

# Numerical Methods, Algorithms and Tools in C#

By Waldemar Dos Passos



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Comprehensive Coverage of the New, Easy-to-Learn C#

Although C, C++, Java, and Fortran are well-established programming languages, the relatively new C# is much easier to use for solving complex scientific and engineering problems. **Numerical Methods, Algorithms and Tools in C#** presents a broad collection of practical, ready-to-use mathematical routines employing the exciting, easy-to-learn C# programming language from Microsoft.

The book focuses on standard numerical methods, novel object-oriented techniques, and the latest Microsoft .NET programming environment. It covers complex number functions, data sorting and searching algorithms, bit manipulation, interpolation methods, numerical manipulation of linear algebraic equations, and numerical methods for calculating approximate solutions of nonlinear equations. The author discusses alternative ways to obtain computergenerated pseudo-random numbers and real random numbers generated by naturally occurring physical phenomena. He also describes various methods for approximating integrals and special functions, routines for performing statistical analyses of data, and least squares and numerical curve fitting methods for analyzing experimental data, along with numerical methods for solving ordinary and partial differential equations. The final chapter offers optimization methods for the minimization or maximization of functions.

Exploiting the useful features of C#, this book shows how to write efficient, mathematically intense object-oriented computer programs. The vast array of practical examples presented can be easily customized and implemented to solve complex engineering and scientific problems typically found in real-world computer applications.

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#### Numerical Methods, Algorithms and Tools in C# By Waldemar Dos Passos Bibliography

• Sales Rank: #808562 in Books

• Brand: CRC Press • Published on: 2009-10-23 • Original language: English

• Number of items: 1

• Dimensions: 9.21" h x 1.31" w x 6.14" l, 2.10 pounds

• Binding: Hardcover

• 598 pages

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#### **Editorial Review**

About the Author

Waldemar Dos Passos is a computer programming consultant in the Silicon Valley area of California. After completing his undergraduate education at the University of California, Berkeley, Dr. Dos Passos earned an M.S. in computer science and engineering along with a Ph.D. in physics from the University of Michigan, Ann Arbor. With more than twenty years of computer programming experience, he has published several papers in physics journals.

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