Some cool title

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Machine Learning II

GWU

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Because of the temporal nature of music...

- We will use LSTM
- We will train on many songs from an author and/or genre
- The ANN will learn the probability distribution of a sequence of notes, i.e, the music
- Using this distribution, we can predict the next note based on an arbitrary number of previous notes

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It is made up by a series of events, with info regarding:

- Location in time
- Duration in time
- Pitch, intensity and tempo
- Other metadata

Data Sources

- Classical Piano Midi Page: `http://piano-midi.de/`
- Folders Organized by Author and Genre
- We want the data to be well organized
- We also have other sources but...

"How do I go about finding a certain classical work in MIDI format in the Internet? Some MIDI archives in the Internet contain thousands of classical works. You can find the corresponding links to them on my Linkpage. **The quality of the pieces, however, may vary considerably**"

From the author of `http://piano-midi.de/`.

Overview

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  Thus...
- Tempo will not be encoded: Too many possible values
- Intensity will not be encoded: Same reason

We are essentially losing expressiveness info in order to reduce the complexity of the network.

Many-one-hot Encoding

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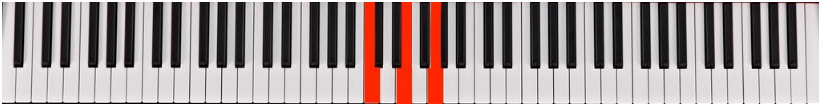

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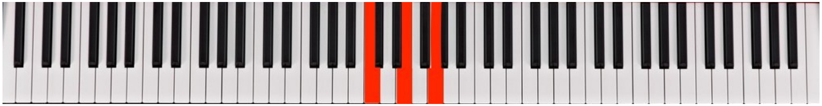

$$\bar{p}_t = [0, 0, ..., 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, ..., 0]$$

- Create a sequence where each input vector $\bar{p}_t$ corresponds to the duration of the shortest note on the piece/s: $\textit{time step} \equiv \Delta_t = t_1 - t_0 = t_2 - t_1 = ... = \textit{cte}$

Two extra dimensions

- Rests are essential to music. Add component #88 to encode rests.

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hhh

TODO

hhh

TODO

Whatever

Something

Happy Music Generation!

Some cool pic!