

DESIGN OF ADAPTIVE FILTER FOR NOISE REMOVAL FROM A TYPICAL EMG SIGNAL USING A GENERALIZED NEURAL NETWORK

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Abstract

The bioelectric potentials associated with muscle activity constitute the electromyogram (EMG). EMG signal is being used in biomedical applications in order to detect abnormal muscle electrical activities that occur in many diseases and conditions like muscular dystrophy, inflammation of muscles, pinched nerves, peripheral nerve damages, amyotrophic lateral sclerosis, disc herniation, myasthenia gravis, and others. In this paper, it is observed that a Generalized Neural Network (Gen.NN) can be effectively used for noise removal from an EMG signal, which is a typical nonlinear multivariable regression problem. The performance parameters i.e. MSE, correlation coefficient (r), N/P and t are found to be in the expected range of values. Also, a Generalized Neural Network is found to perform better than the other types of neural networks like MLP NN, Modular NN and RBF NN.

Keywords: EMG, MSE, MLP, PE, NN, CV, Correlation Coefficient.