

Preface

The metaheuristics appeared in the eighties. These global optimization algorithms are stochastic and can be applied to any problem, at the condition it is formulated as a mono-objective or multiobjective optimization problem. They are called nature inspired because their origin comes from the observation of natural behavior: analogy with physics (simulated annealing, microcanonical annealing), with biology (evolutionary algorithms) or with ethology (ant colonies, particle swarms). They also can be extended, particularly to multiobjective optimization. Algorithms, techniques, and methods based on metaheuristic paradigm have been successfully applied to a wide range of complex problems. From the perspective of science development, metaheuristics is an emerging interdisciplinary area between natural sciences, biology, sociology, and computer science. Its rapid growth is a natural product of the rapid development of interdisciplinary research today.

Medical imaging has established itself as a very important research area primarily due to the rapid development of sensors, communication technologies, databases, processors, etc. The phenomenal growth in the technologies and applications for medical imaging has allowed for many interesting results concerning, Medical image acquisition, Medical image processing, and Telemedicine.

This book “Metaheuristics for Medicine and Biology” aims at providing a review for researchers interested in the advances and applications of metaheuristics to biomedical engineering. The book is oriented towards both theoretical and applications aspects of metaheuristics to biomedical imaging.

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