Abstract

Due to increasing the number of decision-making criteria in today's ever complicated geometrical optimization problems, the traditional multiobjective optimization approaches, whether a priori, a posteriori or interactive's, found to be insufficient and ineffective. In this paper the drawbacks of the current algorithms are reviewed and the urgent need for inserting a learning component in the optimization loop is discussed. In the following the methodology of reactive optimization for evolutionary interactive multiobjective optimization for solving complicated geometrical decision-making problems is adopted. The proposed brain-computer optimization follows to the paradigm of learning while optimizing, through the use of online machine learning techniques as an integral part of a self-tuning optimization scheme. At the end the effectiveness of the approach to geometrical problems is emphasized by providing the study case of optimal design problem of curves and surfaces.

References


**Index Terms**

Computer Science  
Applied Mathematics

**Keywords**

Decision-making  
geometry  
optimization