عنوان مقاله:

Presenting Effective Methods in Classification of Echocardiographic Views using Deep Learning

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خلاصه مقاله:

Cardiovascular imaging has become the foundation of heart failure diagnostic studies. The most crucial technique for clinically diagnosing cardiac diseases is echocardiography. Depending on the positioning and angles of the probe, different cardiac views can be obtained during echocardiography. Therefore, the automatic classification of echo views, especially for computer systems and even automatic diagnosis in later stages, is the first step for echocardiogram diagnosis. In addition, the classification of heart views allows the tagging of echo videos to be done on a high scale and the possibility of database management and collection is provided. However, deep learning is an advanced machine learning method that is used to analyze both natural and medical images. But so far, it has not been widely used on cardiac ultrasound, the reason is the complexity of formats with multiple views and multi-view formats of echocardiogram. The proposed topic of this research is to provide novel and effective architectures for cardiac view classification. The aim of this study is to overcome the challenges in processing, categorizing and recognizing echo views stored as videos and images. In particular, in order to extract features, automatic methods and deep networks have replaced manual methods. In the presented solution, by using the transfer learning and the ۳d-cnn method in image and video classification, we have improved the accuracy of echo views classification.

کلمات کلیدی:

Classification, Echocardiographic, Deep Learning, images, Artificial intelligence, heart disease