SUBHEAD OR NAME OF SCHOOL, DEPARTMENT, OR UNIT

Music Transposition Project

INDIANA UNIVERSITY SOUTH BEND

1.

What is Music Transposition?

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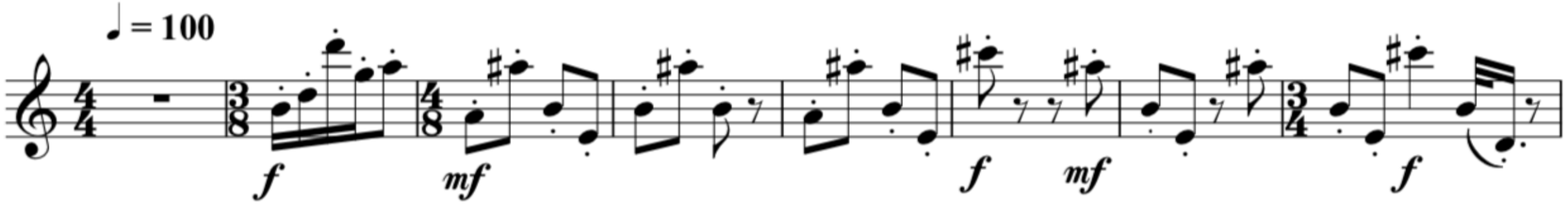
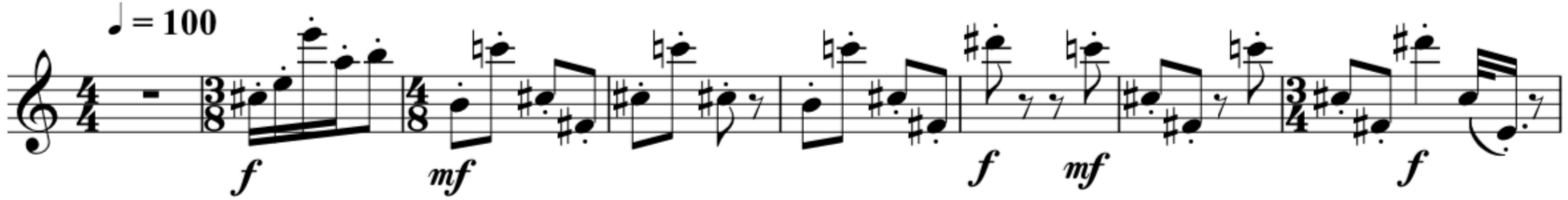
1. When musicians play together, they need to have the same pitch reference to sound good together.
2. For historical and practical reasons, absolute pitch is notated in different ways in music for different instruments.
3. ***Transposition*** is the process where music for originally written for one instrument is changed so another can read it in accurate pitch.

What is Music Transposition?

Oboe:



Alto Saxophone:



Usage

- Chamber music:
  - Create tool for music performers to quickly and accurately transpose pieces so new combinations can be prototyped.
  - Must try and see if new combination sounds good, that process takes a lot of time.
- Personnel Emergencies/replacements
-

Usage

- Need:
  - fast transposition of **photocopied images** or **smartphone photos of sheet music**

2.

Existing Methods

Existing Methods

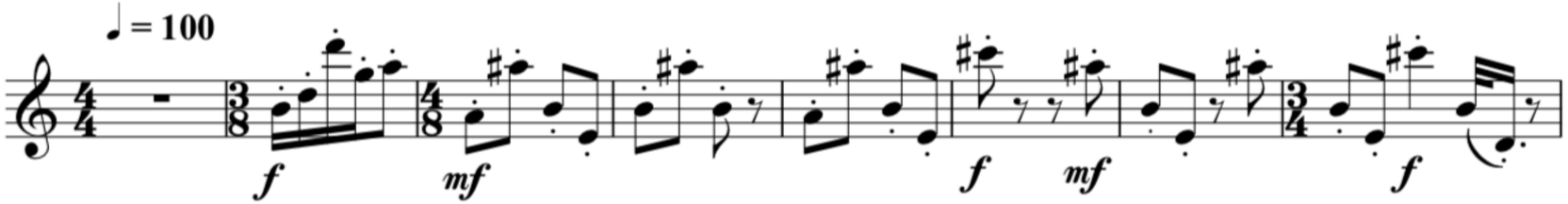
- If digital encoding exists:
  - Operation trivial
- If no encoding exists:
  - Optical Music Recognition
  - Most current applications are end-to-end, but high rate of errors
  - End-to-end not required for transposition

Existing Methods

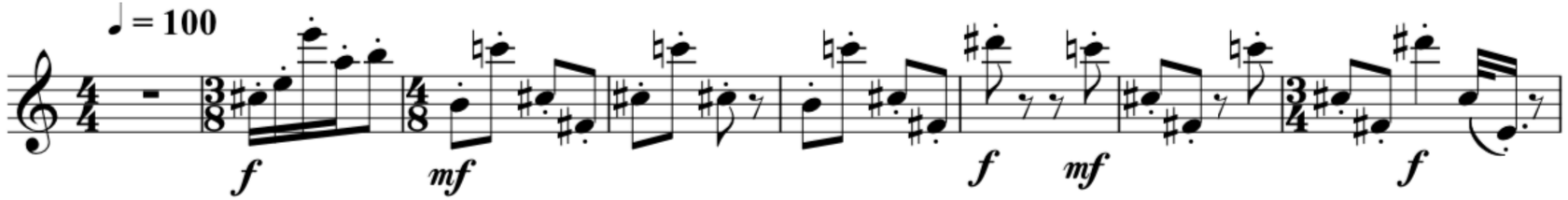
- Need two main steps of OMR:
  - Staff line identification and removal
  - Accidental identification and replacement

Staff Lines + Accidentals

Oboe:

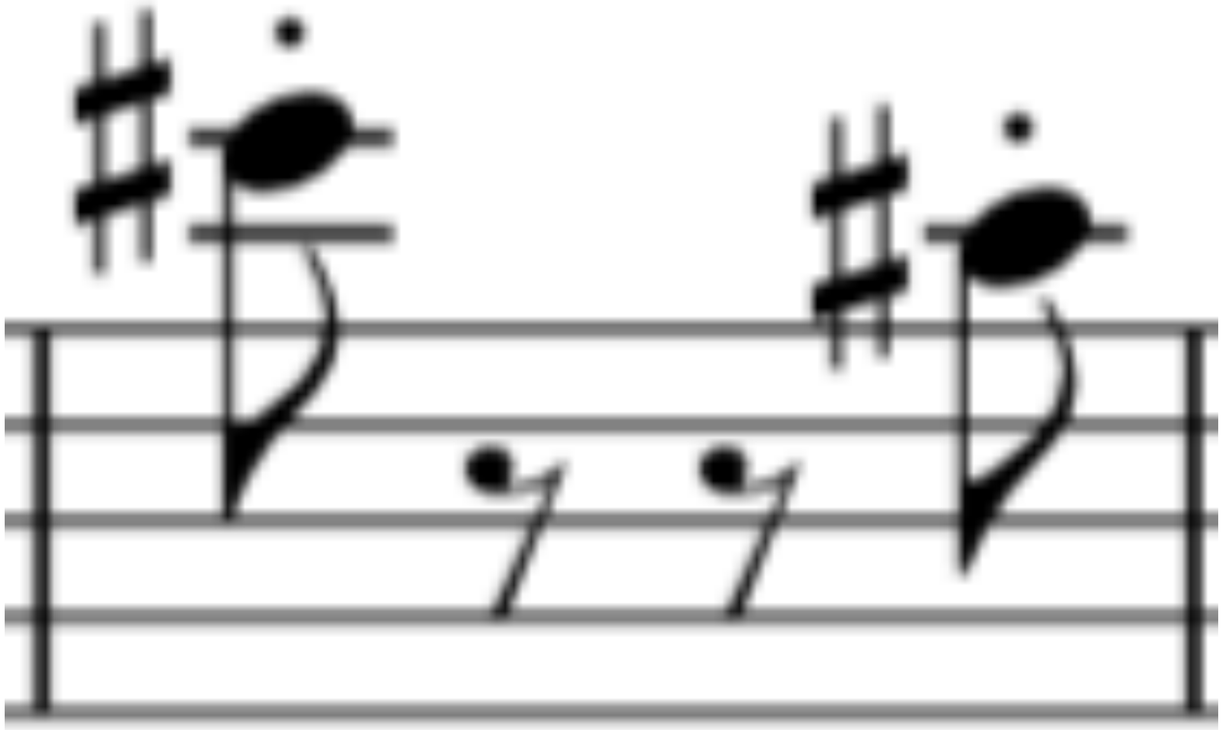


Alto Saxophone:



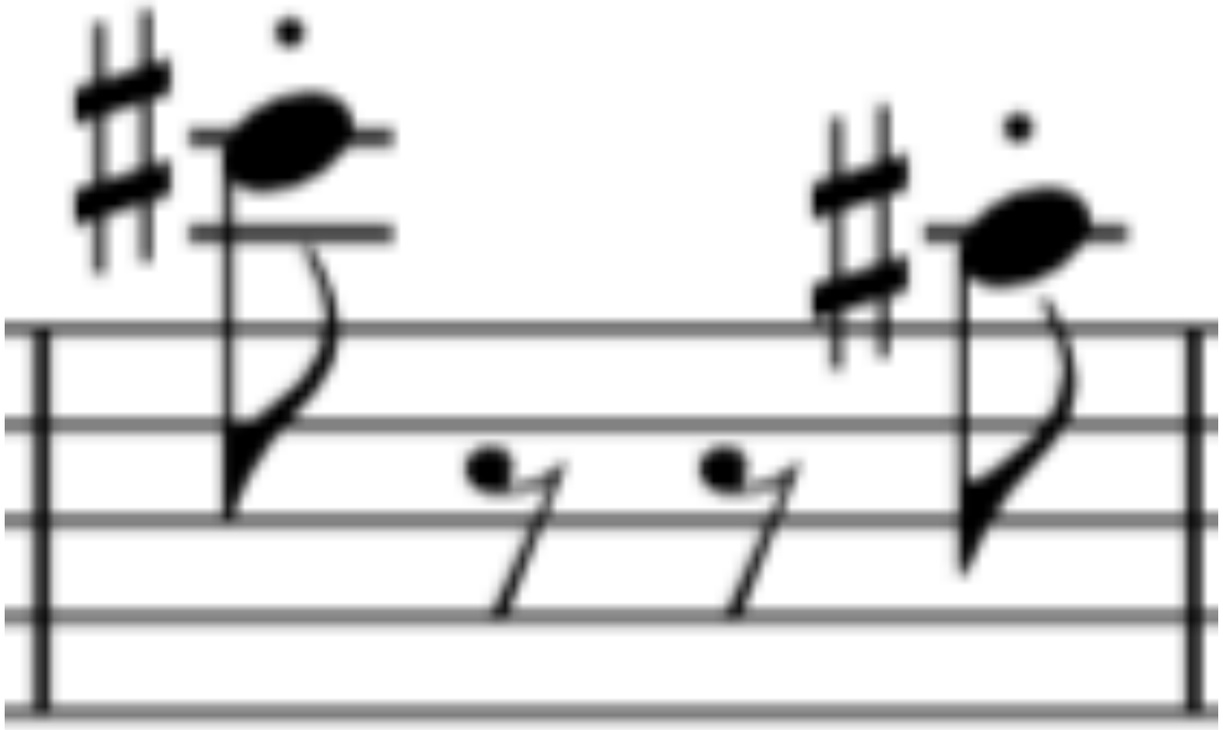
Staff Line Removal Strategies

- Rune-based removal (Su et. al)
- Line-based tracking
- Neural networks

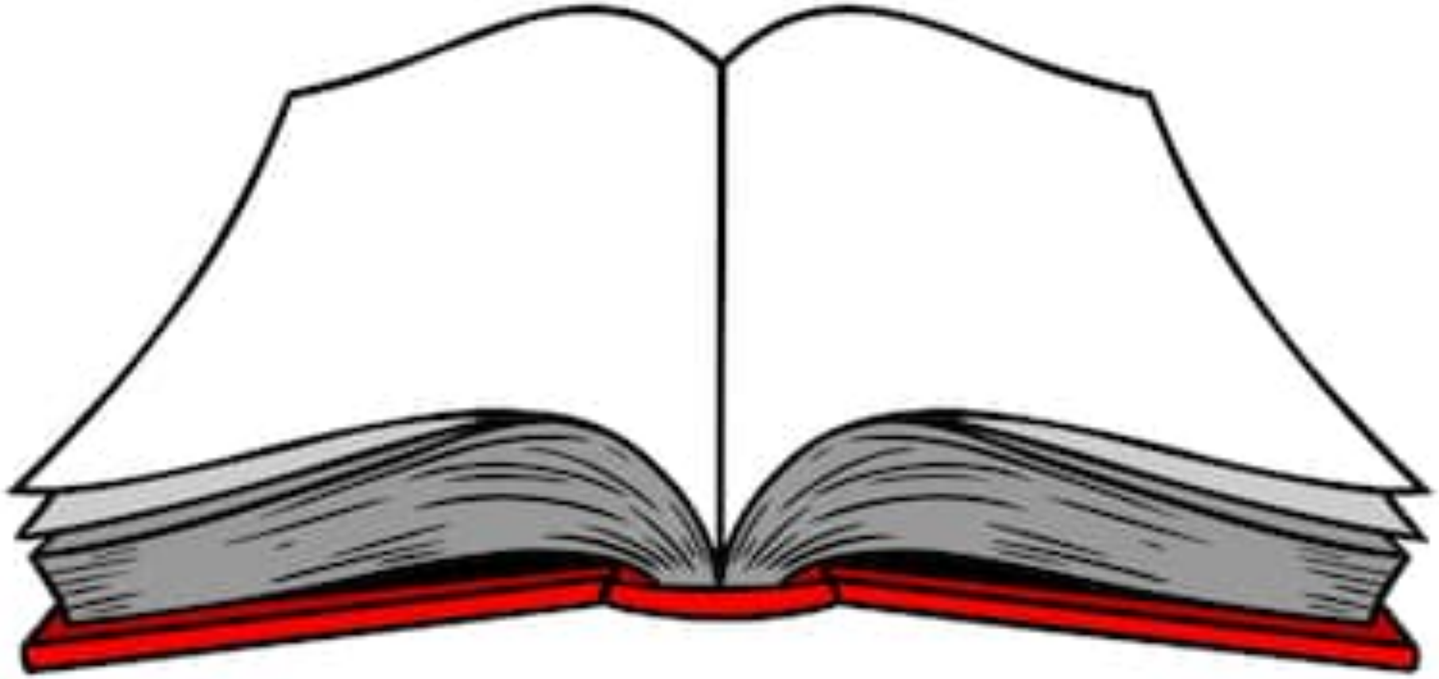


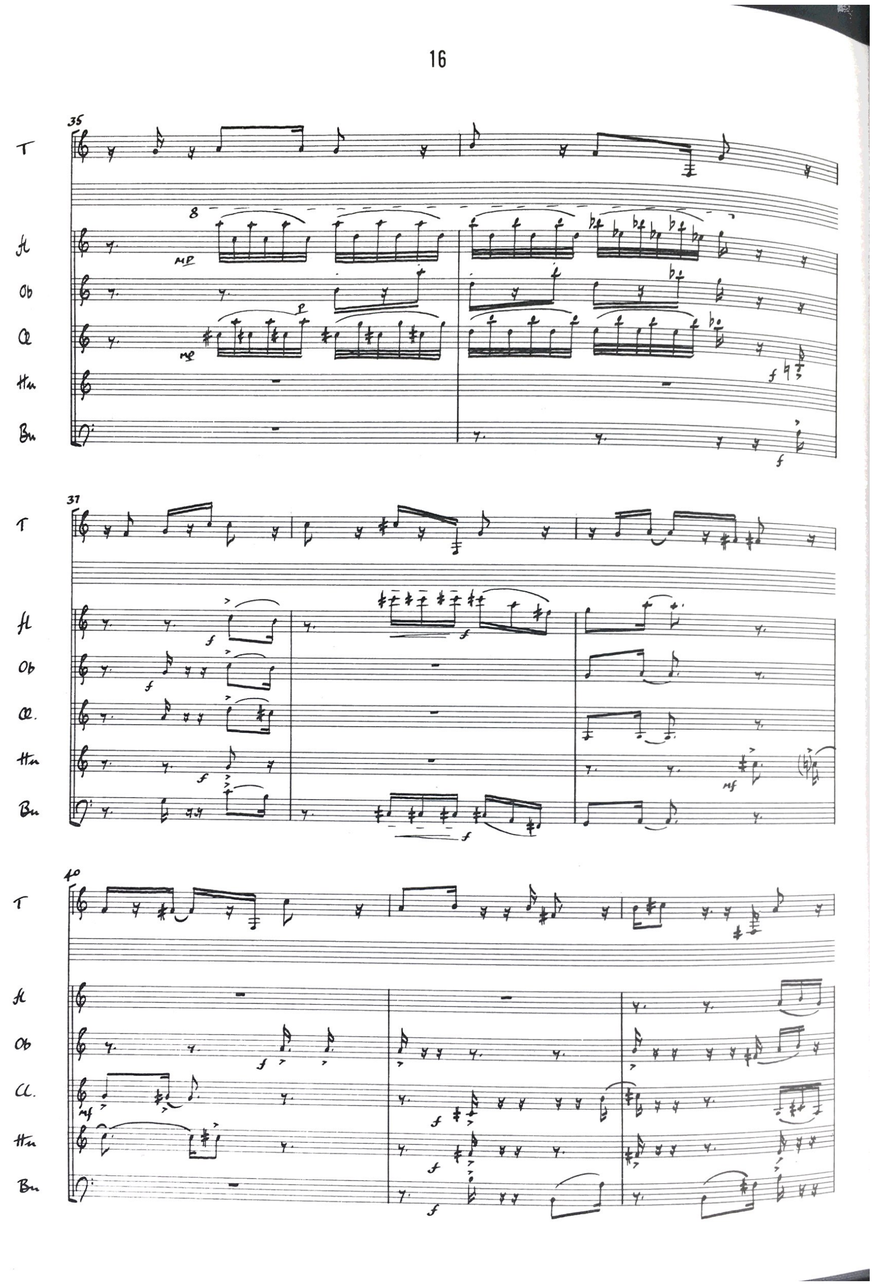
Staff Line Removal Strategies

- Rune-based removal (Su et. al):
  - Most effective if assume that staff lines are equal thickness and equally spaced



Photographed sheet music




16
35
T
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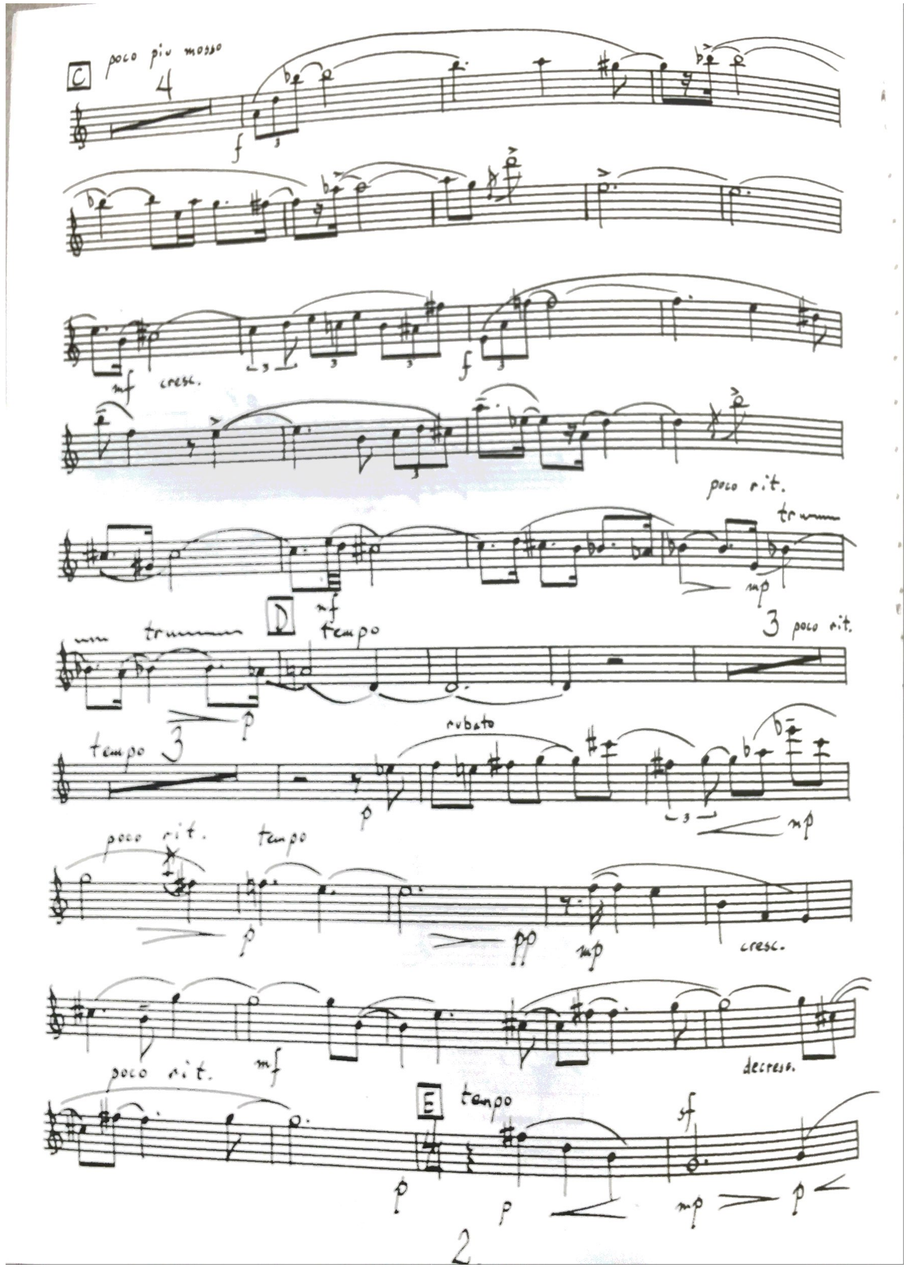
37
40


C
poco più mosso
cresc.
poco rit.
D
tempo
rubato
E
2

3.

Possible Strategy

Degradation + Point-based Registration