Digital Image Processing Project

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ABSTRACT

Inspired by a powerful sheet music recognition app - notation scanner. In order to help people who aren't good at fast reading sheet music, I want to create an image processing program to convert notes on the sheet music to solmization and letter names.

Keywords: OMR, OCR, DIRS

1. INTRODUCTION

In order to achieve the purpose of music sheet converting. A technique will be introduced -OMR. OMR is an abbreviation of optical music recognition. Nowadays, there are two frameworks to implement OMR - General and Refined. Both of them incorporate four steps to achieve the converting goal. General incorporates staff line identification, musical objects located, musical feature classification, musical semantics. and the refined incorporates preprocessing, music symbols recognition, musical notation reconstruction, final representation construction. The two methods are similar and, in this paper, I will only implement the general method.

The structure of this paper is designed as follows: Section 2 introduces the objective of this paper. In section 3, some functions of the UI will be instructed in this section. Section 4 will introduce the general OMR method implementation in detail. Section 5 provides summaries and conclusions of this paper.

2. OBJECTIVE

- The main goal is to convert notes on the sheet music to solmization or letter name
- Creating a user interface to make people achieve the main goal without effort

3. USER INTERFACE

work-to-go

4. METHOD

4.1 Preprocessing

geometric transformation, noise removal, gray, binary. Seeing Fig.1

4.2 Staffline identification

Seeing Fig.2

4.3 Musical objects located

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4.4 Musical feature classification

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5. SUMMARY AND CONCLUSION

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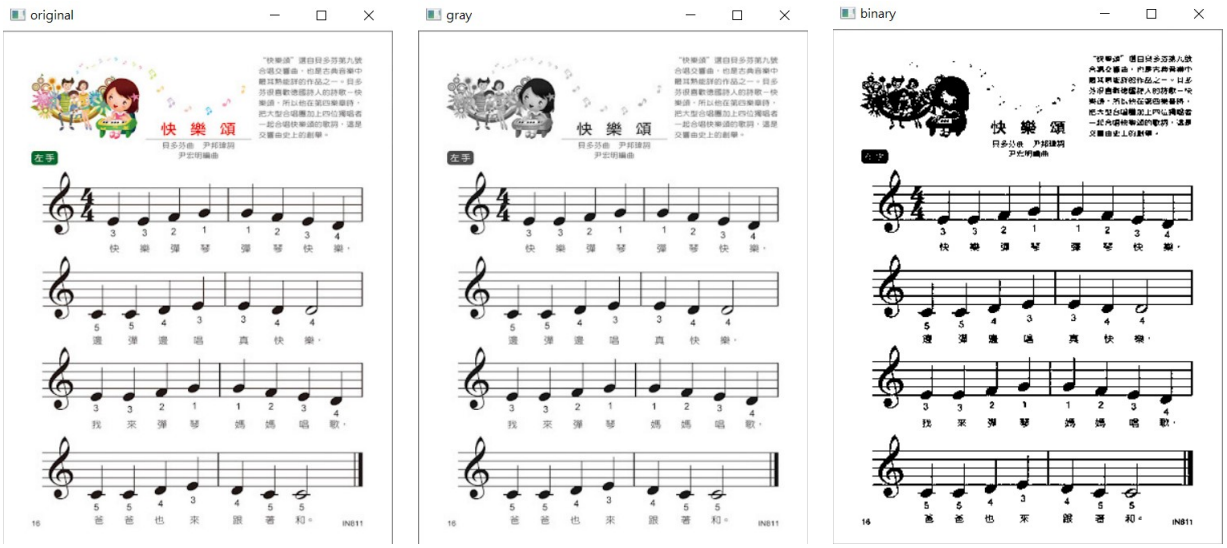
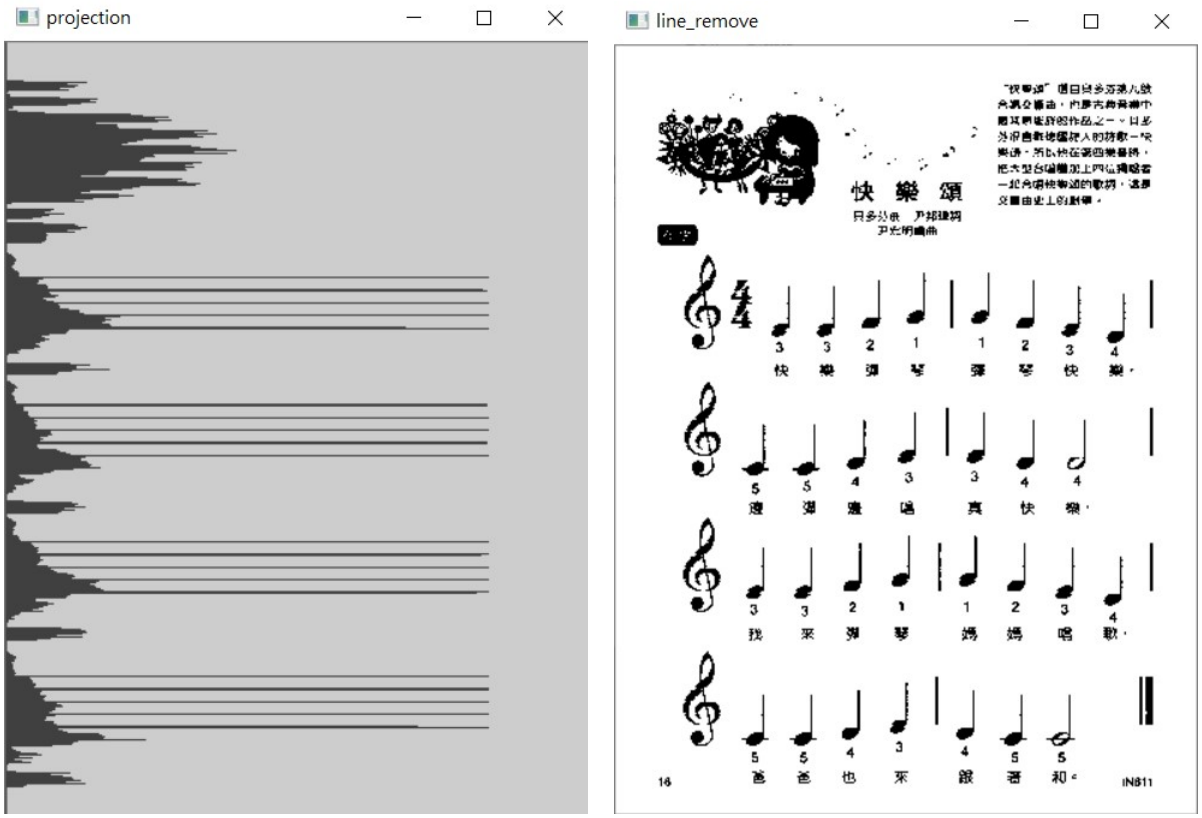
REFERENCES



(a) original (b) gray (c) binary

Figure 1. image preprocessing



(a) projection (b) line removed result

Figure 2. line removed with horizontal projection