Music Transcription System For Piano Performance With Comparing Its Phrases

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1 Introduction

In recent years, it becomes that many people can enjoy playing music supported by computers, electronic instruments. In particular, the standard of MIDI and the progress of the electronic technology make us play the electronic instruments. These computers do not only support playing, but also support to make scores from playing automatically. In this years, the playing data by the electronic instruments is translated to the standard MIDI data. In the standard MIDI data, some informations is included such as the pitch, note time and playing time. By use of these informations, we can make the score from the standard MIDI data. To make a score, other informations such as the beat and the tempo. These two informations do not include the standard MIDI data, we must estimate these informations from any beat tracking method or use of tempo information in the standard MIDI data. However, the playing data by humans have to include some fluctuations of tempo. Therefore, if we use the tempo data in the standard MIDI data, we can not get the correct scores.

In this paper, we propose a new method to make scores by use of same or similarly pieces of playing. In the music, we can find the many places which had already played, we named it as similar phrase. By comparing the partial data of playing with the similar phrases, we can improve the quality of automatic scoring from the standard MIDI data of human playing.

2 Music Transcription

The scoring of music is the conventional method to record and transmit the information of music. However, it is very difficult to make scores because it requires some special skills. Thus, the method to make scores automatically is much required for many years. The computer aided scoring systems which developed previously could classify the two types. One extract the informations of music from the sound signal, the other use the standard MIDI data. To extract the informations from the sound signals is very difficult, so the use of electronic data such as the standard MIDI becomes popular.

To make the scores, some informations such as beat, tempo of playing are required. The scoring systems have been proposed which use a metronome alternative of estimations by the beat tracking. However, if we try to play the music according to the tempo of metronome, it is impossible that to keep the tempo as the metronome. Therefore, there must be some gaps between the actual playing and scores from the playing data.

3 Music Transcription System With Comparing Its Phrases

To improve the precision of scoring systems, we propose a new approach, which use of same or similar phrases. In the music, we can find many phrases which look like as same. It is popular property of music. If we can find a piece of music which looks like the phrase already played, we mark this piece a similar phrase. We define the phrase as the piece of music, which unit is measure. The new similar phrase is compared with the phrase which already played. If similar phrase can define as the same, we modify the similar phrase to the exact phrase. Our approach can define as the beat tracking only use of the first beat of measures. On the other hand, the traditional approach can define as the beat tracking system for the rhythm patterns of playing or a prior knowledge.

4 Experiments and Discussions

The system divided a music performance into measures. And the system made several ways of measuring a music performance. In their lists, the system can chose right one when the system selected it that number of equal phrases in a music was more than the others. Although most of equal phrases was took by the system, some similar phrases was not took by the system. When all similar phrases was took by the system, there were some wrong phrases on lists of similar phrases.

5 Conclusions

In this paper, we propose the new approach to make scores from the human playing by the using of similar phrases. From the experiments, our approach can reduce the mistakes

to find the measures, and extract the same score from the some human playing. For future works, it is remaining that to adapt our system to the playing with the free tempo fluctuations. Then, we have to expand our system to the general playing which has the cords.