Music Score Reader on Android Platform

EE 368 Final Project Proposal

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Android Phone-based: Yes

Description:

We plan to implement a music score reader on Android platform. The program will take a picture of a page of music score, use image processing techniques to extract music information from the picture, and play out the music. The program will be a very helpful tool for people who don't know how to read notes to learn music.

The project will be done in two stages. The first one is to extract music information from a picture and save it in text using ABC notation [1]. The second stage would be play out the music from the text. For the purpose of this course, we will focus on the first stage.

First, the user will take a picture of a page of score. Then we will develop some algorithm to locate the staves. We can compute correlation [2] between the original image and horizontal lines to obtain the horizontal components of the image. Then we can perform morphological image processing techniques, such as image dilation to merge five nearby lines together. After locating the stave, we can use similar method to locate the heads of all the notes on that stave. By comparing the location of the head and the location of the stave, we can get the pitch of each node. Finding the duration of the each note is a more complicated problem. It will depend on many factors such as if the head has a stick and tail.

We will test our algorithm with simple scores first and gradually increase the difficulty. We can generate music scores by ourselves using the online ABC notation converter [3]. In this way it allows us to generate proper test images, and compare our text result with the original ABC text.

References:

[1] ABC notation. Wikipedia.com. http://en.wikipedia.org/wiki/ABC_notation

[2] Satoru Yoneyama, Go Murasawa. Digital Image Correlation. http://www.eolss.net/Sample-Chapters/C05/E6-194-04.pdf

[3] ABC Convert-A-Matic. http://www.concertina.net/tunes_convert.html