عنوان مقاله:

A Combinatorial Algorithm for Fuzzy Parameter Estimation with Application to Uncertain Measurements

محل انتشار:

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خلاصه مقاله:

This paper presents a new method for regression model prediction in an uncertain environment. In practical engineering problems, in order to develop regression or ANN model for making predictions, the average of set of repeated observed values are introduced to the model as an input variable. Therefore, the estimated response of the process is also the average of a set of output values where the variation around the mean is not determinate. However, to provide unbiased and precise estimations, the predictions are required to be correct on average and the spread of date be specified. To address this issue, we proposed a method based on the fuzzy inference system, and genetic and linear programming algorithms. We consider the crisp inputs and the symmetrical triangular fuzzy output. The proposed algorithm is applied to fit the fuzzy regression model. In addition, we apply a simulation example and a practical example in the field of machining process to assess the performance of the proposed method in dealing with practical problems in which the output variables have the nature of uncertainty and impression. Finally, we compare the performance of the suggested method with other methods. Based on the examples, the proposed method is verified for prediction. The results show that the proposed method reduces the error values to a minimum level and is more accurate than the Linear Programming (LP) and fuzzy weights with linear programming (FWLP) methods.

کلمات کلیدی:

Fuzzy regression, linear programming, Machining process, Adaptive Neuro-Fuzzy Inference System, Genetic Algorithm

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