

Applications of Structured Learning to Polyphonic Transcription

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Using structured learning to transcribe piano music

Outline

- 1 Motivation
- 2 Previous Solutions
- 3 Algorithm
- 4 Preliminary Results
- 5 Summary
- 6 References

Example

Please listen to the following selections.

The Problem

Goal: Given a recording of a song, transcribe the song in an accurate manner.

Input: Recording of song taken in variable settings and with variable quality of recording equipment.

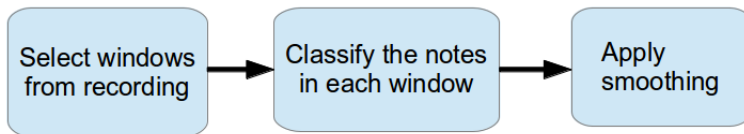
Output: MIDI file of the song.

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Previous Solutions

The general approach



Some separate the classification of notes into two steps: note onset detection and then classification of notes. These tend to suffer, why?

Previous Solutions

Lots of variations and possibilities to consider

- How to select the windows? Overlapping? Multiple windows with different lengths?
- What classification technique to use? How to extract feature vector from windows?
- What smoothing technique should be applied? How much should this encompass.

Previous Solutions

Three general styles of classification

- Discriminative - uses SVM one versus all classifiers
- Generative/Recursive Neural Nets - TODO
- F0 approach - TODO

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Idea

So far the discriminative approaches have performed the best.

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So far the discriminative approaches have performed the best. A couple of thoughts:

- One-versus-All SVM is terrible!
- Why place too much emphasis upon the HMM at end?
- Can improve the feature vectors chosen and the way windowing is done.

New System

Benefits

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Bibliography