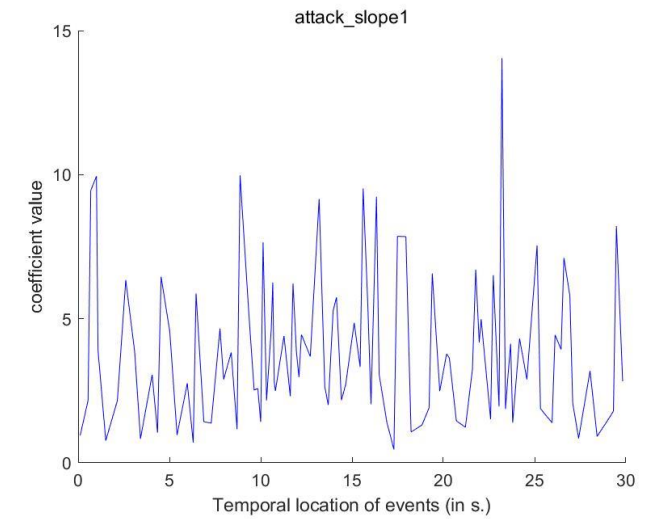
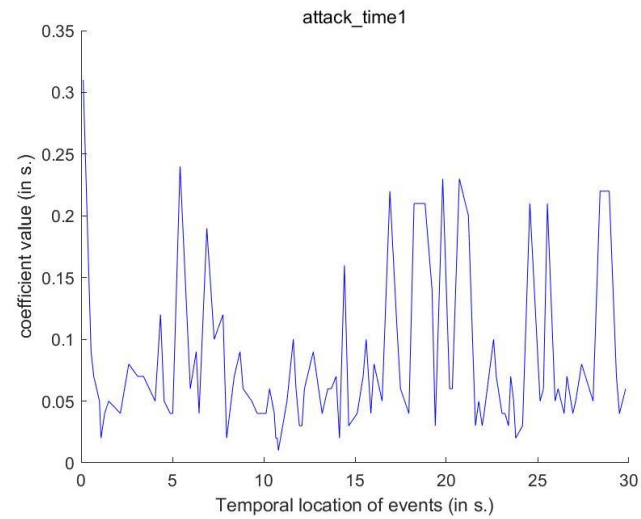
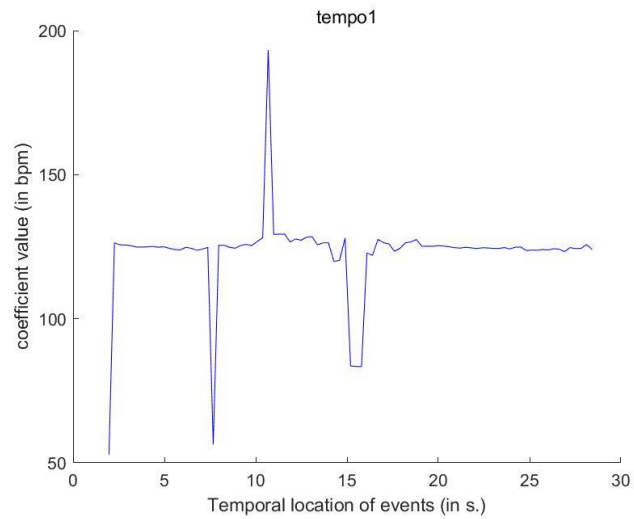


Fluctuation



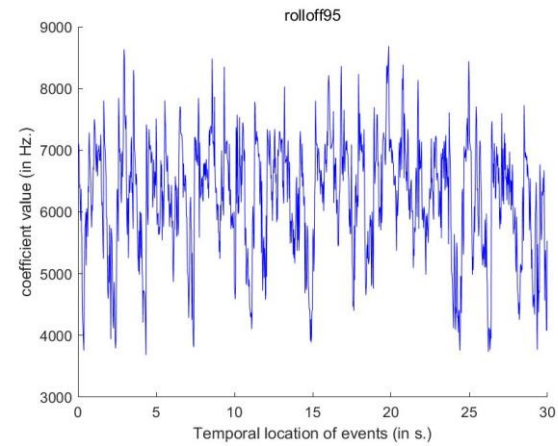
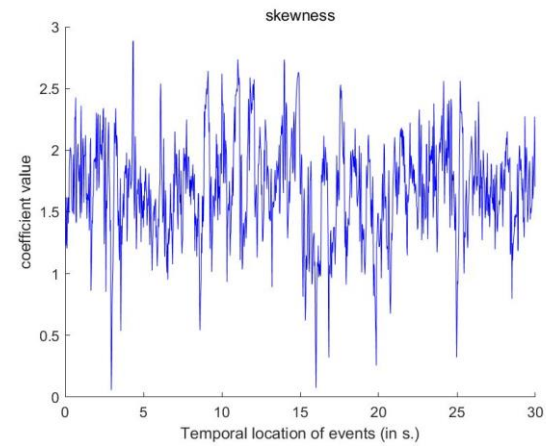
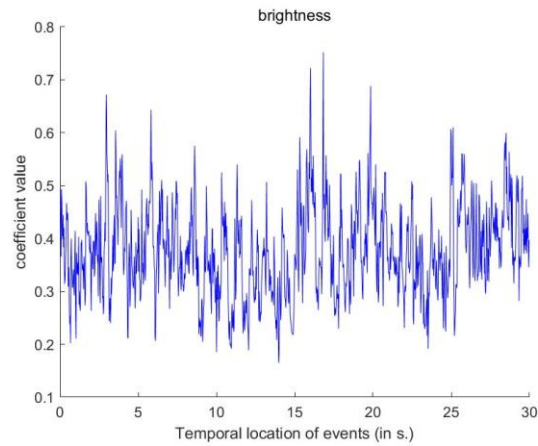
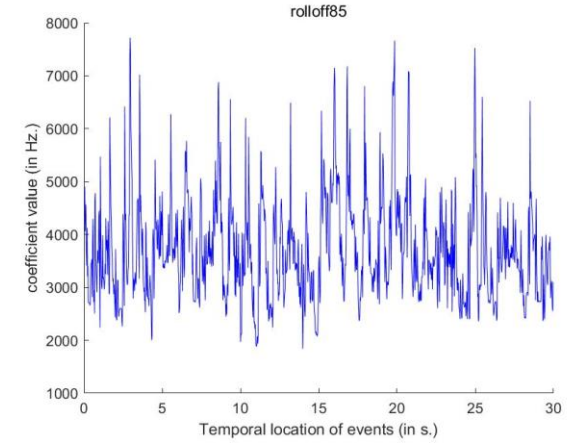
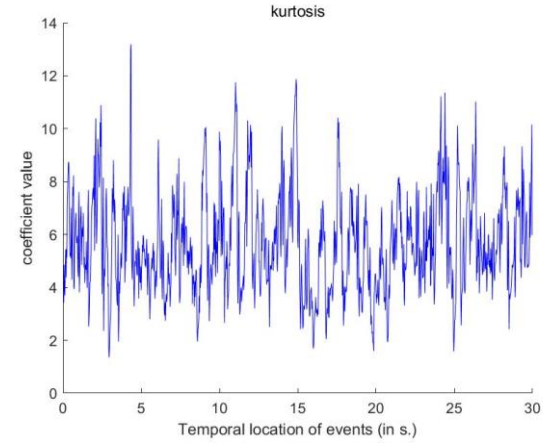
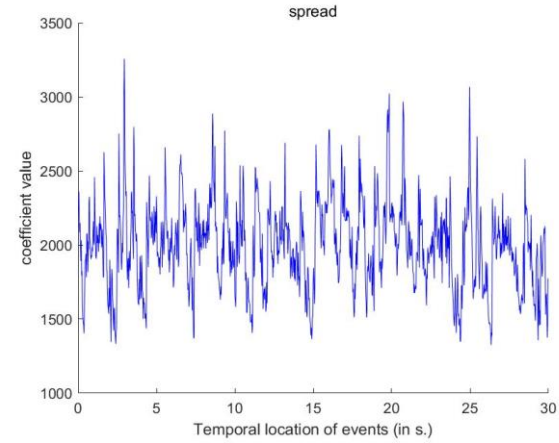
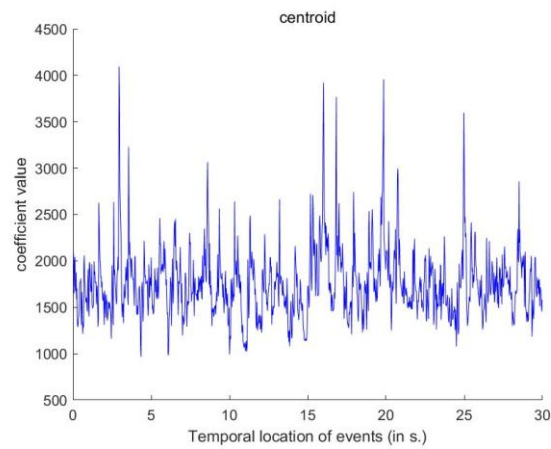
MIRToolbox

Rhythm



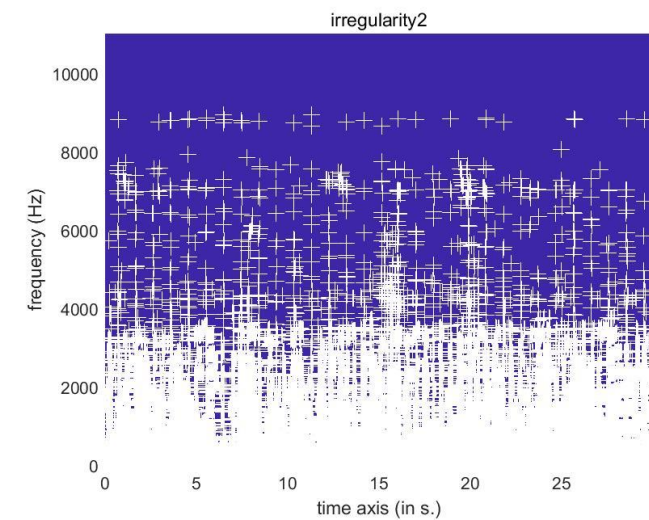
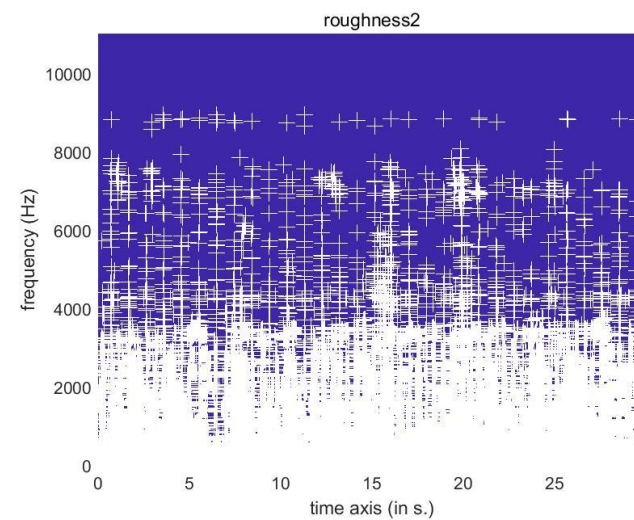
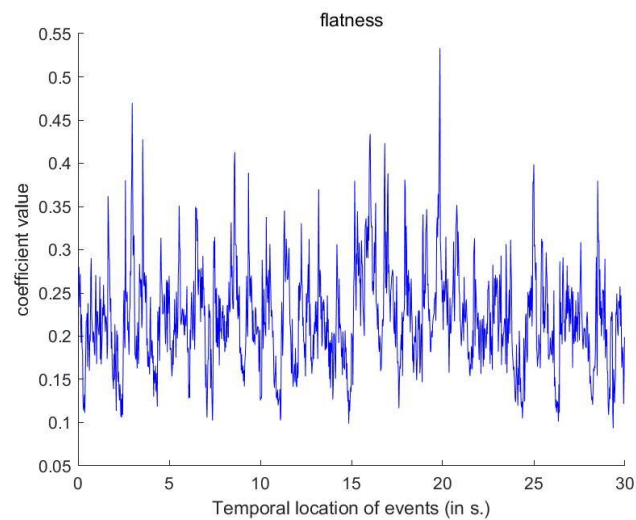
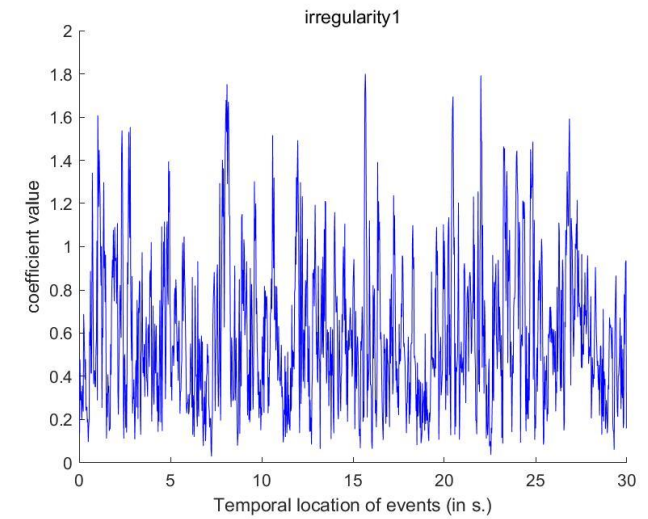
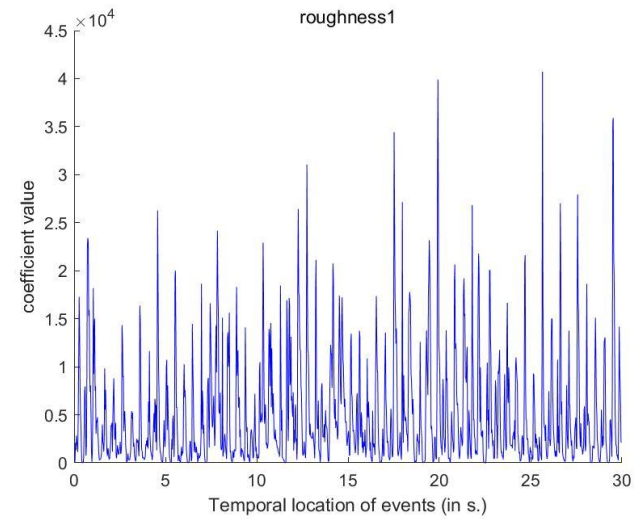
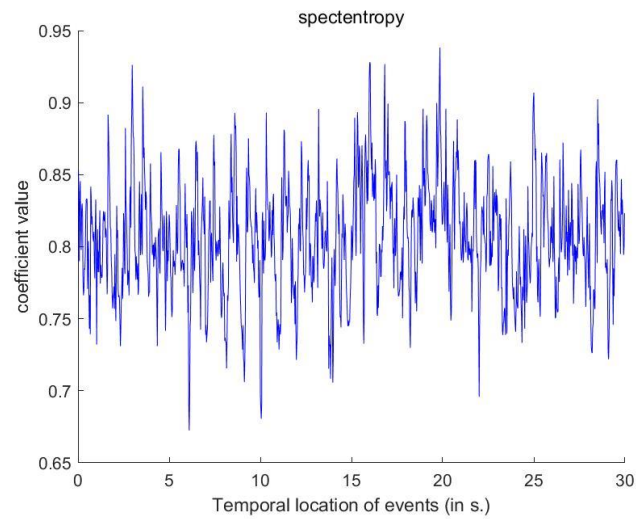
MIRToolbox

Spectral



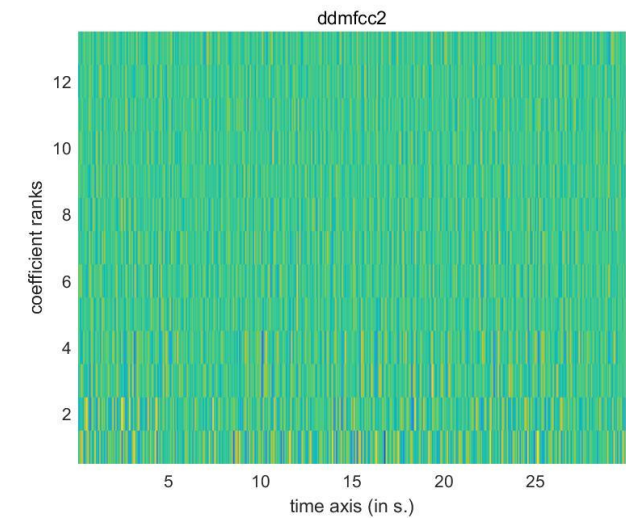
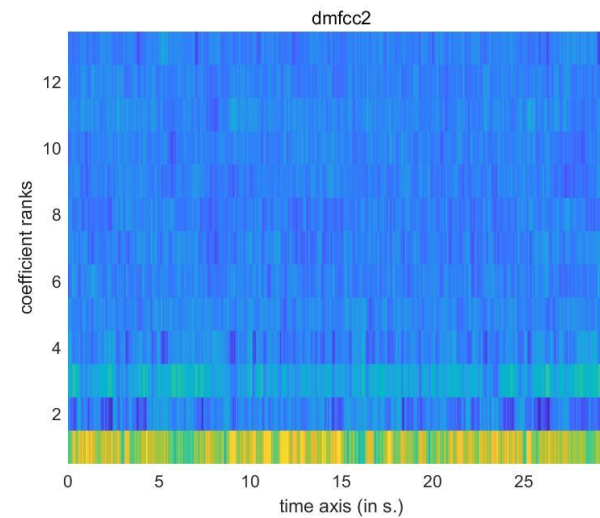
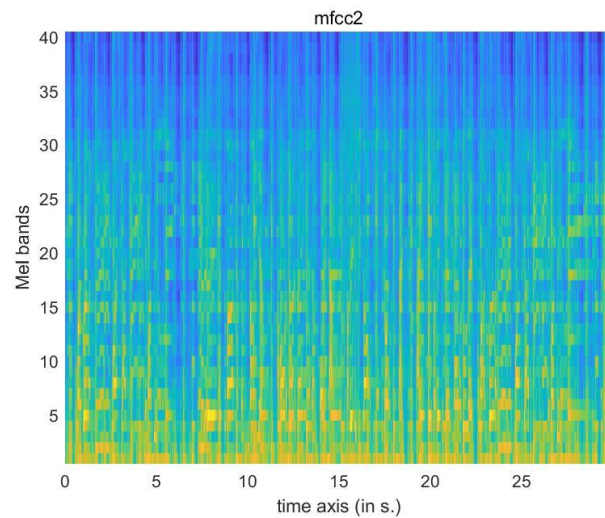
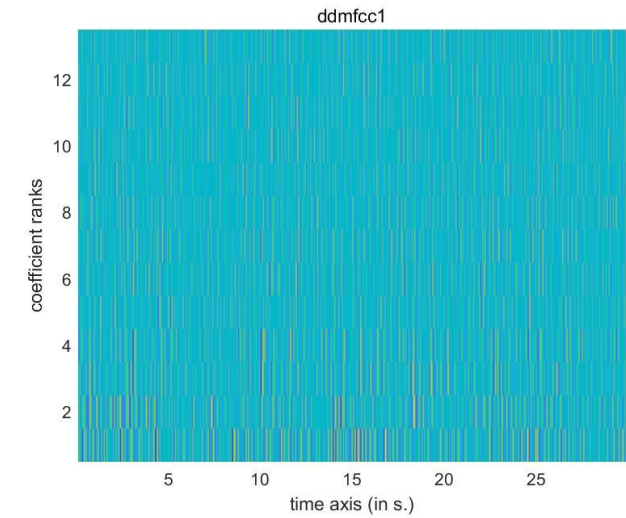
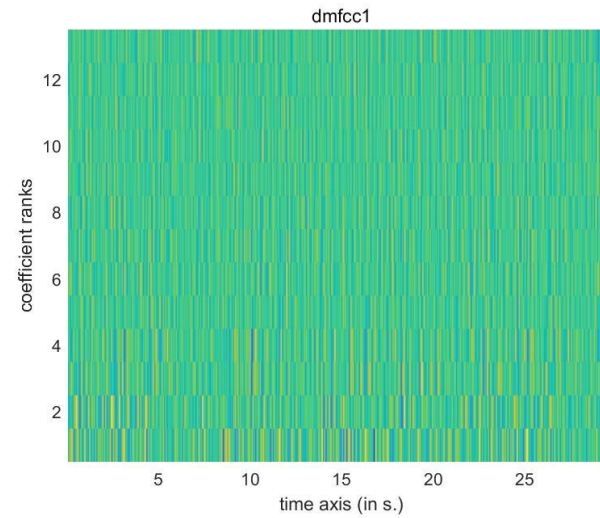
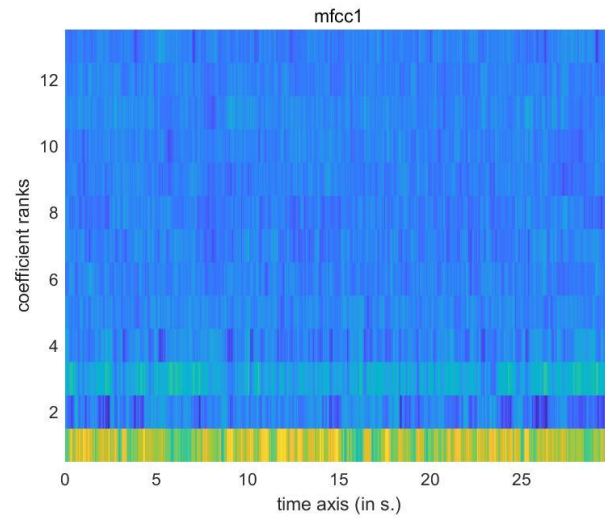
MIRToolbox

Spectral



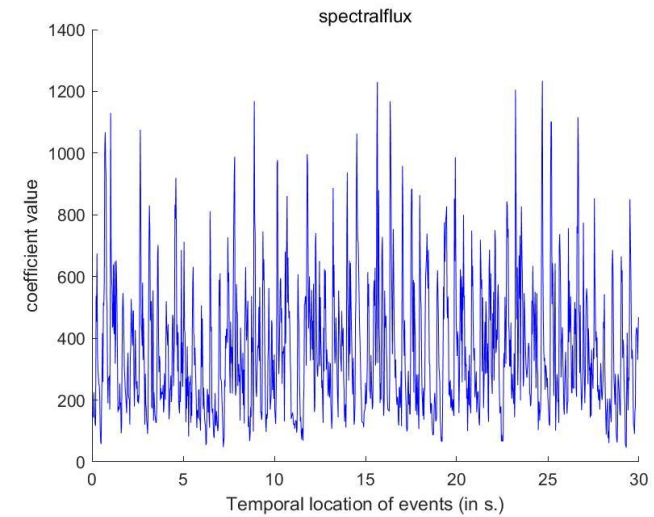
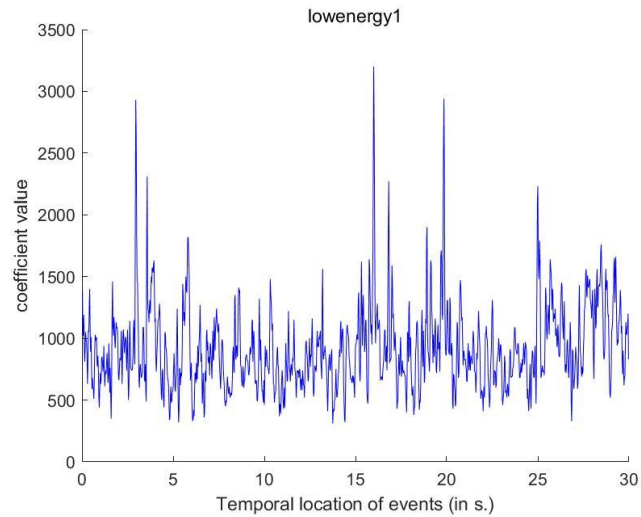
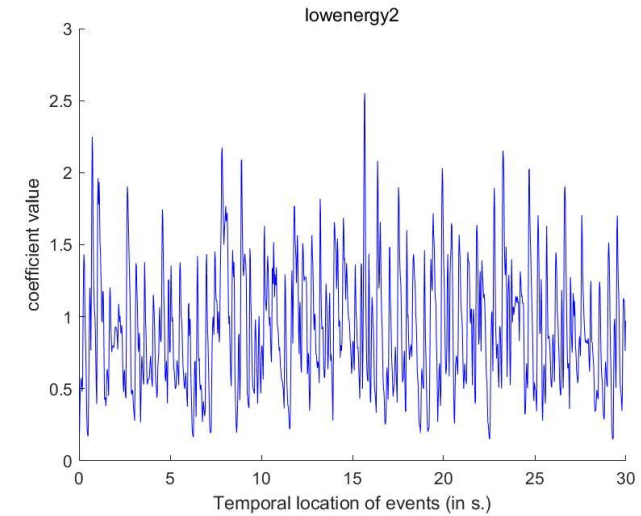
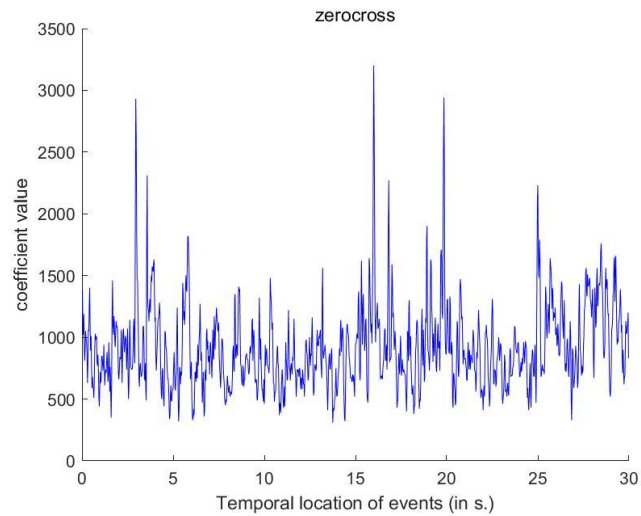
MIRToolbox

Spectral



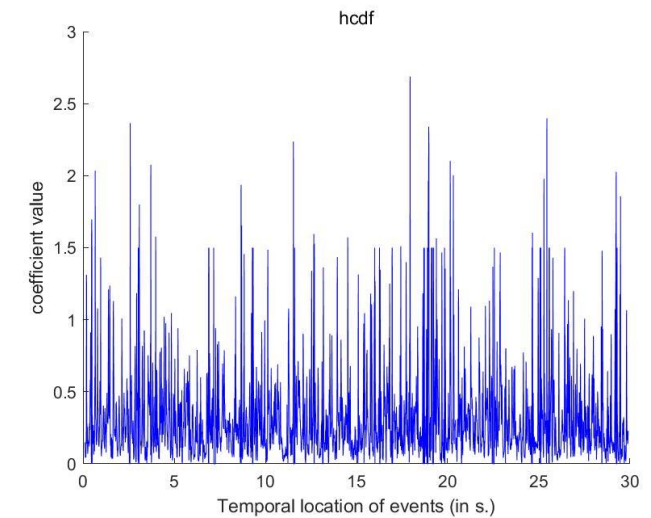
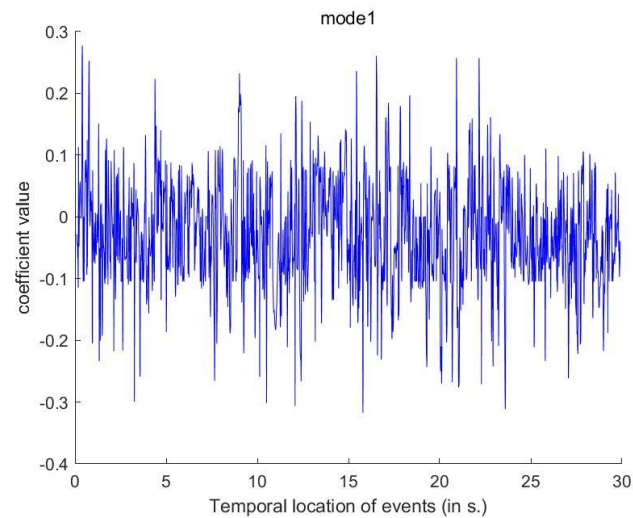
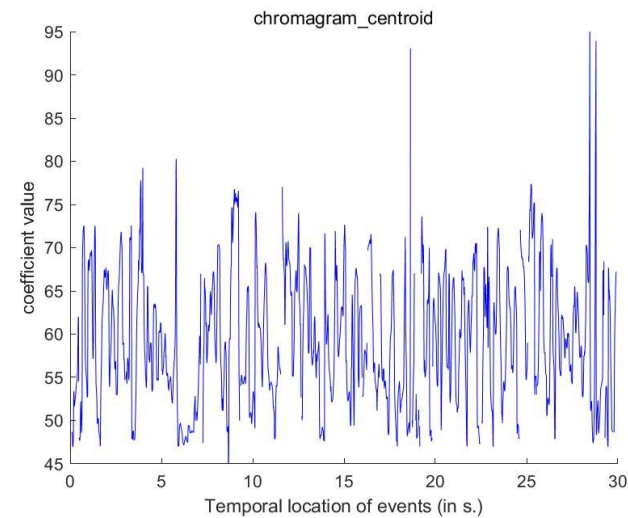
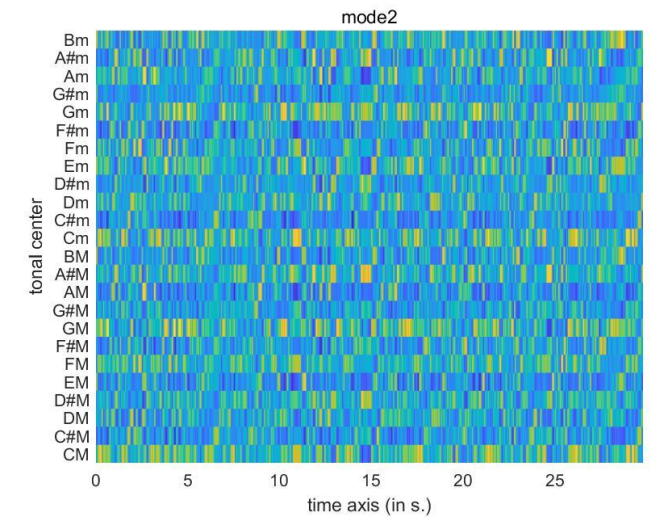
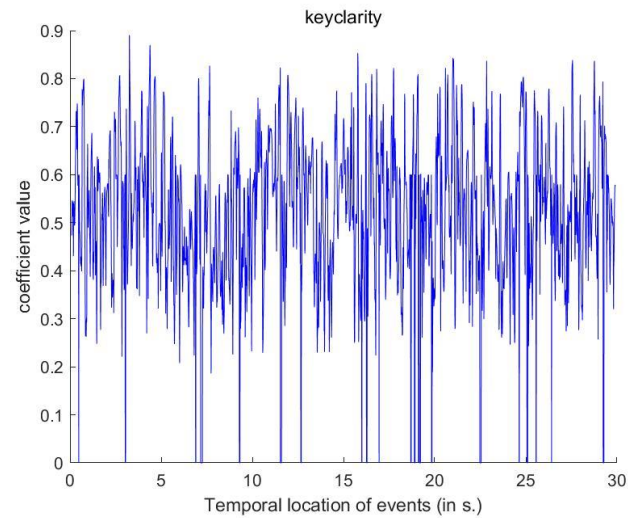
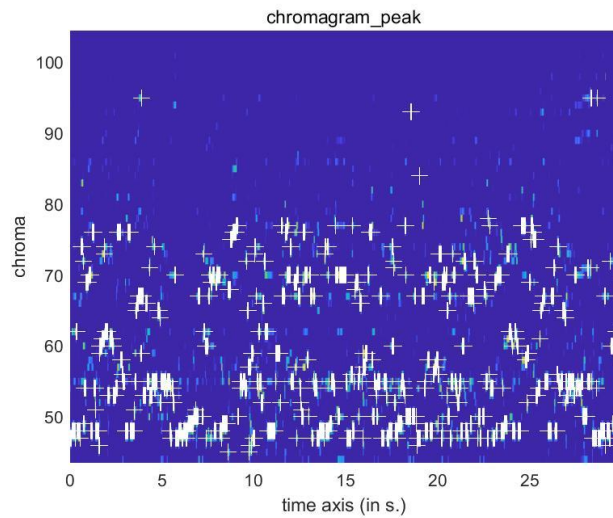
MIRToolbox

Timbre



MIRToolbox

Tonal



Reference

- [1] Massoudi, M., Verma, S., & Jain, R. (2021, January). Urban Sound Classification using CNN. In *2021 6th International Conference on Inventive Computation Technologies (ICICT)* (pp. 583-589). IEEE.
- [2] Ghildiyal, A., Singh, K., & Sharma, S. (2020, November). Music genre classification using machine learning. In *2020 4th International Conference on Electronics, Communication and Aerospace Technology (ICECA)* (pp. 1368-1372). IEEE.
- [3] Palanisamy, K., Singhanian, D., & Yao, A. (2020). Rethinking cnn models for audio classification. *arXiv preprint arXiv:2007.11154*.
- [4] Yu, Y., Luo, S., Liu, S., Qiao, H., Liu, Y., & Feng, L. (2020). Deep attention based music genre classification. *Neurocomputing*, 372, 84-91.
- [5] Won, M., Ferraro, A., Bogdanov, D., & Serra, X. (2020). Evaluation of cnn-based automatic music tagging models. *arXiv preprint arXiv:2006.00751*.
- [6] Bisharad, D., & Laskar, R. H. (2019, October). Music Genre Recognition Using Residual Neural Networks. In *TENCON 2019-2019 IEEE Region 10 Conference (TENCON)* (pp. 2063-2068). IEEE.
- [7] Zhang, S., Gu, H., & Li, R. (2019). MUSIC GENRE CLASSIFICATION: NEAR-REALTIME VS SEQUENTIAL APPROACH.
- [8] Chillara, S., Kavitha, A. S., Neginhal, S. A., Haldia, S., & Vidyullatha, K. S. (2019). Music genre classification using machine learning algorithms: a comparison. *Int Res J Eng Technol*, 6(5), 851-858.
- [9] Zhang, W., Lei, W., Xu, X., & Xing, X. (2016, September). Improved music genre classification with convolutional neural networks. In *Interspeech* (pp. 3304-3308).
- [10] Choi, K., Fazekas, G., Sandler, M., & Cho, K. (2017, March). Convolutional recurrent neural networks for music classification. In *2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* (pp. 2392-2396). IEEE.
- [11] Su, Y., Zhang, K., Wang, J., & Madani, K. (2019). Environment sound classification using a two-stream CNN based on decision-level fusion. *Sensors*, 19(7), 1733.
- [12] Choi, K., Fazekas, G., & Sandler, M. (2016). Automatic tagging using deep convolutional neural networks. *arXiv preprint arXiv:1606.00298*.
- [13] Li, S., Yao, Y., Hu, J., Liu, G., Yao, X., & Hu, J. (2018). An ensemble stacked convolutional neural network model for environmental event sound recognition. *Applied Sciences*, 8(7), 1152.