

Optimal Mother Wavelet Function for Shoulder Muscles of Upper Limb Amputees

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Abstract : Wavelet transform (WT) is a powerful statistical tool used in applied mathematics for signal and image processing. The different mother, wavelet basis function, has been compared to select the optimal wavelet function that represents the electromyogram signal characteristics of upper limb amputees. Four different EMG electrode has placed on different location of shoulder muscles. Twenty one wavelet functions from different wavelet families were investigated. These functions included Daubechies (db1-db10), Symlets (sym1-sym5), Coiflets (coif1-coif5) and Discrete Meyer. Using mean square error value, the significance of the mother wavelet functions has been determined for teres, pectorals, and infraspinatus around shoulder muscles. The results show that the best mother wavelet is the db3 from the Daubechies family for efficient classification of the signal.

Keywords : Daubechies, upper limb amputation, shoulder muscles, Symlets, Coiflets

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