Early detection of Atrial Fibrillation (AF) is crucial in order to prevent acute and chronic cardiac rhythm disorders. In this study, a novel method for robust automatic AF detection (AAFD) is proposed by combining atrial activity (AA) and heart rate variability (HRV), which could potentially be used as a screening tool for patients suspected to have AF. The method includes an automatic peak detection prior to the feature extraction, as well as a noise cancellation technique followed by a bagged tree classification. Simulation studies on the MIT-BIH Atrial Fibrillation database was performed to evaluate the performance of the proposed method. Results from these extensive studies showed very promising results, with an average sensitivity of 96.51%, a specificity of 99.19%, and an overall accuracy of 98.22%.

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