Reduction of the Noise in the Respiration Sound Recording by the Optimal Sampling Rate of Sound Card: The Verification by Simple Filters

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***Abstract*— The simple first and second order low pass filter were employed to verify the effect on the reducing the sampling rate of the respiration sound. This study presented a theoretical analysis to prove that there exists an optimal sampling frequency to reduce the noise in the signal to reduce the processes of acoustic digital signal processing. The respiration sounds have been recorded by 2 to 44.1 KHz or higher sampling rates, however, the optimal frequency might be decided by the noise from environment. This study solves the problem from the point of theoretical view. Finally, the study discussed the literatures of noises of the lung sound recording, and examined the effect of the optimization of sampling rate in the processes of moving average.**

***Keywords*— noise reduction, sampling frequency, acoustic signal, lung sound, sound card.**

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