
A Genetic Algorithm For Discovering Classification Rules

Soft Computing for Data Mining Applications
Genetic Algorithms in Search, Optimization, and Machine Learning
Equation Discovery for Structural Drift Estimation Using Genetic Algorithm with Sparse Regression
Practical Handbook of Genetic Algorithms
Pattern Mining with Evolutionary Algorithms
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An Introduction to Genetic Algorithms
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Multi-Objective Evolutionary Algorithms for Knowledge Discovery from Databases
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Advances in Evolutionary Computing

Multi-Objective Evolutionary Algorithms for Knowledge Discovery from Databases
Genetic Algorithms and Genetic Programming in Computational Finance
Research Anthology on Multi-Industry Uses of Genetic Programming and Algorithms
Handbook of Genetic Algorithms
Data Mining and Knowledge Discovery Approaches Based on Rule Induction Techniques
Parallel Genetic Algorithms for Financial Pattern Discovery Using GPUs
Genetic Algorithms for Pattern Recognition
Fuzzy Modeling and Genetic Algorithms for Data Mining and Exploration
Principles of Data Mining and Knowledge Discovery
Advanced Methods for Knowledge Discovery from Complex Data
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Genetic Algorithms and Engineering Design
Genetic Algorithms in Electromagnetics
Introduction to Genetic Algorithms

*A Genetic Algorithm For Discovering
Classification Rules*

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REEVES PAUL

Soft Computing for Data Mining Applications Springer
This book outlines the core theory and practice of data mining and knowledge discovery (DM & KD) examining theoretical foundations for various methods, and presenting an array of examples, many drawn from real-life applications. Most theoretical developments are accompanied by extensive empirical analysis, offering a deep insight into both theoretical and practical aspects of the subject. The book presents the combined research experiences of 40 expert contributors of world renown.

Genetic Algorithms in Search, Optimization, and Machine Learning Springer Science & Business Media

A gentle introduction to genetic algorithms. Genetic algorithms revisited: mathematical foundations. Computer implementation of a genetic algorithm. Some applications of genetic algorithms. Advanced operators and techniques in genetic search.

Introduction to genetics-based machine learning. Applications of genetics-based machine learning. A look back, a glance ahead. A review of combinatorics and elementary probability. Pascal with random number generation for fortran, basic, and cobol programmers. A simple genetic algorithm (SGA) in pascal. A simple classifier system(SCS) in pascal. Partition coefficient transforms for problem-coding analysis.

Equation Discovery for Structural Drift Estimation Using Genetic

Algorithm with Sparse Regression IGI Global

The mathematics employed by genetic algorithms (GAs) are among the most exciting discoveries of the last few decades. But what exactly is a genetic algorithm? A genetic algorithm is a problem-solving method that uses genetics as its model of problem solving. It applies the rules of reproduction, gene crossover, and mutation to pseudo-organisms.

Practical Handbook of Genetic Algorithms Springer

Data Mining is the science and technology of exploring large and complex bodies of data in order to discover useful patterns. It is extremely important because it enables modeling and knowledge extraction from abundant data availability. This book introduces soft computing methods extending the envelope of problems that data mining can solve efficiently. It presents practical soft-computing approaches in data mining and includes various real-world case studies with detailed results.

Pattern Mining with Evolutionary Algorithms Springer Science & Business Media

* This book deals with the fundamentals of genetic algorithms and their applications in a variety of different areas of engineering and science * Most significant update to the second edition is the MATLAB codes that accompany the text * Provides a thorough discussion of hybrid genetic algorithms * Features more examples than first edition

Genetic Algorithms and Genetic Programming Springer Science & Business Media

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

Genetic Algorithm Essentials Springer Science & Business Media

After a decade of development, genetic algorithms and genetic programming have become a widely accepted toolkit for computational finance. *Genetic Algorithms and Genetic Programming in Computational Finance* is a pioneering volume devoted entirely to a systematic and comprehensive review of this subject. Chapters cover various areas of computational finance, including financial forecasting, trading strategies development, cash flow management, option pricing, portfolio management, volatility modeling, arbitrage, and agent-based simulations of artificial stock markets. Two tutorial chapters are also included to help readers quickly grasp the essence of these

tools. Finally, a menu-driven software program, Simple GP, accompanies the volume, which will enable readers without a strong programming background to gain hands-on experience in dealing with much of the technical material introduced in this work.

Introduction to Genetic Algorithms Springer Science & Business Media

This book constitutes the refereed proceedings of the 10th International Conference on Parallel Problem Solving from Nature, PPSN 2008, held in Dortmund, Germany, in September 2008. The 114 revised full papers presented were carefully reviewed and selected from 206 submissions. The conference covers a wide range of topics, such as evolutionary computation, quantum computation, molecular computation, neural computation, artificial life, swarm intelligence, artificial ant systems, artificial immune systems, self-organizing systems, emergent behaviors, and applications to real-world problems. The papers are organized in topical sections on formal theory, new techniques, experimental analysis, multiobjective optimization, hybrid methods, and applications.

Knowledge Discovery from Legal Databases John Wiley & Sons

The authors have consolidated their research work in this volume titled *Soft Computing for Data Mining Applications*. The monograph gives an insight into the research in the fields of Data Mining in combination with Soft Computing methodologies. In these days, the data continues to grow - potentially. Much of the data is implicitly or explicitly imprecise. Database discovery seeks to discover noteworthy, unrecognized associations between the data items in the existing database. The potential of

discovery comes from the realization that alternate contexts may reveal additional valuable information. The rate at which the data is stored is growing at a phenomenal rate.

As a result, traditional ad hoc mixtures of statistical techniques and data management tools are no longer adequate for analyzing this vast collection of data.

Several domains where large volumes of data are stored in centralized or

distributed databases include applications like in electronic commerce, bio-informatics, computer security, Web intelligence, intelligent learning database

systems, finance, marketing, healthcare, telecommunications, and other fields. Efficient tools and algorithms for knowledge discovery in large data sets have been devised during the recent years. These methods exploit the capability of computers to search huge amounts of data in a fast and effective manner. However, the data to be analyzed is imprecise and affected with uncertainty. In the case of heterogeneous data sources such as text and video, the data might moreover be ambiguous and partly conflicting.

Besides, patterns and relationships of interest are usually approximate. Thus, in order to make the information mining process more robust it requires tolerance toward imprecision, uncertainty and exceptions.

An Introduction to Genetic Algorithms Springer

This book provides a collection of forty articles containing new material on both theoretical aspects of Evolutionary Computing (EC), and demonstrating the usefulness/success of it for various kinds of large-scale real world problems. Around 23 articles deal with various theoretical aspects of EC and 17 articles

demonstrate the success of EC methodologies. These articles are written by leading experts of the field from different countries all over the world.

The Practical Handbook of Genetic Algorithms Springer

This Brief presents a study of SAX/GA, an algorithm to optimize market trading strategies, to understand how the sequential implementation of SAX/GA and genetic operators work to optimize possible solutions. This study is later used as the baseline for the development of parallel techniques capable of exploring the identified points of parallelism that simply focus on accelerating the heavy duty fitness function to a full GPU accelerated GA.

Evolutionary and Swarm Intelligence Algorithms CRC Press

This book constitutes the refereed proceedings of the 4th European Conference on Principles and Practice of Knowledge Discovery in Databases, PKDD 2000, held in Lyon, France in September 2000. The 86 revised papers included in the book correspond to the 29 oral presentations and 57 posters presented at the conference. They were carefully reviewed and selected from 147 submissions. The book offers topical sections on new directions, rules and trees, databases and reward-based learning, classification, association rules and exceptions, instance-based discovery, clustering, and time series analysis.

Multi-Objective Evolutionary Algorithms for Knowledge Discovery from Databases Addison-Wesley Professional

This book offers a basic introduction to genetic algorithms. It provides a detailed explanation of genetic algorithm concepts and examines numerous genetic algorithm optimization problems. In addition, the book presents implementation of

optimization problems using C and C++ as well as simulated solutions for genetic algorithm problems using MATLAB 7.0. It also includes application case studies on genetic algorithms in emerging fields.

Computational Intelligence for Big Data Analysis MIT Press

This book provides a comprehensive overview of the field of pattern mining with evolutionary algorithms. To do so, it covers formal definitions about patterns, patterns mining, type of patterns and the usefulness of patterns in the knowledge discovery process. As it is described within the book, the discovery process suffers from both high runtime and memory requirements, especially when high dimensional datasets are analyzed. To solve this issue, many pruning strategies have been developed. Nevertheless, with the growing interest in the storage of information, more and more datasets comprise such a dimensionality that the discovery of interesting patterns becomes a challenging process. In this regard, the use of evolutionary algorithms for mining pattern enables the computation capacity to be reduced, providing sufficiently good solutions. This book offers a survey on evolutionary computation with particular emphasis on genetic algorithms and genetic programming. Also included is an analysis of the set of quality measures most widely used in the field of pattern mining with evolutionary algorithms. This book serves as a review of the most important evolutionary algorithms for pattern mining. It considers the analysis of different algorithms for mining different type of patterns and relationships between patterns, such as frequent patterns, infrequent patterns, patterns defined in a continuous domain, or even positive and negative patterns. A completely new problem

in the pattern mining field, mining of exceptional relationships between patterns, is discussed. In this problem the goal is to identify patterns which distribution is exceptionally different from the distribution in the complete set of data records. Finally, the book deals with the subgroup discovery task, a method to identify a subgroup of interesting patterns that is related to a dependent variable or target attribute. This subgroup of patterns satisfies two essential conditions: interpretability and interestingness.

Feature Engineering and Selection Oxford University Press

This book is a delight for academics, researchers and professionals working in evolutionary and swarm computing, computational intelligence, machine learning and engineering design, as well as search and optimization in general. It provides an introduction to the design and development of a number of popular and recent swarm and evolutionary algorithms with a focus on their applications in engineering problems in diverse domains. The topics discussed include particle swarm optimization, the artificial bee colony algorithm, Spider Monkey optimization algorithm, genetic algorithms, constrained multi-objective evolutionary algorithms, genetic programming, and evolutionary fuzzy systems. A friendly and informative treatment of the topics makes this book an ideal reference for beginners and those with experience alike.

[Data Mining and Knowledge Discovery with Evolutionary Algorithms](#) MIT Press

This book introduces readers to genetic algorithms (GAs) with an emphasis on making the concepts, algorithms, and applications discussed as easy to understand as possible. Further, it avoids a

great deal of formalisms and thus opens the subject to a broader audience in comparison to manuscripts overloaded by notations and equations. The book is divided into three parts, the first of which provides an introduction to GAs, starting with basic concepts like evolutionary operators and continuing with an overview of strategies for tuning and controlling parameters. In turn, the second part focuses on solution space variants like multimodal, constrained, and multi-objective solution spaces. Lastly, the third part briefly introduces theoretical tools for GAs, the intersections and hybridizations with machine learning, and highlights selected promising applications.

Practical Genetic Algorithms Springer

This book integrates two areas of computer science, namely data mining and evolutionary algorithms. Both these areas have become increasingly popular in the last few years, and their integration is currently an active research area. In general, data mining consists of extracting knowledge from data. The motivation for applying evolutionary algorithms to data mining is that evolutionary algorithms are robust search methods which perform a global search in the space of candidate solutions. This book emphasizes the importance of discovering comprehensible, interesting knowledge, which is potentially useful for intelligent decision making. The text explains both basic concepts and advanced topics

Hands-On Genetic Algorithms with Python CRC-Press

This book is the result of several years of research trying to better characterize parallel genetic algorithms (pGAs) as a powerful tool for optimization, search, and learning. Readers can learn how to solve complex tasks by reducing their high

computational times. Dealing with two scientific fields (parallelism and GAs) is always difficult, and the book seeks at gracefully introducing from basic concepts to advanced topics. The presentation is structured in three parts. The first one is targeted to the algorithms themselves, discussing their components, the physical parallelism, and best practices in using and evaluating them. A second part deals with the theory for pGAs, with an eye on theory-to-practice issues. A final third part offers a very wide study of pGAs as practical problem solvers, addressing domains such as natural language processing, circuits design, scheduling, and genomics. This volume will be helpful both for researchers and practitioners. The first part shows pGAs to either beginners and mature researchers looking for a unified view of the two fields: GAs and parallelism. The second part partially solves (and also opens) new investigation lines in theory of pGAs. The third part can be accessed independently for readers interested in applications. The result is an excellent source of information on the state of the art and future developments in parallel GAs.

Pattern Discovery in Biomolecular Data John Wiley & Sons

Content Description # "A Bradford book." # Includes bibliographical references (p.) and index.

The Simple Genetic Algorithm CRC Press

Explore the ever-growing world of genetic algorithms to solve search, optimization, and AI-related tasks, and improve machine learning models using Python libraries such as DEAP, scikit-learn, and NumPy Key Features Explore the ins and outs of genetic algorithms with this fast-paced guide Implement tasks such as feature selection, search optimization, and cluster analysis using

PythonSolve combinatorial problems, optimize functions, and enhance the performance of artificial intelligence applicationsBook Description Genetic algorithms are a family of search, optimization, and learning algorithms inspired by the principles of natural evolution. By imitating the evolutionary process, genetic algorithms can overcome hurdles encountered in traditional search algorithms and provide high-quality solutions for a variety of problems. This book will help you get to grips with a powerful yet simple approach to applying genetic algorithms to a wide range of tasks using Python, covering the latest developments in artificial intelligence. After introducing you to genetic algorithms and their principles of operation, you'll understand how they differ from traditional algorithms and what types of problems they can solve. You'll then discover how they can be applied to search and optimization problems, such as planning, scheduling, gaming, and analytics. As you advance, you'll also learn how to use genetic algorithms to improve your machine learning and deep learning models, solve reinforcement learning tasks, and perform image reconstruction. Finally, you'll

cover several related technologies that can open up new possibilities for future applications. By the end of this book, you'll have hands-on experience of applying genetic algorithms in artificial intelligence as well as in numerous other domains. What you will learnUnderstand how to use state-of-the-art Python tools to create genetic algorithm-based applicationsUse genetic algorithms to optimize functions and solve planning and scheduling problemsEnhance the performance of machine learning models and optimize deep learning network architectureApply genetic algorithms to reinforcement learning tasks using OpenAI GymExplore how images can be reconstructed using a set of semi-transparent shapesDiscover other bio-inspired techniques, such as genetic programming and particle swarm optimizationWho this book is for This book is for software developers, data scientists, and AI enthusiasts who want to use genetic algorithms to carry out intelligent tasks in their applications. Working knowledge of Python and basic knowledge of mathematics and computer science will help you get the most out of this book.