MONYC: Music of New York City Dataset

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1. Motivation

- Music is important in human cultures and is an integral part of urban soundscapes
- To make sense of these soundscapes, machine listening models should be able to detect and classify street music
- The lack of well-curated resources for training and evaluating models currently hinders their development. To mitigate this, we introduce MONYC, the first-of-its-kind open dataset of music in urban settings

Data curation and annotations

stage	SONYC	2017	subsampled	15 sensors	music	uniform	DPP	annotation	agreement
# clips	250M	30M	10M	5.8M	94k	30k	3k	1.7k	1.5k

- We use data-driven and self-supervised methods for sampling and curating a diverse set of music clips in different stages, using recordings from the SONYC sensor network [1], from 250M clips to the final 1.5k
- Annotations include genre tags, live vs. playback music, multi- vs. singleinstrument, loud vs. quiet indicators

Dataset overview



- The top genre in MONYC is hip hop
- Most genres are play-backed, except for jazz and drumming





Conclusions and Future work 4.

- We present MONYC, the first-of-its-kind open dataset of music in urban settings

[1] https://wp.nyu.edu/sonyc/

[2] J. Pons and X. Serra, "musicnn: Pre-trained Convolutional Neural Networks for Music Audio Tagging," arXiv preprint arXiv:1909.06654, 2019.



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0.08

면 <u>0.06</u>

0.04



We identified more music clips towards the Summer months (June, July), and considerably less in Winter (November, December and January) Genre presence usually correlates with events, e.g. Celtic music in March due to St. Patrick's Day

Less street music at the beginning of the week, more towards the weekend

- With MONYC we can look at the spatial distribution of genres such as hip hop (blue), jazz (black) and pop (green)
- Jazz is mostly live, so is concentrated around Washington Square Park more than the other genres



- We did an experiment with the off-the-shelf music tagger musicnn [2], and observed poor performance compared to standard MIR genre datasets (where mean performance is on the order of 50%). This is to expect since the model is not trained in music with low Signal-to-Noise Ratio and external source interference as MONYC clips are.
- The model performed 8-12% worse in average in those recordings labeled with high interference of sources
- MONYC opens the possibility to develop and evaluate machine listening models for the classification of street music
- Such models for the classification of street music offer the opportunity to dig into behavioral patterns related to human activities in urban, such as nightlife, festivals, street celebrations, among others.
 - https://magdalenafuentes.github.io/monyc/
 - https://github.com/soundata/soundata



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