Heartbeat Classification Using Normalized RR Intervals and Morphological Features

**1-Preprocessing: Filtering & Segmentation**

all the ECG signals are first preprocessed using a 200-ms width median filter to remove P wave and QRS complex, then a 600-ms

width median filter to remove T wave.

The resulted signals are then regarded as the baseline which is subsequently subtracted from the original signals to yield the baseline corrected ECG signal

1. **Feature Extraction**
2. **Classification & Classifier**

SVM is employed in this study as the heartbeat classifier

1. **Accuracy**

coefficients features. With typical DS1/DS2 division, the sensitivities of the classification system are found to be 88.63%, 74.23%, 88.06% and 73.45% respectively for the class N, S, V and F, and the corresponding values of positive predictivitis are 98.54%, 59.76%, 82.33% and 6.96%. In summary, the average sensitivity, positive predictivity and accuracy are 81.09%, 61.90% and 87.88% respectively for the four classes, the geometric means of sensitivities and positive predictivities are 80.77% and 42.86%.

1. **Two Leads or One Lead ? In case of two leads .. how classification of two leads is merged to have final decision ?**

In this paper, we first fuse the two binary classifiers from the two leads, then the final decision are voted by the fused binary classifiers, this scheme is most resilient to binary classification errors

1. **Classes**

branch block beat (N), supraventricular ectopic beat (S), ventricular ectopic beat (V), fusion of ventricular and normal beat (F), and heartbeats that cannot be classified (Q(