Foreword

The topic of multiobjective optimization is of utmost importance to most practitioners who deal with a variety of optimization tasks in real-world settings. The reason is that most real-world problems involve more than one objective. It is quite unusual to optimize along one dimension, whether this would be the cost of production, inventory levels or total profits. Rather, real-world problems involve multiple conflicting objectives (e.g., minimizing the weight of a battery while maximizing its life). Because of this, no one solution can be termed "the best"—and it is necessary to consider a set of trade-off optimal solutions.

Many classic optimization methods have been proposed to address multiobjective optimization problems. Most of these methods convert such problems into single objective formulations, which suffer from a few disadvantages. These include the necessity of making a variety of adjustments to a method and also the return of a single solution at the end of each run.

Hence, there is a huge interest in applications of computational intelligence methods for multiobjective optimization problems. Indeed, it is one of the hottest topics at present, so this book is coming out at the right time. The first part of the book deals with issues of applicability of various techniques, like particle swarm optimization, differential evolution, artificial immune systems, evolutionary algorithms, and multiobjective optimization problems. The second part of the book concentrates on various applications (e.g., wireless sensor network design, DNA sequence design, assignment problems, and military applications).

I am sure you will find this book quite useful and interesting, as it presents a variety of available techniques and some areas of potential applications.

Enjoy.

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