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Abstract

AUTOMATIC MUSIC TRANSCRIPTION SYSTEM FOR
ERHU MUSIC

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Automatic transcription of music has been the subject of increasing research interest in music signal processing during the past decades. There are many proposed systems that have been described and developed for piano and violin music. However, seldom article has started research on Oriental counterparts. In addition, with rapid growth in the development of national music examinations, erhu has become one of the most popular instruments in China. Therefore, in this thesis, the researches are mainly focused on the automatic transcription system for erhu music that can pick a musical performance by a musical recording, and convert it into a symbolic representation to help the beginners learning erhu.

The proposed system is based on AMDF pitch detection method and mainly consists of frame blocking, pitch detection, onset and offset detection, and smoothing stages. The Matlab programming environment is employed. The respective subproblems especially pitch detection methods and the musical features are studied and reviewed. The main emphasis of this research is laid on detecting the pitches of erhu music notes. Various approaches to solve this problem are also discussed. Implementation results of the proposed system are analyzed and the proposed system can correctly transcribe over 97% of the notes in erhu music.

In contrary to traditional methods, a novel pitch detection method based on HHT which can detect the pitch without the limitation of frame selection and produce physically meaningful representations of data from non-linear and non-stationary processes is proposed. The results indicate that rapid variation of the pitch period can be accurately detected.

Key words: Erhu, Automatic music transcription, Pitch detection, AMDF, HHT