ABSTRACT

Gamelan is one of a traditional musical instrument from Indonesia that is increasingly accepted internationally. Gamelan is manually made by its author. They tune every note based on their own feelings so that the fundamental frequency is different between each gamelan. There are two types of gamelan note, slendro and pelog. Their fundamental frequency can be calculated by using frequency scaling formula. However, gamelan usually has its frequency difference compared to the formula. This problem can be solved by using pitch shifting algorithm. Pitch shifting change the frequency without changing its duration. Phase vocoder is one of the pitch shifting method which is used in this research.

Phase vocoder converts the time domain signal into frequency domain which is allowed to modify its phase on frequency domain. Then the signal is converted back into time domain and resample the signal to obtain new frequency without changing its duration. This research implements phase vocoder and new phase vocoder method. From this research, it shows that there are some significant amplitude degradation on phase vocoder method compared to the new phase vocoder method. This research is done by shifting gamelan’s frequency on gamelan pelog and slendro. And the results is that the error of slendro instrument is 40.98% and 36.18% by using phase vocoder method. And 14.46% on pelog instrument and 22.33% on slendro instrument by using the new phase vocoder method.

Keyword: Fundamental Frequency, Pitch Shifting, Gamelan, Phase Vocoder
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