

عنوان مقاله:

Continuous Discrete Variable Optimization of Structures Using Approximation Methods

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خلاصه مقاله:

Optimum design of structures is achieved while the design variables are continuous and discrete. To reduce the computational work involved in the optimization process, all the functions that are expensive to evaluate, are approximated. To approximate these functions, a semi quadratic function is employed. Only the diagonal terms of the Hessian matrix are used and these elements are estimated from the first derivatives that are available from the previous iterations. The second order approximation is obtained for both direct and reciprocal approximations. In addition, a hybrid form of the approximation is introduced. With the help of this approximation, the continuous optimization is obtained. The results are used as the starting point for the discrete optimization. A new penalty function is introduced for discrete optimum design and the discrete variables are obtained in conjunction with the same function approximation. Examples are given and the numerical results are discussed.

کلمات کلیدی:

Continuous Optimization, Discrete Optimization, Approximation Concepts, Penalty Functions

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