

## Wavelet-Based Classification of Myocardial Ischemia, Arrhythmia, Congestive Heart Failure and Sleep Apnea

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**Abstract :** This paper presents wavelet based classification of various heart diseases. Electrocardiogram signals of different heart patients have been studied. Statistical natures of electrocardiogram signals for different heart diseases have been compared with the statistical nature of electrocardiograms for normal persons. Under this study four different heart diseases have been considered as follows: Myocardial Ischemia (MI), Congestive Heart Failure (CHF), Arrhythmia and Sleep Apnea. Statistical nature of electrocardiograms for each case has been considered in terms of kurtosis values of two types of wavelet coefficients: approximate and detail. Nine wavelet decomposition levels have been considered in each case. Kurtosis corresponding to both approximate and detail coefficients has been considered for decomposition level one to decomposition level nine. Based on significant difference, few decomposition levels have been chosen and then used for classification.

**Keywords :** arrhythmia, congestive heart failure, discrete wavelet transform, electrocardiogram, myocardial ischemia, sleep apnea

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