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.

Index Terms

Computer Science
Applied Mathematics

Keywords

Decision-making, geometry, optimization