

# **Studies in Computational Intelligence**

Volume 655

## **Series editor**

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### *About this Series*

The series “Studies in Computational Intelligence” (SCI) publishes new developments and advances in the various areas of computational intelligence—quickly and with a high quality. The intent is to cover the theory, applications, and design methods of computational intelligence, as embedded in the fields of engineering, computer science, physics and life sciences, as well as the methodologies behind them. The series contains monographs, lecture notes and edited volumes in computational intelligence spanning the areas of neural networks, connectionist systems, genetic algorithms, evolutionary computation, artificial intelligence, cellular automata, self-organizing systems, soft computing, fuzzy systems, and hybrid intelligent systems. Of particular value to both the contributors and the readership are the short publication timeframe and the worldwide distribution, which enable both wide and rapid dissemination of research output.

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Stefka Fidanova  
Editor

# Recent Advances in Computational Optimization

Results of the Workshop on Computational  
Optimization WCO 2015

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# Preface

Many real-world problems arising in engineering, economics, medicine, and other domains can be formulated as optimization tasks. Every day we solve optimization problems. Optimization occurs in minimizing time and cost or maximizing profit, quality, and efficiency. Such problems are frequently characterized by nonconvex, nondifferentiable, discontinuous, noisy or dynamic objective functions, and constraints which ask for adequate computational methods.

This volume is a result of vivid and fruitful discussions held during the workshop on computational optimization. The participants have agreed that the relevance of the conference topic and the quality of the contributions have clearly suggested that a more comprehensive collection of extended contributions devoted to the area would be very welcome and would certainly contribute to a wider exposure and proliferation of the field and ideas.

This volume includes important real problems such as parameter settings for controlling processes in bioreactor, control of ethanol production, minimal convex hull with application in routing algorithms, graph coloring, flow design in photonic data transport system, predicting indoor temperature, crisis control center monitoring, fuel consumption of helicopters, portfolio selection, GPS surveying, and so on. Some of them can be solved applying traditional numerical methods, but others need huge amount of computational resources. Therefore it is more appropriate to develop an algorithms based on some metaheuristic method like evolutionary computation, ant colony optimization, constrain programming, etc., for them.

Sofia, Bulgaria  
April 2016

Stefka Fidanova  
Co-Chair, WCO 2015

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Workshop on Computational Optimization (WCO 2015) is organized in the framework of Federated Conference on Computer Science and Information Systems (FedCSIS)—2015

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