

ABSTRACT

CERTAIN INVESTIGATIONS ON EQUALIZATION ALGORITHMS FOR WIRELESS ELECTRO CARDIOGRAM SIGNAL TRANSMISSION

Telemedicine, an evolving area of healthcare services, uses telecommunication technologies to transfer medical information about diagnosis, education and therapy. The medical information includes medical images, patient records, audio signals, video signals and output data from medical devices. A mobile communication technology leads to the benefit of people by improving the quality of healthcare services and reducing the cost. The Electrocardiogram (ECG) is the most important diagnosis clinical tool used to assess the risk of CVD. The direct transmission of electrocardiogram signals over a band limited channel or through a multipath propagation is subject to Intersymbol Interference (ISI). This causes degradation of error performance at the receiver healthcare station. The main objective of this work is to mitigate ISI in the transmitted ECG signal through mobile networks. An equalizer at the receiver end uses adaptive algorithms to evaluate the channel and to compensate the ISI distortion. This work not only focuses on the various investigations on the channel equalizers but also compares their performance metrics. In this work, both the adaptive equalizers and blind equalizers are used. Adaptive equalizers work on the concept of training sequence and the blind equalizer does not require a training sequence. Adaptive equalizer uses the Least Mean Square (LMS) and Recursive Least Square (RLS) algorithms whereas the blind equalizer uses the Constant Modulus Algorithms (CMA). The Mean Square Error (MSE), the auto correlation coefficient, the cross correlation coefficient, convergence, computational complexity and Signal to Noise Ratio (SNR) improvement has been estimated for LMS, RLS and CMA adaptive algorithms and their performances are compared.

