World Academy of Science, Engineering and Technology
International Journal of Computer and Systems Engineering
Vol:11, No:04, 2017

Sensitivity Analysis during the Optimization Process Using Genetic Algorithms

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Abstract : Genetic algorithms (GA) are applied to the solution of high-dimensional optimization problems. Additionally, sensitivity analysis (SA) is usually carried out to determine the effect on optimal solutions of changes in parameter values of the objective function. These two analyses (i.e., optimization and sensitivity analysis) are computationally intensive when applied to high-dimensional functions. The approach presented in this paper consists in performing the SA during the GA execution, by statistically analyzing the data obtained of running the GA. The advantage is that in this case SA does not involve making additional evaluations of the objective function and, consequently, this proposed approach requires less computational effort than conducting optimization and SA in two consecutive steps.

Keywords : optimization, sensitivity, genetic algorithms, model calibration
Conference Title : ICCCIA 2017 : International Conference on Computational Complexity and Intelligent Algorithms
Conference Location : Kyoto, Japan
Conference Dates : April 27-28, 2017

Open Science Index, Computer and Systems Engineering Vol:11, No:04, 2017 publications.waset.org/abstracts/62152.pdf