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Edizione	[2nd ed. 2023.]
Descrizione fisica	1 online resource (563 pages)
Collana	Texts in Computational Science and Engineering, , 2197-179X ; ; 13
Disciplina	502.85
Soggetti	Mathematics—Data processing Mathematical optimization Mathematical analysis Computational Science and Engineering Optimization Analysis Ciència Processament de dades Investigació quantitativa Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Preface -- Preface to Second Edition -- Introduction to Scientific Computing -- Solving a Nonlinear Equation -- Matrix Equations -- Eigenvalue Problems -- Interpolation -- Numerical Integration -- Initial Value Problems -- Optimization: Regression -- Optimization: Descent Methods -- Data Analysis -- Taylor's Theorem -- Vector and Matrix Summary -- Answers -- References -- Index.
Sommario/riassunto	This textbook provides an introduction to numerical computing and its applications in science and engineering. The topics covered include those usually found in an introductory course, as well as those that arise in data analysis. This includes optimization and regression-based methods using a singular value decomposition. The emphasis is on problem solving, and there are numerous exercises throughout the text concerning applications in engineering and science. The essential role

of the mathematical theory underlying the methods is also considered, both for understanding how the method works, as well as how the error in the computation depends on the method being used. The codes used for most of the computational examples in the text are available on GitHub. This new edition includes material necessary for an upper division course in computational linear algebra.
