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ECG Waveform Encryption Using Shifted FFT and DWT

Publisher: IEEE

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Abstract:

Recently, millions of medical information passed different media to reach their destination without any error. The introduction of advanced media including communications, wireless networks, mobile networks and Internet offer wide range of e-health application. Electrocardiogram (ECG) waveform is an important issue in e-health in which it recognizes the heart activities and it gives an efficient indication about the patient. The most important issue of ECG waveform is to transmit and receive this waveform with an efficient way. This means ECG waveform must reach its destination secure and accurate. The implemented approach introduces an efficient way for compression and encryption of ECG waveform. This approach based on both discrete wavelet transforms (DWT) and shifted fast Fourier transform (FFT). The obtained results indicated that there is 100% of similarity between transmitted and received signal in addition there is a compression ratio of $\frac{1}{4}$ when applying second level DWT.

Published in: [2019 12th International Conference on Developments in eSystems Engineering \(DeSE\)](#)

Date of Conference: 7-10 Oct. 2019

Date Added to IEEE *Xplore*: 23 April 2020

ISBN Information:

ISSN Information:

INSPEC Accession Number: 19568651

DOI: [10.1109/DeSE.2019.00071](https://doi.org/10.1109/DeSE.2019.00071)

Publisher: IEEE

Conference Location: Kazan, Russia

Keywords

- [Electrocardiography](#),
- [Discrete wavelet transforms](#),
- [Encryption](#),
- [Medical services](#),
- [Media](#),
- [Medical diagnostic imaging](#)