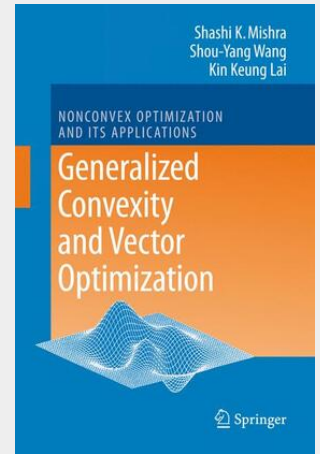


Generalized Convexity and Vector Optimization

The present lecture note is dedicated to the study of the optimality conditions and the duality results for nonlinear vector optimization problems, in finite and infinite dimensions. The problems include nonlinear vector optimization problems, s-metric dual problems, continuous-time vector optimization problems, relationships between vector optimization and variational inequality problems. Nonlinear vector optimization problems arise in several contexts such as in the building and interpretation of economic models; the study of various technological processes; the development of optimal choices in finance; management science; production processes; transportation problems and statistical decisions, etc. In preparing this lecture note a special effort has been made to obtain a self-contained treatment of the subjects; so we hope that this may be a suitable source for a beginner in this fast growing area of research, a semester graduate course in nonlinear programming, and a good reference book. This book may be useful to theoretical economists, engineers, and applied researchers involved in this area of active research. The lecture note is divided into eight chapters: Chapter 1 briefly deals with the notion of nonlinear programming problems with basic notations and preliminaries. Chapter 2 deals with various concepts of convex sets, convex functions, invex set, invex functions, quasiinvex functions, pseudoinvex functions, type I and generalized type I functions, V-invex functions, and uninvex functions.

The present book discusses the Kuhn-Tucker Optimality, Karush-Kuhn-Tucker Necessary and Sufficient Optimality Conditions in presence of various types of generalized convexity assumptions. Wolfe-type Duality, Mond-Weir type Duality, Mixed type Duality for Multiobjective optimization problems such as Nonlinear programming problems, Fractional programming problems, Nonsmooth programming problems, Nondifferentiable programming problems, Variational and Control problems under various types of generalized convexity assumptions.



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