

Title: Detection of Cardiac Arrest Using Deep Learning for Automated External Defibrillator

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Abstract: Ventricular fibrillation (VF) and ventricular tachycardia (VT), known as shockable rhythms, are the main cause of sudden cardiac arrests (SCA), which can be properly treated by electronic defibrillators. Recently, convolutional neural networks (CNN) have emerged as a useful approach. Moreover, CNNs are also used to extract a set of informative features, which is then used as the input of the machine learning (ML) classifiers. Here, we use two databases, which are the Creighton University Ventricular Tachyarrhythmia Database (CUDB) and the MIT-BIH Malignant Ventricular Arrhythmia Database (VFDB), divided into training and testing sets. Firstly, the CNNs and CNN-extractor models are selected on training data using fully CNNs and CNNs in combination with ML classifiers. Then, the fully CNNs and set of feature extracted by CNN-extractor are validated on the testing data. Therefore, the performance of fully CNNs and CNN-extractor is investigated to construct a novel algorithm, which can be effectively applied for the automated external defibrillators (AEDs).

Biography

Minh Tuan Nguyen received the B.S. degree from the Post & Telecommunications Institute of Technology, Hanoi, Vietnam, in 2004, the M.S. degree from Hanoi University of Science and Technology, Hanoi, Vietnam, in 2008, both in electronics and telecommunicationsengineering and iscurrently working toward thePh.D.degree at the Gwangju Institute of Science and

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