

Performance of Multi-Layer Perceptron in Classification of Wine

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Introduction: A multilayer perceptron (MLP) is a class of feedforward artificial neural network. An MLP consists of at least three layers of nodes. Except for the input nodes, each node is a neuron that uses a nonlinear activation function. It is based on the idea of support vector machines (SVM's). An upper bound on the Vapnik–Chervonenkis (VC) dimension is iteratively minimized over the interconnection matrix of the hidden layer and its bias vector. The output weights are determined according to the support vector method.

Analysis and Result

Hidden layers	Number of iterations	Activation function	Accuracy
(13,12,11)	500	Identity	94.44%
(10,8,7)	2500	Identity	97.22%
(6,7,8)	3500	Tanh	97.22%
(1,1,1,1,1)	3500	Identity	83.33%
(1,1,1,1,1)	3500	Tanh	61.11%

Conclusion:

Overall, when we increase the number of hidden layers and change the values of neurons, the chances of missclassification increases as per in my dataset. Also considering the results of mlp3 and mlp4, we see that the type of activation function also matters a lot as the accuracy score went down for 83% to 61%. From the above table we are able to infer that as we increase the dimension of the hidden layers and the number of iterations, we get bit lesser accuracy values for Wine dataset.