[7]

In Adavanne et al, LSTM units (Long short-term memory) within a Recurrent Neural Network (RNN) are leveraged to identify sound events in polyphonic audio samples [7]. Three different feature sets were studied in their evaluation, log mel-band energy, harmonic features (such as pitch), and time difference of arrival (TDOA) and found that a combination of mel-band and TDOA features performed the best. A preliminary survey of the data for this project has already seen some success in leveraging harmonic features by visualizing the octave spectrum from contaminated and non-contaminated audio.

[8] and [9]

One technique that we considered but decided against, due to the small size of our dataset was metric or similarity learning. Royo-Letelier et al [8] explored the use of metric learning to disambiguate artists within a music catalog. They found that at smaller dataset sizes (300 or fewer examples), that a traditional 1D-CNN (One Dimensional Convolutional Neural Network) outperformed the metric learning model [8]. The model they compared their metric learning model to is described in [9]. An idea that the project may explore given enough time is leveraging triplet loss as they do in this paper to separate contaminated and non-contaminated audio. The goal of triplet loss is that given a tuple of (xa, x+, x-) to learn a function F where the similarity of xa to x+ is greater than that of xa to x-.

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