



Design and Implementation of Digital Stethoscope with Heart Defect Detection Algorithm

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Abstract— This paper presents real time heart defect monitoring and heart sound hearing system. The purpose of this work is to design and implement a digital stethoscope which serves as a platform to detect cardiac murmurs. Digital stethoscope is used to help doctor in analyzing the heart condition and to reduce the risk of not discovering certain abnormal conditions. The system design comprises of a traditional stethoscope with an electrets condenser microphone, pre-amplifier circuit with a TMS320C5515 Digital Signal Processor kit (DSK) and its associated software. The heart sound signal from the pre-amplifier circuit is acquired and sent to TMS320C5515 through the audio codec input. The heart sound signal is subjected to signal processing techniques like Acoustic noise cancellation algorithm and heart defect detection algorithm. Noise cancellation algorithm is used to remove the noise from the heart sound signal acquired. Finally using the heart defect detection algorithm heart sounds can be classified as normal or abnormal heart sound.

Keywords—Heart sounds, TMS320C5515, Heart defect detection algorithm, Noise cancellation algorithm, Heart murmurs.