

A multi model ensemble approach to process optimization considering model uncertainty

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Abstrak

ABSTRACT

Traditional approaches in constructing response surface models typically ignore model uncertainty. If the relationship between the input factors and output characteristics of a process is very complex, traditional model building approaches may have limited effectiveness. In this paper, we propose a multi model ensemble and then implement this ensemble model to optimize the process performance. To form a multi model ensemble, we need to determine the weights of the different models, that is, values indicating relative importance among the models. To determine the weights, a hybrid weighting method is proposed, in which both global and local weighting methods are taken into account. Based on the hybrid weights of different models, a multi model ensemble is built and optimized. An example is illustrated to verify the effectiveness of the proposed approach. The results show that the proposed model can achieve more accurate predictive capability and that a better process improvement is reached.