



Musical Genre Classification via CNN



AutoML 연구실
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To Do List

➤ Last Week

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➤ This Week

- 비교 모델 정리
- MIRToolbox 정리

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]

MIRToolbox

Field	Dynamics	Rhythm	Timbre	Pitch	Tonality
Features & Functions	rms	fluctuation	attacktime	pitch	chromagram
	lowenergy	beatspectrum	attackslope	midi	keystrength
		events	attackleap	inharmonicity	key
		eventdensity	decaytime		mode
		tempo	decayleap		keysom
		metre	decayslope		tonalcentroid
		metroid	duration		hcdf
		pulseclarity	zerocross		
			rolloff		
			brightness		
			centroid,spread,skewness, kurtosis,flatness, entropy		
			mfcc		
			roughness		
			irregularity		

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., Singhania, 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.