TITLE??

title, author list, and abstract; introduction, methods, results, and discussion sections; and references.

Problem and Motivation

* Identifying the unique country a song is popular in using only musical properties. No contextual information is used. It is a single-label, multiclass classification problem.
* We want to see if the music tastes of people from different countries can be distinguished. Being able to predict the countries a song would be popular in, the industry can identify the markets to target for promotional activities. It potentially may uncover market – music type pairs which has high probability of being a good match but not utilized for promotion planning.

Why deep learning

* Complex relations including non-linearities and interactions.
* Other ML approaches that allow for complexity, such as Boosting Trees, are not appropriate as they do account for sequential nature of the data.
* Other ML approaches do not naturally extend to the multiclass cases???
* Abundance of song data allows us to train complex deep learning models.

Goal

* Proposing a competitive prediction model that can achieve the above-mentioned task. Additionally, discovering the important aspects of the learning task – how sampling rate and sampling window selection affects the performance.
* The inference part, such as identifying new market – music type pairs, is out of the scope of this research. However, a good prediction model would help understanding the underlying mechanism and pave the way for the inference.

Outcome

* Report it shortly in intro

Previous work and positioning

* Genre, mood, instrument or any other tag classification. No country or culture related task
* Provide a visual representation of songs, spectrogram, to CNNs to classify songs
  + An evaluation of Convolutional Neural Networks for music classification using spectrograms: Genre classification
  + TRANSFER LEARNING FOR MUSIC CLASSIFICATION AND REGRESSION TASKS: Classify songs to Last.fm tags. Use the learned latent space for other tasks.
  + CONVOLUTIONAL RECURRENT NEURAL NETWORKS FOR MUSIC CLASSIFICATION: Use GRU on top of CNN to capture the temporal properties.
  + Automatic Musical Pattern Feature Extraction Using Convolutional Neural Network: Uses MFCC (another way to visualize music) as image in CNN
* Recurrent Neural Net
  + Music Genre classification using a hierarchical Long Short Term Memory (LSTM) model
  + Long Short-term Memory Recurrent Neural Network based Segment Features for Music Genre Classification

Methodology

* In order to represent the differences in segment durations in our input data, we sampled segments at a rate proportional to their durations. We also expected higher sample rates to capture this relation more precisely because of rounding to integers.
* Adequate information to reproduce the analysis
* Make the github repo public and add the link in the paper. ( with a read me file for the pipeline to reproduce)
* Explain why you chose the metric

Results

* Higher sample rate hurt the performance. We attribute this to the fact that it gets harder for LSTM to remember what the state of the system was like a few segments ago because a segment consists of a higher number of time steps.
* Compare against baseline

Discussion

* Future work
* Success, failure, takeaway, unexpected outcome

\bibliography{references.bib}

\begin{thebibliography}{00}

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\bibitem{b1} An evaluation of Convolutional Neural Networks for music classification using spectrograms

\bibitem{b2} TRANSFER LEARNING FOR MUSIC CLASSIFICATION AND REGRESSION TASKS: Classify songs to Last.fm tags. Use the learned latent space for other tasks.

\bibitem{b3} CONVOLUTIONAL RECURRENT NEURAL NETWORKS FOR MUSIC CLASSIFICATION: Use GRU on top of CNN to capture the temporal properties.

\bibitem{b4} Automatic Musical Pattern Feature Extraction Using Convolutional Neural Network: Uses MFCC (another way to visualize music) as image in CNN

\bibitem{b5} Music Genre classification using a hierarchical Long Short Term Memory (LSTM) model

\bibitem{b6} Long Short-term Memory Recurrent Neural Network based Segment Features for Music Genre Classification

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