

METHODS FOR QUASI-EVEN GENERATION OF PARETO FRONTIER IN MULTIOBJECTIVE OPTIMIZATION USED IN ENGINEERING DESIGN

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A multiobjective optimization problem is considered in a general formulation. It is well known that the solution of the problem is not unique and represented in the objective space by a Pareto frontier. In an engineering design it can be important to provide a discrete representation of the entire Pareto surface. Meanwhile, the obtaining of a single Pareto solution may be time-consuming. Moreover, in real-life design a Decision Maker is able to analyse and reach an ultimate decision on the basis of only several possible solutions. Therefore, it is important to generate a Pareto set evenly representing the entire Pareto frontier.

In engineering design there are only a few methods capable to provide a well-distributed Pareto set. A comparative analysis is done between the Normal-Boundary Intersection method [1], Normal Constraint Method [2], Physical-Programming-based method [3, 4] and its recent modification [5, 6] elaborating the typical features of all of the previous three approaches.

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