AUDIO MUSICAL DICE GAME: A DEMONSTRATION FOR PERSONALIZED MEDLEY CREATION SYSTEM

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ABSTRACT

This paper demonstrate a system for creating personalized music medleys from users' music collections. We treat the medley generation process as an audio version of a musical dice game. Once the user's collection has been analyzed, the system is able to generate various pleasing medleys. This flexibility allows users to create medleys according to the specified conditions, such as the medley structure or the must-use clips. Even users without musical knowledge can compose medley songs from their favorite tracks. The system is available at http://www.cmlab.csie.ntu.edu.tw/~known/medley/demo/.

1. INTRODUCTION

A musical medley is a piece of music composed from parts of existing music pieces [1]. In the past, medleys were usually edited by professional audio engineers and distributed by music production companies, e.g. The Beatles Movie Medley [1]. Currently, more and more music hobbyists create their own medleys from their favorite songs with the help of newly-developed audio technologies and publish the results on websites like YouTube. The resultant medleys can be used as background music for personal films and slideshows or for non-stop dance suites.

In this paper, we provide a demonstration of the improved version of our prior work [2], a personalized medley creation system. We treat the medley generation process as an audio version of the musical dice game [3], which is a kind of music composition which originated from the European classical era. In a musical dice game, players throw dice to randomly choose short pieces of melodies from a pool of pre-composed interchangeable musical figures [2] for each bar. Similarly, our system generates medleys by choosing the clip at a given position from a set of interchangeable clips. So various medleys can be generated once we have analyzed the user's song collection. This flexibility allows the system to create medleys based on user preference, thus even users with no understanding of music theory can compose medley songs from their favourites tracks. As shown in Figure 1, users can specify the structure of the target medley, and optionally select a few song excerpts at certain positions in the medley, and other parameters. The system then completes the medley with song excerpts selected from the song collection provided by the user (c.f. Figure 2). If the user finds the resultant medley unsatisfactory, they can also adjust the connecting (cutting) positions and the overlapping ratios between the clips.

To create sets of interchangeable clips, we first analyze the songs in the user-provided collection and cut the songs into clips (based on musical phrase detection) and deter-

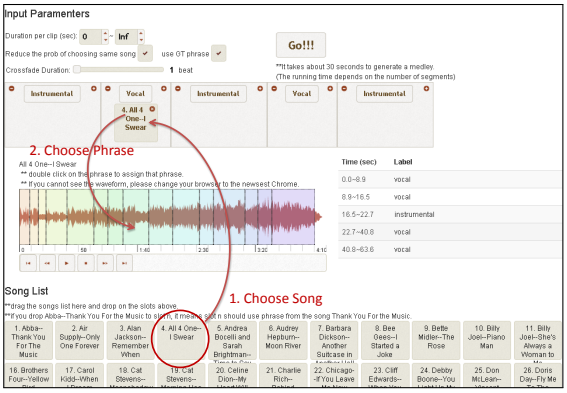

Figure 1. Screenshot of our graphical user interface for medley creation, where users can specify the medley structure, must-use clips, and other parameters

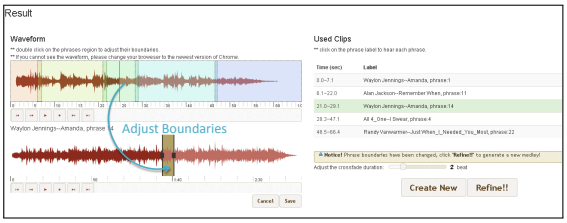

Figure 2. Screenshot of our graphical user interface for medley generation, where the user can adjust the phrase boundaries manually.

[1] https://www.youtube.com/watch?v=pKOiculk5tA
[2] A short musical phrase [4].

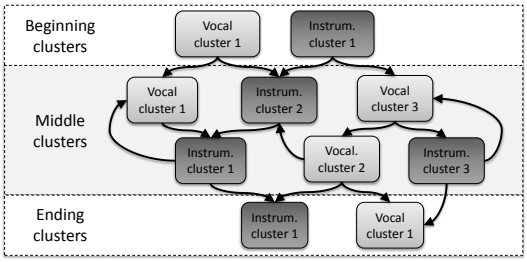

Figure 3. Example of a musical dice graph.

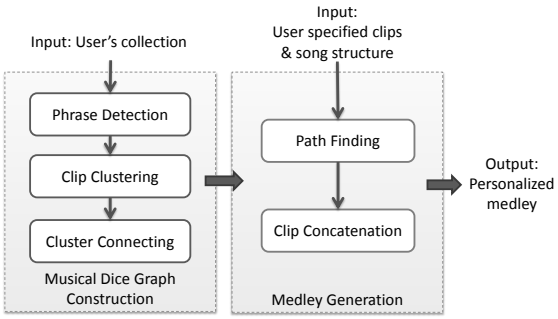

Figure 4. System Overview.

mine the type of the clips, i.e. vocal or instrumental. For each clip type, we then group similar clips into clusters. The used distance measures should make the clips in the same cluster interchangeable in a medley. We then connect clusters according to the transition probability calculated from clip connectivity in the songs from which they were originally extracted. The result is referred to as a "musical dice graph" in which the vertices are the clusters and the edges are weighted by the calculated transition probability. Each path on the graph is a version of a medley. Figure 3 shows an example of a musical dice graph. With this graph, we can generate various medleys based on user preferences and the transition probability. Figure 4 illustrates the system overview.

2. REFERENCES

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