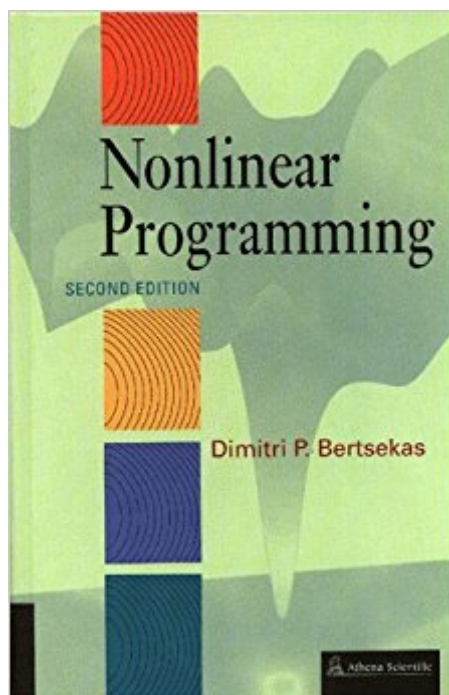


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# Nonlinear Programming



## Synopsis

This extensive rigorous textbook, developed through instruction at MIT, focuses on nonlinear and other types of optimization: iterative algorithms for constrained and unconstrained optimization, Lagrange multipliers and duality, large scale problems, and the interface between continuous and discrete optimization. Among its special features, the book: 1) provides extensive coverage of iterative optimization methods within a unifying framework 2) provides a detailed treatment of interior point methods for linear programming 3) covers in depth duality theory from both a variational and a geometrical/convex analysis point of view 4) includes much new material on a number of topics, such as neural network training, discrete-time optimal control, and large-scale optimization 5) includes a large number of examples and exercises detailed solutions of many of which are posted on the internet Much supplementary/support material can be found at the book's web page

## Book Information

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## Customer Reviews

"This book contains a wealth of material... Throughout this book, well-prepared graphics illustrate ideas and results. The text contains many examples and each section is followed by a set of nice exercises." --M. Heinkenschloss, Zentralblatt fur Mathematik, October 2000 "This is a beautifully written book by a prolific author ... who has taken painstaking care in making the presentation extremely lucid ... The style is unhurried and intuitive yet mathematically rigorous." "The numerous figures in the book are extremely well thought out and are used in a very effective way to elucidate the text. The detailed and self-explanatory long captions accompanying each figure are extremely

helpful." "The 80 pages constituting the four appendixes serve as a masterfully written introduction to the field of nonlinear programming that can be used as a self-contained monograph. Teachers using this book could easily assign these appendixes as introductory or remedial material." --Review by Olvi Mangasarian, Optima, March 1997

Dimitri Bertsekas is Professor of Electrical Engineering and Computer Science at the Massachusetts Institute of Technology, and a member of the National Academy of Engineering. He has researched a broad variety of subjects from optimization theory, control theory, parallel and distributed computation, systems analysis, and data communication networks. He has written numerous papers in each of these areas, and he has authored or coauthored sixteen textbooks. Professor Bertsekas was awarded the INFORMS 1997 Prize for Research Excellence in the Interface Between Operations Research and Computer Science for his book "Neuro-Dynamic Programming" (co-authored with John Tsitsiklis), the 2000 Greek National Award for Operations Research, the 2001 ACC John R. Ragazzini Education Award, the 2009 INFORMS Expository Writing Award, the 2014 ACC Richard E. Bellman Control Heritage Award for "contributions to the foundations of deterministic and stochastic optimization-based methods in systems and control," the 2014 Khachiyan Prize for Life-Time Accomplishments in Optimization, and the 2015 George B. Dantzig Prize.

A very thorough book about the details and best book i've ever known for optimization. If you want to how to deduce the algorithm, i would recommend it.

Reference book of my lecture! Highly recommended by my teacher in lecture nonlinear programming. Splendid and rigorous proof are what I need

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This is a MUST if you are doing research in optimization or need to study the details of optimization theory. It explains both theory and algorithm quite well with many exercises worth doing. Strongly recommended.

The study of optimization is not an easy task. Several books, different levels, some books only addressing theory, some books emphasizing algorithms and a few addressing modelling. When you

read scientific papers, eventually you will convince yourself of the necessity to know some more "advanced" results (Lagrange, Duality and even non-differentiable optimization) that are not well explained on introductory operational research books. Up to date, with solutions available for download at Bertsekas' homepage.

This book explains the duality theory very well. It also covers various numerical methods. People who never have background in optimization can start the subject from this book. The exercises were collected from recent papers, so they are common problems that you might encounter in your research.

If you are an operations researcher or someone interested in the NLP topic this is a must-buy book. Rigorous, extremely coherent and well written.

Bertsekas has always been one of my favorite authors. Nonlinear Programming is yet another of his masterpieces. An extremely well written book. Strongly Recommended.

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