

Master's Thesis

A descent method for robust multiobjective optimization
in the presence of implementation errors

Guidance

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Abstract

In real world applications, we often need to consider optimization problems involving more than one objective. They are called multiobjective optimization problems. Also, many practical problems have uncertainties in their data or in their solutions, and can be modelled as robust optimization problems. In this work, we are interested in the so-called robust multiobjective optimization, a subject that combines the multiobjective optimization and the robust optimization. We are particularly interested in problems where implementation errors are present, i.e., with imperfect realizations of the decision variables. Here, we define a new kind of robust Pareto optima, based on descent directions. We also propose a method, requiring only continuous differentiability of the objective function, so it can be applied to many problems. Moreover, we prove the convergence of the algorithm for the convex case. Finally, we present some numerical experiments to validate our method, and show that it can be interesting for nonconvex Pareto frontiers.