Learning a Latent Space of Multitrack Measures

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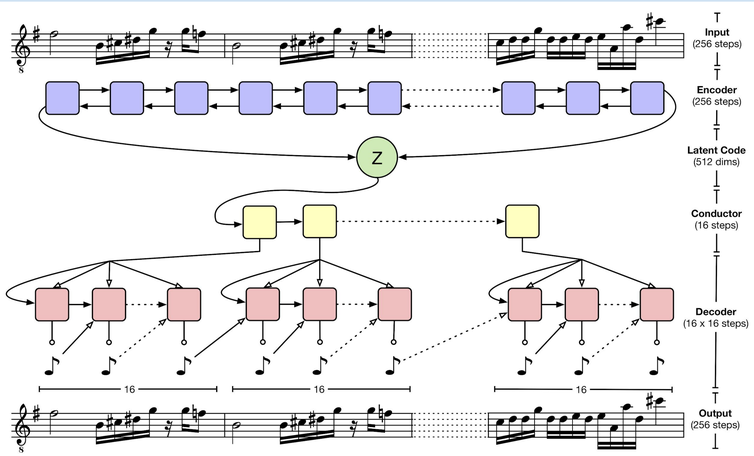
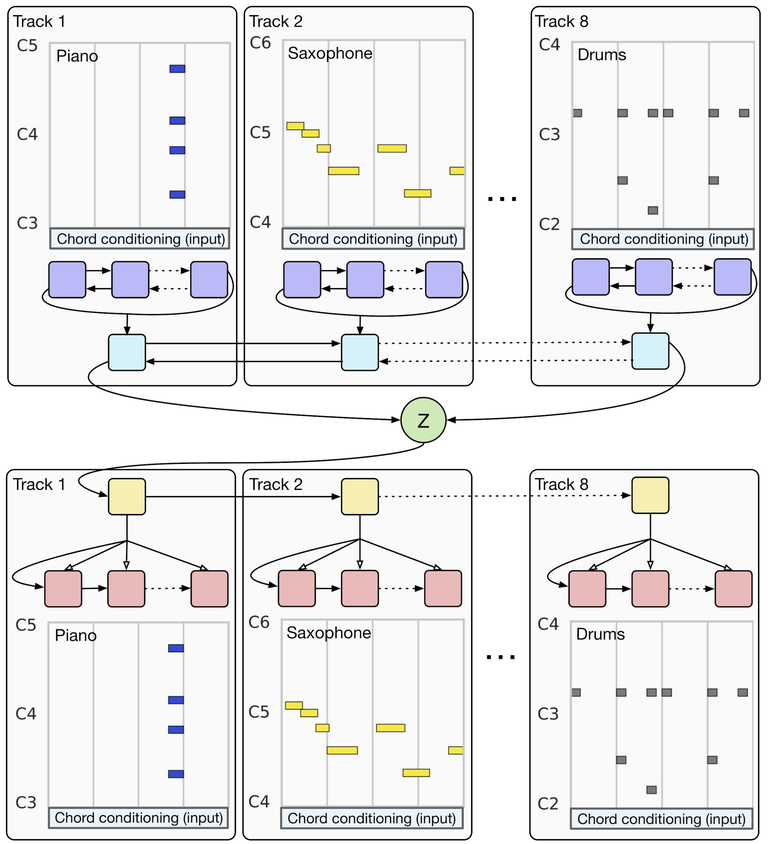
Abstract

Discovering and exploring the underlying structure of multi-instrumental music using learning-based approaches remains an open problem. We extend the recent MusicVAE model to represent multitrack polyphonic measures as vectors in a latent space. Our approach enables several useful operations such as generating plausible measures from scratch, interpolating between measures in a musically meaningful way, and manipulating specific musical attributes. We also introduce chord conditioning, which allows all of these operations to be performed while keeping harmony fixed, and allows chords to be changed while maintaining musical "style". By generating a sequence of measures over a predefined chord progression, our model can produce music with convincing long-term structure. We demonstrate that our latent space model makes it possible to intuitively control and generate musical sequences with rich instrumentation.

MusicVAE



Multitrack MusicVAE

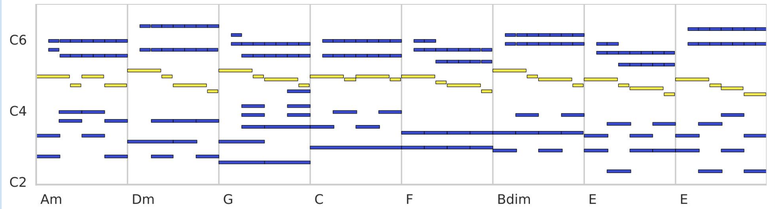


Pointers

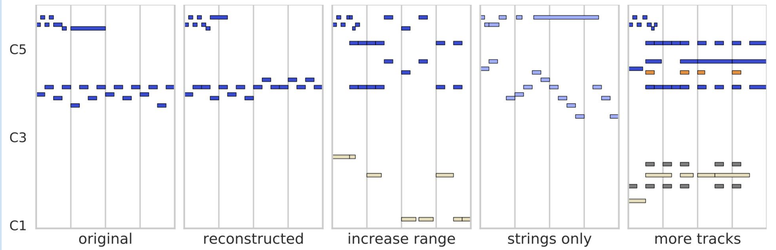
Paper: https://goo.gl/magenta/multitrack-paper
Web Demos: https://g.co/magenta/multitrack
Audio examples: https://goo.gl/magenta/multitrack-examples
Python code: https://github.com/tensorflow/magenta
Javascript code: https://github.com/tensorflow/magenta-js

Results

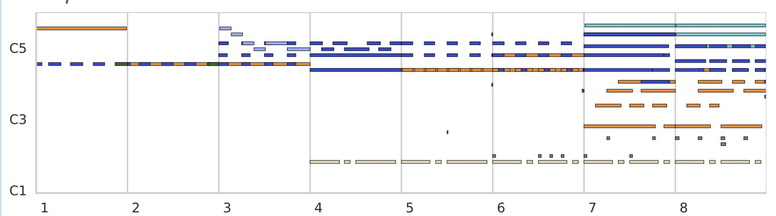
Chord conditioning



Attribute manipulation



Interpolation



Samples