**Team Name:** Bachpropagation

**Team Members:** Jason Shu, Joseph Poirier, Paul Scott

**Project Statement:** For our project, we will be creating a model that predicts the sentiment of classical music. The model will take in either a MIDI file or audio file and will output several scores that describe the sentiment of the input song. These scores include valence (how happy/sad the song is), energy (how intense the song is), tempo (how fast the song is), and the mode (how major/minor the song is).

**Dataset:** We found a dataset of classical wave and midi files on Kaggle. The set consists of 200 hours of virtuoso piano music (1184 performances), their titles and some other metadata. We plan to gather sentiment data for the songs from the Spotify API, focusing on valence, arousal, dominance, and energy. Some further analysis will be necessary here.

<https://magenta.tensorflow.org/datasets/maestro>

[Spotify API](https://spotipy.readthedocs.io/en/2.19.0/)

**Methods:** We’ll assume that sentiment labels using the Spotify API are accurate with regard to the entries in the Maestro dataset. We also assume that, if we use MIDI, sufficient information is contained within the MIDI to predict sentiment; if we use audio, we assume that a short clip of the audio is sufficient (maybe first 30 seconds).

We query the Spotify API with the title/artist information from Maestro and retrieve sentiment scores in various columns (“valence,” “energy,” “tempo,” “mode,” etc.). We can have some exploratory data analysis about this joined dataset.

For our model, we will need to use a model that can handle sequenced data of variable length. Therefore, models such as LSTMs, RNNs, or transformers will be useful for our project.

**Innovation:** Most of the applications we’ve seen in class don’t deal with audio or music processing, which we may be able to explore here. There also aren’t a lot of audio datasets with sentiment labels and we’re making a new dataset with our current method. There also isn’t a lot of deep learning research done on classical music, especially with regard to sentiment.

**TA Preferences:** Mrigank, Yifei, Marcel