The Impact of the Number of Neurons in the Hidden Layer on the Performance of MLP Neural Network: Application to the Fast Identification of Toxics Gases

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Abstract : In this work, we have applied neural networks method MLP type to a database from an array of six sensors for the detection of three toxic gases. As the choice of the number of hidden layers and the weight values has a great influence on the convergence of the learning algorithm, we proposed, in this article, a mathematical formulation to determine the optimal number of hidden layers and good weight values based on the method of back propagation of errors. The results of this modeling have improved discrimination of these gases on the one hand, and optimize the computation time on the other hand, the comparison to other results achieved in this case.