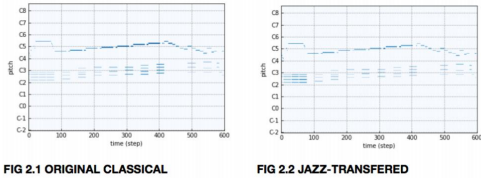# Musical Style Transfer

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Recent success of neural style transfer on visual art inspires us to experiment it on music.
The goal of our project is to build a neural network that can transfer music from one style into another style.

We used the same data set from the paper (Malik, 2017). It contains 349 classical tracks and 349 jazz tracks. These data are in MIDI format.

The data itself is labeled data. We process out input data from it by representing activated / non-activated notes with 1/0.

We tried different models: GRU + GRU and CNN + 2 * LSTM.

Result:

FIG 2.1 ORIGINAL CLASSICAL   FIG 2.2 JAZZ-TRANSFERED

https://s3.us-east-2.amazonaws.com/music-style-transfer/Jazz+-+Chelsea+Bridge+transferred.mp3

In this study we tried to develop a neural network to transfer music into different music styles.
We investigated into different structures along the line of encoder-styler-output tri-layer structure.
We found that certain level complexity in the encoder layer is necessary to convert music notes into something that can be learned in a RNN laye
The G2 model shows that multiple FC layers and RNN can serve as a good encoder.
The CNN + 2 LSTM model shows that a proper CNN make a good difference to make the predicted music more smooth and nature.

For the future work, we would like to study how to build a better encoder. For example, an encoder that can separate
the line of melody and chords will reduce the amount of training work and can be shared by different music styles.
We also would like to investigate into the possibility to change the note duration according to the music styles.

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