ABSTRACT

Heart sounds overlapping on lung sound recordings in low frequencies are considered as noise when the medical team do acoustical analysis afterwards. Meanwhile, acoustical analysis provides important and helpful information for diagnosis and monitoring of lung sounds diseases.

This final assignment proposed the method to do reduction heart sounds on lung sound recordings using genetic algorithm (GA). GA is one of popular evolutionary algorithm. GA will choose and threshold the subbands of wavelet packet decomposition from lung sound recordings, in process, heart sounds will be optimized and lung sounds considered as noise. Quality of signal is measured by cross-correlation among heart sounds on lung sounds recordings and a reference heart sounds . Quality of signal is measured by peak-signal-to-noise-ratio (PSNR), too. It measures lung sound and heart sound are mixed by researcher.

The result is heart sounds that have cross-correlation coefficient 0.9104 in level 8, population size 100, crossover probability 0.8, and mutation probability 0.06. The result from PSNR has got pure lung sound 63 decibel.

Keyword: *noise, genetic algorithm, evolutionary algorithm, thresholding, subband, cross-correlation, peak-signal-to-noise-ratio, packet wavelet decomposition, decibel*