Implementation of Melody Extraction from Polyphonic Music Using Harmonic Structure Grouping

Hye-In Lee[1], Ji-Hun Seo[1], Ju-Hyun Park[1], Seok-Pil Lee[2]
[1]Dept. Of Computer Science, Sangmyung University
[2]Dept. Of Media Software, Sangmyung University

honeyb97@naver.com, muoe00@gmail.com, kidiai@naver.com, esprit@smu.ac.kr

ABSTRACT

This paper presents an implementation of melody extraction from polyphonic music files using a harmonic structure grouping. For this we extract significant peaks in each frame and determine the candidates for fundamental frequency by harmonic structures. Then, the candidates of the fundamental frequency are grouped by classification of equivalent MIDI note. Finally, the fundamental frequency is extracted by using the pitch tracking based on ranking of candidates for the fundamental frequency.

1. INTRODUCTION

The polyphonic music is composed of various sound sources. For extraction of main melody from polyphonic music, it is necessary to select a fundamental frequency from among many pitches in the music signal [1][2]. In order to implement that, we propose a method of significant melody extraction using the multi-pitch extraction and the pitch tracking based in harmonic structure.

2. METHOD

Figure 1 shows an overall structure of the proposed method. For reduction of computation, we use mono channel of music signal sampled at 8 kHz.
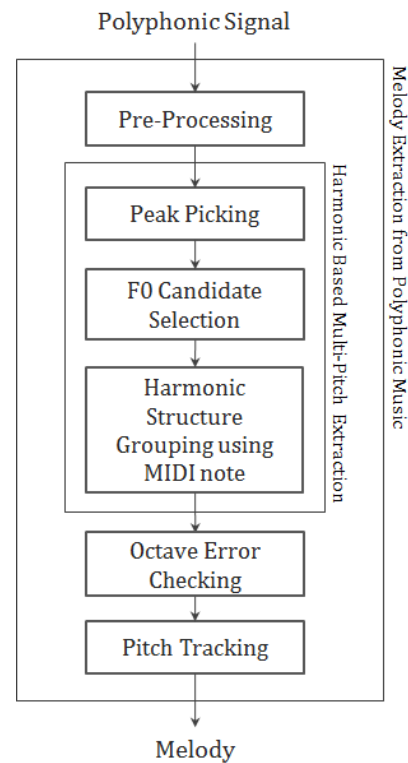

Figure 1. Overall structure of the proposed method

In the multi-pitch extraction, significant pitches are extracted by threshold values [3][4]. We find harmonic structures among the peaks [5]. The candidates of fundamental frequency are grouped by equivalent MIDI notes. In pitch tracking, the octave error is checked because of the harmonic overtone in falsetto due to the nature of the human voice [6]. Finally, we select definitive fundamental frequency from ranking and continuity of fundamental

frequency.

3. REFERENCES

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