Some cool title

Aaron A. Gauthier, Avijeet Kartikay and Pedro Uria Rodriguez

Machine Learning II

GWU

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Automatic Music Generation

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Automatic Music Generation

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- Mmmm
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And sooo..

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Motivation

TODO

MIDI

- Protocol that stores music data and metadata, and allows different instruments and software to communicate with each other.

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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

TODO

Overview

- MIDI files provide us with more info than we need

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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

- Python's `music21` library to read `.mid` files.
- Preprocess the `stream` objects to get the data for the time events.

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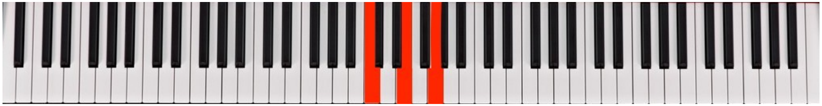

$$\bar{p}_t = [0, 0, \ldots.., 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, \ldots, 0]$$

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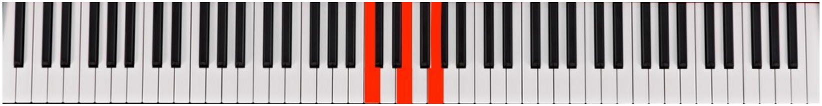

$$\bar{p}_t = [0, 0, \ldots.., 1, 0, 0, 0, 1, 0, 0, 1, 0, 0, \ldots, 0]$$

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

Two extra dimensions

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

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Combining Melody & Harmony

TODO

hhh

TODO

Whatever

Something

Happy Music Generation!

Some cool pic!