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ABSTRACT

A CASCADED BINARY CLASSIFIER FOR IDENTIFYING RHYTHMS IN A SINGLE-LEAD ELECTROCARDIOGRAM (ECG) SIGNAL

10 Current technologies analyze electrocardiogram (ECG) signals for a long
duration, which is not always a practical scenario. Moreover the current scenarios
perform a binary classification between normal and Atrial Fibrillation (AF) only,
whereas there are many abnormal rhythms apart from AF. Conventional
systems/methods have their own limitations and may tend to misclassify ECG
signals, thereby resulting in an unbalanced multi-label classification problem.
15 Embodiments of the present disclosure provide systems and methods that are
robust and more efficient for classifying rhythms for example, normal, AF, other
abnormal rhythms and noisy ECG recordings by implementing a spectrogram
based noise removal that obtains clean ECG signal from an acquired single-lead
ECG signal, an optimum feature selection at each layer of classification that
20 selects optimum features from a pool of extracted features, and a multi-layer
cascaded binary classifier that identifies rhythms in the clean ECG signal at each
layer of the classifier.

25 [To be published with FIG. 3]