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Laurene V Fausett* (Laurene_Fausett@TAMU-Commerce.edu), Texas A&M University-Commerce, Department of Mathematics, Commerce, TX 75429-3011. *Using Neural Networks for Near-Interpolation of Scattered Data.*

Although it has been known theoretically for some time that neural networks are capable of approximating arbitrary input-output mappings to arbitrary accuracy, these results are based on the network having "enough" hidden units, "enough" training data, and "enough" training. In this talk we show that it is in fact practical to use either of two standard neural networks for near-interpolation of small to moderate sized data sets, with input from R^2 and output in R . Examples illustrate the typical behavior of these networks, and the contrasts between neural and numerical approaches. Several small but important modifications to these networks are presented which improve network results. The characteristics of neural network solutions which may be desirable in certain settings are also discussed. (Received August 21, 2009)