This article is dedicated to Janusz Kacpryzk, an early pioneer not only in the theoretical development of fuzzy set theory and optimization, but showed the usefulness of this theory in practice. Without his efforts and sacrifices, many of us who have followed his lead would be much further behind than we are.

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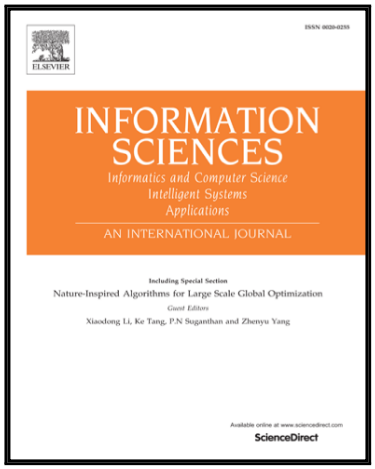

A Constraint Fuzzy Interval Analysis Approach to Fuzzy Optimization

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PII: S0020-0255(17)31014-9
DOI: 10.1016/j.ins.2017.10.026
Reference: INS 13201

To appear in: *Information Sciences*

Received date: 1 April 2017
Revised date: 3 October 2017
Accepted date: 8 October 2017

Please cite this article as: Weldon A. Lodwick, K. David Jamison, A Constraint Fuzzy Interval Analysis Approach to Fuzzy Optimization, *Information Sciences* (2017), doi: 10.1016/j.ins.2017.10.026

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A Constraint Fuzzy Interval Analysis Approach to Fuzzy Optimization

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October 12, 2017

Abstract

This article illustrates the effacacy of using constraint fuzzy analysis in fuzzy optimization. We present the theoretical approach and concretize this theory via examples.

Keywords: Possibility theory, fuzzy set theory, interval analysis, optimization

1. Introduction

One of the newest types of optimization is fuzzy optimization introduced in 1970 by R. Bellman and L. Zadeh [3]. The years of 1973/74 saw the operationalization of the ideas of Bellman/Zadeh by a number of researchers [1, 23, 29]. Possibilistic optimization, which was derived from fuzzy sets (see [28]), arose soon after [22]. Subsequently, not only have the fields of fuzzy and possibilistic optimization developed, many excellent surveys exist. Among these are [9, 10, 11, 18, 19]. The focus of this article is on possibilistic optimization as a subset of optimization under generalized uncertainty (see [17]). In particular, a new method for optimization under generalized uncertainty is proposed. What is new is that this method provides a more complete set of uncertainty information as part of the solution as well as providing only the uncertainty associated with the initial input data.

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