

ABSTRACT

In this work ANN model of thermistors are developed and optimized using Matlab ANN tools. The real data is taken from the datasheets of 10K as well as 100k thermistor from Bapi sensors. 114 data samples have been taken for each case and normalized from 0 to 1 for better accuracy and network simplicity. 15% of the data is separated for testing purpose i.e.17 data samples whereas the rest of the data is given the network for training and validation purpose. Neuron by neuron approach has been adopted for optimization purpose. All 13 training algorithms has been adopted with mean square error as performance parameter. Regarding this, the architecture 1-4-1 with Log-sigmoid activation function using Bayesian regularization training algorithm shows mean square error (MSE) of 4.96×10^{-12} and gradient value of 3.65×10^{-9} for the case of 10K thermistor. For the case of 100K thermistor, the same architecture i.e. 1-4-1 with Log-sigmoid activation function using Bayesian regularization training algorithm exhibit mean square error (MSE) of 1.56×10^{-13} with gradient value of 2.48×10^{-8} .