

USING NEURAL NETWORK WITH RANDOM WEIGHTS AND MUTUAL INFORMATION FOR SYSTOLIC PEAKS CLASSIFICATION OF PPG SIGNALS

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Abstract:

The detection of peaks in photoplethysmogram (PPG) signals is important to ensure the information gather from the peaks in accurate manner. The false peaks will interrupt the accuracy for future classification of any related events. This study presents the implementation of feature enhancement method for systolic peaks classification of PPG signals using mutual information and neural network with random weights (MI-NNRW). MI-NNRW method is proposed to improve the accuracy performance of NNRW method. MI method implements at sixteen time-domain features and then NNRW classifier predicts between false and true systolic peaks point of PPG signals. The results indicate that by using sigmoid as activation function, the accuracy of sensitivity (Se) for ICP signals increase up to 81.71 percent. Overall, MI-NNRW method improves the accuracy performance compared to NNRW method which is leads to the improvement of accuracy for detection of systolic peaks.

Keywords: Systolic peaks classification, Neural network with random weights, Mutual information, PPG signals

Acknowledgment

The authors wish to acknowledge M. Aboy et. al. [20] for sharing their PPG database. This study is financially supported UMP Internal Grant scheme (RDU180394).