عنوان مقاله:

A new approach to detect Life threatening cardiac arrhythmias using Sequential spectrum of Electrocardiogram signals

محل انتشار:

مجله پیشرفت در تحقیقات کامپیوتری, دوره 2, شماره 4 (سال: 1390)

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خلاصه مقاله:

This study evaluates the discriminative power of sequential spectrum analysis of the short-term electrocardiogram (ECG) time series in separating normal and subjects with life threatening arrhythmias like, ventricular tachycardia/fibrillation (VT/VF). The raw ECG time series is transformed into a series of binary symbols and the binary occupancy or relative distribution of mono-sequences (i.e. tuples containing only one type of symbol '0' or '1') is computed. The quantified approximate entropies (ApEn0 and ApEn1) of the binary occupancies in the sequential spectra are found to have potential in discriminating normal and VT/VF subjects and thus can significantly add to the prognostic value of traditional cardiac analysis. The receiver operating characteristic curve (ROC) analysis confirms the robustness of this new approach and exhibits an average sensitivity of about 98.0% (97.1%), specificity of about 93.3% (93.3%), positive predictivity of around 94.7% (89.3%), and accuracy of about 95.9% (94.7%) with ApEn0 to distinguish between normal and VT (VF) subjects.

کلمات کلیدی:

Ventricular tachycardia, Ventricular fibrillation, Sequential spectrum, Symbolic dynamics

لینک ثابت مقاله در پایگاه سیویلیکا: