AIoT Coding, Engineering and Entrepreneurial Skills Education for Gifted Students

Music Score Page Turner

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Project ID: P4

Abstract

To allow for continuous reading of a music score during play, an automatic music score page turner is created for musicians using Optical Music Recognition (OMR) and Dynamic Time Warping (DTW) technology.

Objective / Background / Motivation

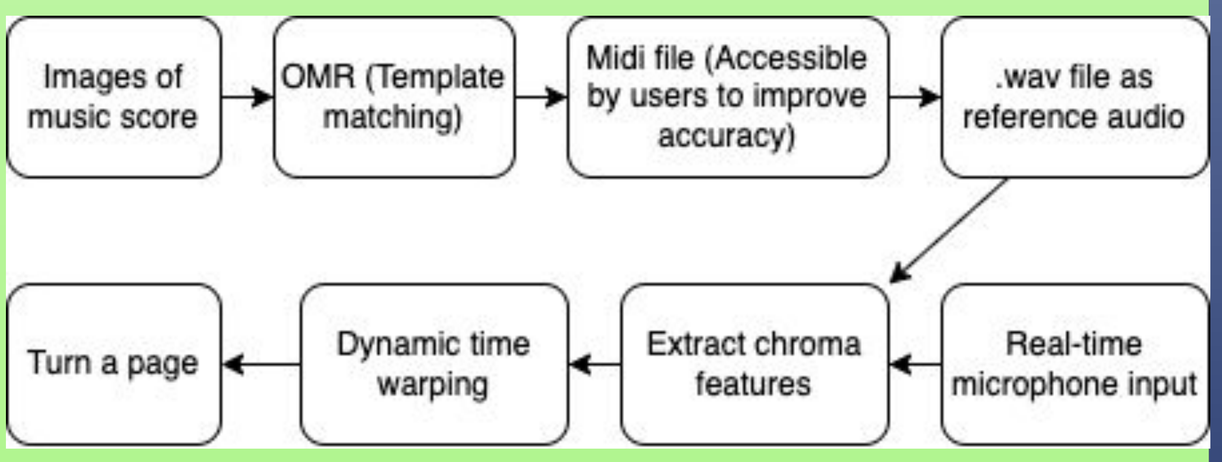
- Ariel is a piano player
- Lots of sheet music from the internet
- Troublesome to manually turn a page
- Disrupts the flow of play
- Existing good solutions cost HKD300

Digital software (Enote3):
Cannot import pdf digital scores

Mechanical page turning pedals:
Incompatible with some pianos

Methodology

- OMR (Template matching) to recognise handcrafted features (notes) from images of a musical score, then generating a reference audio
- Chroma features of the 2 audio streams are extracted, and compared using Dynamic Time Warping
- Used Tkinter (A python library) for GUI



Results / Application

- A computer application that includes both OMR and page turning functionality is created
- The OMR part recognises simple music scores fairly accurately
- The page turner can turn 1 page in a 2-page music score
- Musicians can play pieces and not worry about their page not flipping

GitHub Link

YouTube Link

Discussion / Conclusion

The project combined a few existing libraries of handcrafted acoustic features to creatively construct a solution to make the page turning process more convenient and automatic.

Through this project, creative, innovative problem-solving skills, technical knowledge and resilient attitudes were developed.

In the future, an app can be developed to include a more appealing GUI, models of improved accuracy and allow for better portability and personalisation.