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Automated identification of shockable and non-shockable life-threatening ventricular arrhythmias using convolutional neural network

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Abstract

Ventricular tachycardia (VT) and ventricular fibrillation (VFib) are the life-threatening shockable arrhythmias which require immediate attention. Cardiopulmonary resuscitation (CPR) and defibrillation are highly recommended means of immediate treatment of these shockable arrhythmias and to resume spontaneous circulation. However, to increase efficacy of defibrillation by an automated external defibrillator (AED), an accurate distinction of shockable ventricular arrhythmias from non-shockable ones needs to be provided upfront. Therefore, in this work, we have proposed a novel tool for an automated differentiation of shockable and non-shockable ventricular arrhythmias from 2 seconds electrocardiogram (ECG) segments. Segmented ECGs are processed by an