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Differentiating Type of Muscle Movement via AR Modeling and Neural Network Classification

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Abstract: The aim of this study is to classify electromyogram (EMG) signals for controlling multifunction proshetic devices. An artificial neural network (ANN) implementation was used for this purpose. Autoregressive (AR) parameters of a_1, a_2, a_3, a_4 and their signal power obtained from different arm muscle motions were applied to the input of ANN, which is a multilayer perceptron. At the output layer, for 5000 iterations, six movements were distinguished at a high accuracy of 97.6%.

Key Words: Myoelectric signals, artificial neural networks, classification