

Growing Radial Basis Neural Networks With Potential Function Generators

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Abstract - In this paper, we propose an approach for shaping the adaptive radial basis functions through potential functions for the purposes of classification. We propose a multilayer Potential Function Generators neural network (PFUGNN) with two fundamental components: potential function generators (PFGs) and potential function entities (PFEs) which create the decision rules by constructing multivariate potential functions and adjusting

the weights as well as the parameters of the cumulative potential functions. The two proposed criteria evaluate the NN performance during the learning phase and force PFUGNN to enter the dynamic phase and perform structural changes before entering the next learning cycle. The implementation of the presented method with several data sets demonstrates its power in generating classification solutions for learning samples of various shapes.