Faculty of Science

Department :Mathematics

Name: Mohamed Abd El-Hady Kassem

Title: Higher-order symmetric duality in vector optimization problem involving generalized cone-invex functions

Authors: Mohamed Abd El-Hady Kassem

Published In: Applied mathematics and computation 209(2009)

Impact Factor: 0.688

Abstract:

In this paper, a pair of higher order symmetric dual model in vector optimization problem is formulated. The higher-order cone-pseudoinvex and higher-order strongly cone-pseudoinvex functions are defined. The weak, strong and converse duality theorems are established using these defined functions.

Faculty of Science

Department: Mathematics

Name: Mohamed Abdel Hady Kassem

Title: Stability of vector optimization problems with fuzzy weights in the objective functions and fuzzy matrix parameters in the constraints

Authors: Mohamed Abdel-Hady Kassem

Published In: Information sciences,178, (2008)

Impact Factor: 1.003

Abstract:

The aim of this paper is to investigate the stability of multiobjective nonlinear programming problems with fuzzy weights in objective functions and fuzzy matrix parameters in the constraints and represent, in addition, the related dual problems for which the set of feasible parameters and the solvability set are studied. These fuzzy weights and fuzzy matrix parameters are characterized by fuzzy numbers. The existing results concerning the basic notions parametric space in convex programs are redefined and analyzed qualitatively under the concept of x-Pareto optimality. An illustrative example is given to clarify the obtained results.

Key words:

Multiobjective nonlinear programming, Parametric programming, Stability; Fuzzy parameters; Fuzzy numbers; x-Pareto optimality.

Faculty of Science

Department: Mathematics

Name: Mohamed Abdel Hady kassem

Title: Interactive stability cutting-plane algorithm for multiobjective nonlinear programming problems

Authors: Mohamed Abdel-Hady Kassem

Published In: Applied mathematics and computation, 192 (2007)

Impact Factor: 0.816

Abstract:

In this paper, we introduce an interactive stability cutting-plane algorithm for determining a best-compromise solution to a multiobjective nonlinear programming problems in situations with an implicitly defined utility function. The method is called "interactive stability cutting plane compromise programming (ISCPCP) ". The cutting planes which I am going to derive, are based on suitable pairwise trade-offs between the objective functions, as prescribed by the decision maker (DM) at each iterate generated by the algorithm. This algorithm requires no line searches, and generates iterates that are all contained in the efficient frontier. This feature facilitates the preference judgment of the decision maker, and permits an analyst to terminate short of optimality with an efficient near-optimal solution. Also, we investigate the stability of its efficient solutions which are obtained by using this algorithm. An illustrating example is presented to clarify this algorithm.

Key words:

Cutting-plane algorithm, multiobjective nonlinear programming, trade-off method,

best-compromise solution, stability

Faculty of Science

Department: Mathematics

Name: Mohamed Abdel Hady Kassem

Title: Stability achievement scalarization function for multiobjective nonlinear programming problems

Authors: Mohamed Abdel Hady Kassem

Published In: Applied Mathematical Modeling, 32 (2008)

Impact Factor: 0.583

Abstract:

In this paper, we present a method to determine the stability of nondominated criterion vectors using a modified weighted achievement scalarization metric. This method is based on the application of a particular objective function which scalarizes and parameterizes the original multiobjective nonlinear programming problem. Also, we show that this modified weighted achievement metric coincides with the metric introduced by Choo and Atkins [E-U. Choo, D.R. Atkins, Proper efficiency in nonconvex multiciriteria programming, Math. Oper. Res. 8 (1983) 467-470] and Kaliszewski [I. Kaliszewski, A. modified weighted Tchebycheff metric for multiple objective programming, Comput. Oper. Res. 14 (1987) 315-323] in cases when sets of all criterion vectors are finite or polyhedral.

Key works:

Multiobjective nonlinear programmingl Achievement scalarization function, nondominated solutions, stability