Biologically Inspired Algorithms for Financial Modelling (Natural Computing Series)

Anthony Brabazon, Michael O'Neill
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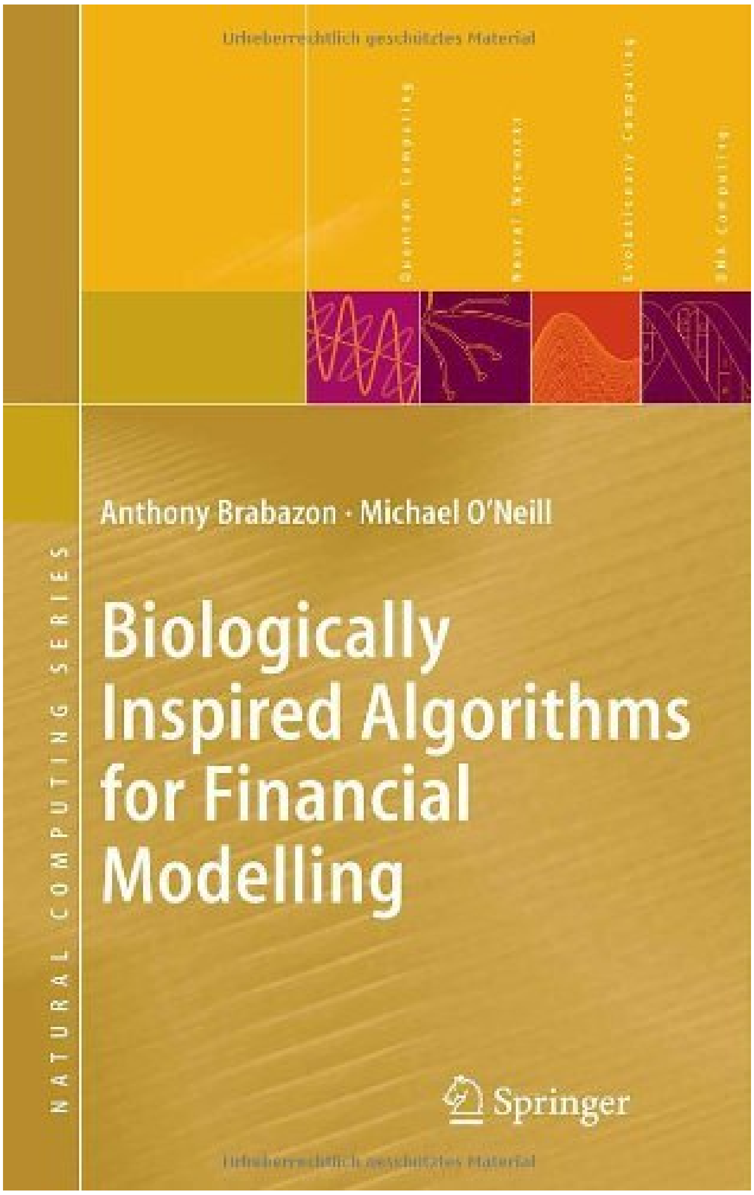

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Anthony Brabazon, Michael O'Neill : Biologically Inspired Algorithms for Financial Modelling (Natural Computing Series) before purchasing it in order to gage whether or not it would be worth my time, and all praised Biologically Inspired Algorithms for Financial Modelling (Natural Computing Series):

2 of 3 people found the following review helpful. Good book - but way too expensive!By Marc PetterssonAlthough

this is a good book on using bio-inspired algorithms for financial modelling, I cannot give it five stars for a simple reason: Its price currently being somewhere around 90$ is way over the top for a book containing only 275 pages. (Even the Kindle-edition of the book is approaching 90$.) The books content is just not worth that much. Compare it for instance to Barry Johnson's highly recommendable book "Algorithmic Trading and DMA: An introduction to direct access trading strategies", consisting of nearly 600 pages (though paperback only), having a price of around 40$ - 50$. Or Stephen Marsland's book "Machine Learning: An Algorithmic Perspective (Chapman Hall/Crc Machine Learning Pattern Recognition)" (406 pages) at a price of roughly 60$ - 70$.Anyway, let's discuss the books contents. The book is well written and clearly structured, so it's fun to read it. It basically consists of three parts: The first part explains the theories and introduces several bio-inspired algorithms and how they work. The second part covers implementation details and gives hints about typical implementation problems you'll run into. It also gives you a really brief introduction to technical analysis. And the third part contains case studies where for most algorithm types one implementation example is given.Algorithms covered by the book are 1. neural networks, 2. genetic algorithms, 3. grammatical evolution, 4. particle swarm models, 5. ant colony models and 6. artificial immune systems. These (and only these) are all well explained, and pseudo-code examples are often given. You'll however still have to bring your own programming knowledge to be able to implement these algorithms yourself and you'll certainly have to have a basic understanding of statistics. Not covered in the book however are for instance P-systems/membrane systems and cellular automata.What is important to know also is that the book mainly targets at modelling stock exchange trading situations - not financial situations in general. Typical problems addressed include portfolio management of stocks or bonds including classification decisions, trend analysis and prediction and therefore buy/sell/out decisions for traders.So to sum it up all: It's a good book, it's just too expensive.7 of 9 people found the following review helpful. Return to senderBy Dimitri Shvorob"Biologically inspired optimization algorithms with financial applications" would be a better title. Apart from the models embedded in the algorithms themselves, the models on hand are statistical - regression and classification - used to predict stock prices and corporate defaults.The first problem is initially handled with multilayer perceptrons: having settled on a specific network structure, one employs backpropagation to search for optimal network weights, effectively coefficients in a non-linear regression. Next, one makes the network structure part of the optimization problem: a genetic algorithm (GA) experiments with different configurations (and starting weights), while backpropagation continues to tune coefficients for each profile. A distinct approach employs GA alone, developing it into genetic programming (GP), which performs a "smart" search over sequences of operator/value strings, forming transformation-defining expressions.Genetic programming accounts for a third of Part I and 6 out of 10 case studies in Part III. It seems fair to judge the book by how well it covers its central topic. It fails. Things get difficult to follow just as GP is introduced on p. 54: a "syntax tree" is shown without any explanation - then again, the section on radial-basis-function networks never said what a radial-basis function is - and the plausible question about how GA can handle the valid-syntax constraint is unanswered. Details pile on, onto a foundation that's not there. Implementation remains unclear, and if a book about GP does not tell you how to build GP, what good is it?Subpar writing is found elsewhere in Part I, especially in the sections on radial-basis-function networks and ant-colony optimization (ACO). Two recurring annoyances are failure to spell out an algorithm - ACO again, not detailed until Part III - and gratuitous biology coverage. (Artificial immune system algorithms: biology 5 pages, algorithms 2 pages). Scattered typos give extra evidence of limited editorial effort.The short Part II will be interesting for those new to finance; others will find the information decently presented but familiar. Part II reviews "technical indicators", and Part III, of course, presents 10 finance-themed case studies. In my view, these are unremarkable - imagine a short project in a master's computer-science course - and at best clarify the points left out in Part I. (Chapter 18, for example; impressively, the case study forgets to finish its analysis)."BIAFM" is not up to the standards that I expect from Springer, and does not justify the investment of $90.1 of 2 people found the following review helpful. Very nice book - provides a good overviewBy jc_1970I usually don't spend time writing reviews, but I did want to comment on the verynegative review made in Dec 2009 because I found this review misleading.I am interested in both Biologically Inspired Algorithms (BIA) and Financial Modelling (FM).I have done a lot of research myself using Neural Networks, and I am currently workingon a project regarding Financial Modelling.I have read only parts of the book yet, but I already found those chapters veryhelpful. The fields of BIA and FM are very broad so, of course, no text book canexhaustively cover both fields. Nevertheless, the authors explain very nicely the fundamentalsteps that one needs to consider when building a system which uses BIA for FM.The first parts of the book introduce the fundamental aspects (BIA and FM) whereas thethird part of the book provides case studies.I liked the book (as far as I have read it yet) very much: It is well structured andwell written and it provides a good overview. For in depth information it provides a lotof references.So for everyone interested in getting an overview of the topic this book is a clearrecommendation. I would have given 5 stars, but I have to admit that at some points a bitmore detail would not have gone amiss.

Predicting the future for financial gain is a difficult, sometimes profitable activity. The focus of this book is the application of biologically inspired algorithms (BIAs) to financial modelling.In a detailed introduction, the authors explain computer trading on financial markets and the difficulties faced in financial market modelling. Then Part I provides a thorough guide to the various bioinspired methodologies ndash; neural networks, evolutionary computing (particularly genetic algorithms and grammatical evolution), particle swarm and ant colony optimization, and immune systems. Part II brings the reader through the development of market trading systems. Finally, Part III examines real-world case studies where BIA methodologies are employed to construct trading systems in equity and foreign exchange markets, and for the prediction of corporate bond ratings and corporate failures.The book was written for those in the finance community who want to apply BIAs in financial modelling, and for computer scientists who want an introduction to this growing application domain.

From the reviews: "Anthony Brabazon and Michael Orsquo;Neill hellip; have just published an interesting book that introduces a wide range of biologically inspired algorithms and their applications in financial modelling. hellip; This book is a well-written, easy to read, brief introduction to the state-of-the-art biologically inspired algorithms." (Mak Kaboudan, Genetic Programming and Evolvable Machines, Vol. 7, 2006) ldquo;The objective of this book is to provide an introduction to biologically inspired algorithms and some tightly scoped practical examples in finance. hellip; provides some new insights and alternative tools for the financial modelling toolbox. hellip; The goal and objective of the book is to provide practical examples using these evolutionary algorithms and it does that decently hellip; . Overall I found the book very enlightening hellip; and it has provided ideas and alternative ways to think about solutions.rdquo; (Brad G. Kyer, SIGACT News, Vol. 40 (4), 2009)About the AuthorAnthony Brabazon [B. Comm (UCD), DPA (UCD), Dip Stats (Dub), MS (Statistics) (Stanford), MS (Operations Research) (Stanford), MBA (Heriot-Watt), DBA (Kingston), FCA, ACMA] lectures at University College Dublin. His research interests include mathematical decision models, evolutionary computation, and the application of computational intelligence to the domain of finance. He has published in excess of 100 papers in journals, conferences and professional publications, and has been a member of the programme committee at both EuroGP and GECCO conferences, as well as acting as reviewer for several journals. He has also acted as consultant to a wide range of public and private companies in several countries. He currently serves as a member of the CCAB (Ireland) Consultative Committee on Accounting Standards, and is a former Secretary and Treasurer of the Irish Accounting and Finance Association. Prior to joining UCD, he worked in the banking sector, and for KPMG.Michael O'Neill [BSc. (UCD), PhD (UL)] is a lecturer in the Department of Computer Science and Information Systems at the University of Limerick. He has over 70 publications on biologically inspired algorithms (BIAs). He coauthored the Springer title "Grammatical Evolution -- Evolutionary Automatic Programming in an Arbitrary Language", Genetic Programming Series, 2003, 160 pp., ISBN 1-4020-7444-1. He is one of the two original developers of the Grammatical Evolution algorithm, research that spawned an annual invited tutorial at the largest evolutionary computation conference and an international workshop, and is also on a number of relevant organising committees (e.g., GECCO 2005). Michael is a regular reviewer for the leading evolutionary computation (EC) journals, namely IEEE Trans. on Evolutionary Computation, MIT Press's Evolutionary Computation, and Springer's Genetic Programming and Evolvable Hardware journal.