

Different Radial Basis Functions in a Welding Process

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Abstract: Since the Neural Networks have been widely used in many prediction and optimization problems in different manufacturing processes and they have been proved to be a useful technique for modeling. In this approach a multilayer Perceptron Radial Basis Function Neural Network was used applying a Genetic Algorithm. This paper makes a comparative study among different Radial Basis Function Neural Networks, to predict a manufacturing process, a welding process. The question is how to know which of these Radial Basis Function Neural Networks apply into the hidden net to find a better prediction in the process? For this question, the main objective of this paper is to propose a method for selecting the Radial Basis Function that explains better the manufacturing process. Statistical metrics are used for the validation in this comparison. The results indicate that the statistical metrics can be a good alternative method to validate the efficiency of the Neural Networks models and to report which Radial Basis it is better in this application. Thus, this paper presents a comparison of models to predict the performance of a welding process and illustrate the advantage of using statistical metrics for choosing the better model.

Keywords: Radial Basis, Genetic Algorithm, Modeling