

Many harmonic reductions generated from a chord progression were used for data augmentation in a chord labeling experiment, increasing the accuracy

Harmonic Reductions as a Strategy for Creative Data Augmentation

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INTRO

- **All the training data** that currently exists for roman numeral analysis **adds to a few hundred files**
- Harmonic reductions could be a way of producing **thousands (or tens of thousands)** of fake examples from the existing datasets

Original score

Generated score

HARMONIC REDUCTIONS

- A musical rendition of the **harmonic movement** of a piece
- Removes **ambiguities, non-chord tones, ornamentations,** and other artifacts of the music
- However, **maintains** stylistic **voice leading** in the reductions
- Promising preliminary results in a dataset of Bach chorales when harmonic reductions were added to the original training data

Training set	Test accuracy
1. Bach	91.9%
2. Generated	88.3%
3. Bach + Generated	92.5%

How do you generate harmonic reductions?

- Rules + dynamic programming
- Currently using Eric Zhang's algorithm: <https://github.com/ekzhang/harmony>

What was the experiment?

- GRU model with one layer and 200 units
- Input representation similar to MiniBach:
 - 4-measure chunks sampled at sixteenth notes
 - Piano-roll input
 - Pitch-class set output
- 63 annotated Bach chorales taken from KernScores
- All in 4/4 and with roman numeral analysis
- Split the data into training (49), validation (7), and test (7)
- Generated harmonic reductions from the training portion
- Tested on test portion with original training data only, generated data only, and both



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