عنوان مقاله:

Comparison of Gradient-based and Genetic Optimization Algorithms Applied to Wing Body Configuration

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خلاصه مقاله:

In this article a Genetic algorithm is compared with one of the gradient-based algorithm (Extended Linear Interior Penalty Function Method) in the context of aerodynamic shape optimization of a wing-body configuration for a better lift to drag ratio. Digital Datcom is used for aerodynamic predictions. Here we have chosen sixty five design variables for wing optimization and constant area planform constraint is applied. Solution of the multi-objective optimization problem showed that 10% improvement for lift coefficient in comparison with nearly 30% decrease in drag coefficient is possible. Moreover, five times fast convergence of the gradient-based algorithm respect to the genetic algorithm.

کلمات کلیدی:

Aerodynamics coefficients, Digital Datcom, Gradient-based algorithm, Genetic algorithm