

Heart sound musical transcription technique using multi-Level preparation

ABSTRACT

Musical transcription of heart sound is a new idea to provide a textual biomedical database. Textual database allows applying several indexing and searching techniques in order to monitor patient behavior for a long duration. MIDI commands produce a semi-structural musical file format which enables to apply various applications. Main objective of this paper is the extraction of fundamental frequency of the given heart sound which is recorded with an electrical stethoscope. Based on extracted fundamental frequencies, the logarithmical relationship of pitch numbers will be estimated. Generally the captured heart sound includes several types of noises such as other organs sound and ambient voice. Hence, filtering of the heart sound is indispensable. Thus, three levels of preparation techniques which are wavelet transform, frequency limitation, and amplitude reconstruction will be applied on the heart sound sequentially. The results of the performed experiments show the accuracy of approximately 93% ± 2 . The statistical analyses illustrated that each level of the preparation, significantly improved the accuracy of the transcription ($p < 0.005$).

Keyword: Heart Sound; Transcription; Wavelet Transform