Identification of Cardiac Autonomic Neuropathy Patients using Cardioid Based Graph for ECG Biometric

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In this paper, the application of data mining applied to Cardioid based person identification mechanism using electrocardiogram (ECG) is presented. Previous studies in Cardioid based ECG biometric excites a new era of efficient patient authentication which places new hope in faster patient care. A total of 51 subjects with Cardiac Autonomic Neuropathy (CAN) were obtained from the Charles Stuart Diabetes Complication Screening Initiative (DiScRi). The subjects were categorized into two types of CAN which are early CAN and definite/severe CAN. Euclidean distances obtained as a result of the Cardioid based graph formation were used as extracted features. These distances were then applied in Multilayer Perceptron to confirm the identity of individuals. Our experimentation results suggest that person identification is possible by obtaining 98% classification accuracy. This indicates that ECG biometric is possible and not severely affected by CAN with the ability to identify and differentiate individuals in cardiac abnormalities.