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Cardioid graph based ECG biometric in varying physiological conditions using compressed QRS (Conference Paper) [\(Open Access\)](#)

Nurfarah Ain Mohd Azam, S.^a, Zohra, F.-T.^a, Azami Sidek, K.^a, Smoleń, M.^b

^aDepartment of Electrical and Computer Engineering, Faculty of Engineering, International Islamic University Malaysia (IIUM), Jalan Gombak, Kuala Lumpur, 53100, Malaysia

^bDepartment of Biocybernetics and Biomedical Engineering, AGH University of Science and Technology, 30 Mickiewiczza Ave., Krakow, 30-059, Poland

Abstract

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This paper proposes a robust biometric identification system using compressed electrocardiogram (ECG) signal by varying physiological conditions. The ECG data were obtained by recording a total of 30 healthy subjects where they performed six regular daily activities repeatedly at a sampling frequency of 1000 Hz. Then, the QRS complexes are segmented by implementing Amplitude Based Technique (ABT) where it compares the amplitudes of ECG points to determine the R peak. The segmented QRS is then compressed for various levels by using Discrete Wavelet Transform (DWT) algorithms and first 3 Daubechies (db) wavelet are computed. Next, a Cardioid graph is generated. In order to verify the matching process, the classification is performed by using the Multilayer Perceptron (MLP) technique. The results show that by applying this method, the accuracy of the identification rate can be achieved as high as 96.4% even when the data file is compressed up to 73.3%. When the data file is compressed, the outcomes also demonstrate that the execution time is less compare to non-compressed data. Therefore, the biometric identification system can be implemented efficiently as there will be a lesser issue regarding the data storage, execution time and accuracy based on the outcome of the study. © 2020 IOP Publishing Ltd. All rights reserved.

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