Genetic Algorithms In Search, Optimization, And Machine Learning
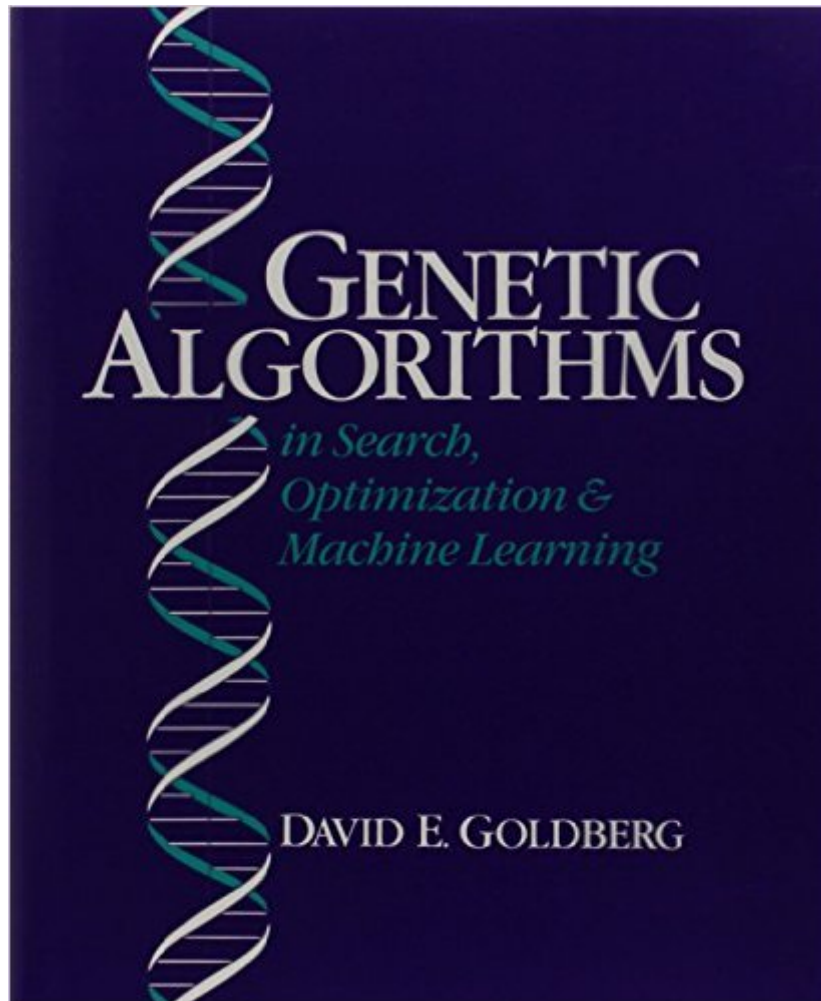
GENETIC ALGORITHMS
in Search,
Optimization &
Machine Learning

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Synopsis

This book describes the theory, operation, and application of genetic algorithms-search algorithms based on the mechanics of natural selection and genetics.

Book Information

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Customer Reviews

One seldom finds a book as well-written as this one. The underlying mathematics are explained in a very accessible manner, yet with enough rigor to fully explain the "partial schemata" theory which is so important to understanding when and where GenAlgs can be applied. It is the lack of coverage of this theory which causes so much misunderstanding and disappointment in the power of genetic algorithms.But beyond the background math (which makes up a small part of the book) this is really a tutorial on implementing GenAlgs, and it is an excellent one. The sample code is great, and the implementations are developed throughout the book, allowing the reader to implement simple (but functional) algorithms after reading only the first few chapters, but building to very sophisticated and modern techniques by the end of the book.A great find.

This book gives a good introduction to genetic algorithms for a general undergraduate audience. However, it is important to note that it does not cover Evolutionary Strategies, an approach to evolutionary computing that I have found quite useful since it is specifically designed for Euclidean space optimization problems where many if not most interesting optimization problems are formulated in (take for example the problem of determining the weights of a neural network that

minimizes the network's overall classification error). Nor does it cover evolutionary programming (not to be confused with genetic programming). So after reading this book, I recommend (for the mathematically adventurous) Thomas Back's "Evolutionary Algorithms in Theory and Practice: Evolution Strategies, Evolutionary Programming, Genetic Algorithms"ISBN: 0195099710Happy reading and enjoy the fascinating world of evolutionary computation!

I was looking for an automated approach to finding an optimum run sequence through a changeover matrix. The programming examples gave me the elements I needed to experiment and then fine tune the approach for a working search algorithm. I found the book a good companion in my "voyage of discovery".For me, the book works two levels, the basic pieces to "play with" are presented clearly in chapters 1 and 3, and practical implementation suggestions are spread throughout the text.By developing programs in Visual Basic, experimenting with search parameters and re-reading sections of this book - I learned something new!

More than seven years after publication, David Goldberg's clear prose, straightforward code examples, and solid theoretical coverage keeps "the blue book" head-and-shoulders above any other text on this most intriguing of algorithmic directions. This is the book that lifted genetic algorithms from obscurity to one of the most discussed (and misunderstood) of emerging technologies.Goldberg did not invent genetic algorithms (that honor goes to either Nature or John Holland, depending on your personal belief system), but he did make sure that they could be understood by any interested programmer. The source code is in Pascal, which may not be to everyone's taste, but is certainly readable by anyone with a programming background.- Larry O'Brien (Editor, AI Expert Magazine 1990-1994

I took an AI class and bought this. The professor is very old-school and still uses overhead projectors and hands out paper notes instead of something like PDF.The book is definitely dated here in 2013, but the ideas presented therein are valid. I would look elsewhere for a modern genetic algorithms book, though. Unless your professor is old-school and has textbooks older than you are.The code examples are largely irrelevant: nobody uses Pascal anymore, not even for teaching. So if you want to play along and run the code you either need to locate an old 386 and CRT monitor, or translate the code into something that actually runs in this century.

This is the only book I have read about Genetic algorithms, but it seems that it covers the field pretty

well.In the preface it says that it is aimed a beginning graduate students, and since I have a M.Sc. in Computer Science and I just wanted to read it for fun I thought it would be for me. But I found that it uses way to many words to explain very basic things (e.g. almost a page to explain binary numbers) while many of the difficult equations just was presented without proper proof. So the book could have better if it had been cut down to a third and then supplemented with the proper proofs. So if you are a Computer Science graduate I cannot recommend this book. Given the fine books that Addison-Wesley usually publish I was quite disappointed with this one.But if you are a student in other fields and just want an "intuitive" impression of Genetic Algorithms without the mathematical rigor it is probably good.Chapter 1: An introduction to genetic algorithms with examples. This chapter is excellent.Chapter 2: The mathematical theory behind genetic algorithms. This is not done very well since many of the equations isn't proven or explained properly.Chapter 3: A Pascal program for the sample in chapter 1. This seems unneccesary since any proficient programmer easily could have implemented the program based on the information in chapter 1.Chapter 4: The history of genetic algorithms and a number of applications all taken from research. Both seem unneccesary.Chapter 5: An extension of the techniques presented in chapter 1. This is good.Chapter 6-7: Introduction to machine learning. Is ok.Chapter 8: A concluding chapter without any real new information.

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