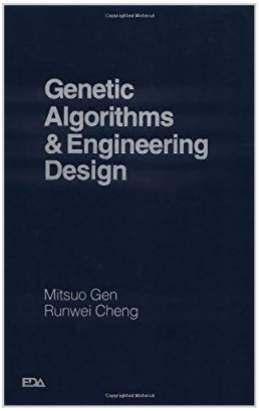

Genetic Algorithms and Engineering Design (Engineering Design and Automation)

By Mitsuo Gen, Runwei Cheng

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The last few years have seen important advances in the use of genetic algorithms to address challenging optimization problems in industrial engineering. Genetic Algorithms and Engineering Design is the only book to cover the most recent technologies and their application to manufacturing, presenting a comprehensive and fully up-to-date treatment of genetic algorithms in industrial engineering and operations research.

Beginning with a tutorial on genetic algorithm fundamentals and their use in solving constrained and combinatorial optimization problems, the book applies these techniques to problems in specific areas--sequencing, scheduling and production plans, transportation and vehicle routing, facility layout, location-allocation, and more. Each topic features a clearly written problem description, mathematical model, and summary of conventional heuristic algorithms. All algorithms are explained in intuitive, rather than highly-technical, language and are reinforced with illustrative figures and numerical examples.

Written by two internationally acknowledged experts in the field, Genetic Algorithms and Engineering Design features original material on the foundation and application of genetic algorithms, and also standardizes the terms and symbols used in other sources--making this complex subject truly accessible to the beginner as well as to the more advanced reader.

Ideal for both self-study and classroom use, this self-contained reference provides indispensable state-of-the-art guidance to professionals and students working in industrial engineering, management science, operations research, computer science, and artificial intelligence. The only comprehensive, state-of-the-art treatment available on the use of genetic algorithms in industrial engineering and operations research . . .

Written by internationally recognized experts in the field of genetic algorithms and artificial intelligence, Genetic Algorithms and Engineering Design provides total coverage of current technologies and their application to manufacturing systems. Incorporating original material on the foundation and application of

genetic algorithms, this unique resource also standardizes the terms and symbols used in other sources--making this complex subject truly accessible to students as well as experienced professionals. Designed for clarity and ease of use, this self-contained reference:
* Provides a comprehensive survey of selection strategies, penalty techniques, and genetic operators used for constrained and combinatorial optimization problems
* Shows how to use genetic algorithms to make production schedules, solve facility/location problems, make transportation/vehicle routing plans, enhance system reliability, and much more
* Contains detailed numerical examples, plus more than 160 auxiliary figures to make solution procedures transparent and understandable

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Editorial Review

From the Publisher
This self-contained reference explains genetic algorithms, the probabilistic search techniques based on the principles of biological evolution which permit engineers to analyze large numbers of variables. It addresses this important advance in AI, which can be used to better design and produce high quality products. The book presents the state-of-the-art in this field as applied to the engineering design process. All algorithms have been programmed in C and source codes are available in the appendix to help readers tailor the programs to fit their specific needs.

From the Inside Flap
The last few years have seen important advances in the use of genetic algorithms to address challenging optimization problems in industrial engineering. Genetic Algorithms and Engineering Design is the only book to cover the most recent technologies and their application to manufacturing, presenting a comprehensive and fully up-to-date treatment of genetic algorithms in industrial engineering and operations research. Beginning with a tutorial on genetic algorithm fundamentals and their use in solving constrained and combinatorial optimization problems, the book applies these techniques to problems in specific areas—sequencing, scheduling and production plans, transportation and vehicle routing, facility layout, location-allocation, and more. Each topic features a clearly written problem description, mathematical model, and summary of conventional heuristic algorithms. All algorithms are explained in intuitive, rather than highly-technical, language and are reinforced with illustrative figures and numerical examples. Written by two internationally acknowledged experts in the field, Genetic Algorithms and Engineering Design features original material on the foundation and application of genetic algorithms, and also standardizes the terms and symbols used in other sources—making this complex subject truly accessible to the beginner as well as to the more advanced reader. Ideal for both self-study and classroom use, this self-contained reference provides indispensable state-of-the-art guidance to professionals and students working in industrial engineering, management science, operations research, computer science, and artificial intelligence.

From the Back Cover
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Julianna Pepper:

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