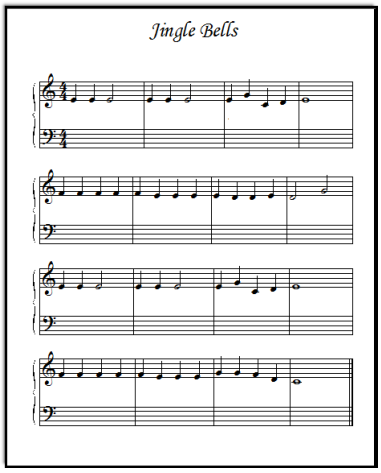
Apps Specs
5- Music Score Reader

Description

Main Idea

Optical music recognition (OMR) has been the subject of research for decades. An accessible and easy-to-use OMR application could provide an amazing tool for improving the musical education experience. For example, a novice musician could use such a tool to hear what a selected piece of music should sound like.

Ideally, an OMR, given an image of a simple or complex music sheet, automatically identifies the notes, and plays the musical piece. For this project, our goal is to develop an algorithm to parse music sheet images, produce the associated annotation, and implement a playback mechanism for the parsed musical notes.



Input

Demo for expected output

Minimum Requirements

1- Parsing horizontally aligned music sheets.
2- Generating ABC annotation.
3- Music playback.

Possible Add-ons (Bonuses)

1- Parsing tilted music sheets (staff lines are not lined with the horizontal).
2- Parsing complex music sheets.

Suggested Search Tracks and Keywords

You may use some/all of the following keywords as a guide (not restricted to them):

1- Optical music recognition (OMR).
2- Segmentation.
3- Morphological operations.
4- Region properties.
5- Matching and classification.
6- ABC annotation.

Test Images for Minimum Requirements

Case1: Twinkle Twinkle sheet music.

Case2: Jingle Bells sheet music.

Test Images for Bonuses

Case3: Bach sheet music.

Case4: Slightly rotated versions of cases 1-3.

References

1- Textbook Ch. 9: Morphological Image Processing
2- Textbook Ch.10: Image Segmentation
3- Textbook Ch. 11: Representation and Description