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FlexPoints: Efficient Algorithm for Detection of Electrocardiogram Characteristic Points

Authors : Daniel Bulanda, Janusz A. Starzyk, Adrian Horzyk

Abstract : The electrocardiogram (ECG) is one of the most commonly used medical tests, essential for correct diagnosis and treatment of the patient. While ECG devices generate a huge amount of data, only a small part of them carries valuable medical information. To deal with this problem, many compression algorithms and filters have been developed over the past years. However, the rapid development of new machine learning techniques poses new challenges. To address this class of problems, we created the FlexPoints algorithm that searches for characteristic points on the ECG signal and ignores all other points that do not carry relevant medical information. The conducted experiments proved that the presented algorithm can significantly reduce the number of data points which represents ECG signal without losing valuable medical information. These sparse but essential characteristic points (flex points) can be a perfect input for some modern machine learning models, which works much better using flex points as an input instead of raw data or data compressed by many popular algorithms.

Keywords : characteristic points, electrocardiogram, ECG, machine learning, signal compression
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