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Autor:

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Sinopsis

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Using an approach that author Alan Laub calls ?matrix analysis for grown-ups,? this new textbook introduces fundamental concepts of numerical linear algebra and their application to solving certain numerical problems arising in state-space control and systems theory. It is written for advanced undergraduate and beginning graduate students and can be used as a follow-up to Matrix Analysis for Scientists and Engineers (SIAM, 2005), a compact single-semester introduction to matrix analysis for engineers and computational scientists by the same author.

Computational Matrix Analysis provides readers with
? a one-semester introduction to numerical linear algebra;
? an introduction to statistical condition estimation in book form for the first time; and
? an overview of certain computational problems in control and systems theory.

The book features a number of elements designed to help students learn to use numerical linear algebra in day-to-day computing or research, including
? a brief review of matrix analysis, including notation, and an introduction to finite (IEEE) arithmetic;
? discussion and examples of conditioning, stability, and rounding analysis;
? an introduction to mathematical software topics related to numerical linear algebra;
? a thorough introduction to Gaussian elimination, along with condition estimation techniques;
? coverage of linear least squares, with orthogonal reduction and QR factorization;
? variants of the QR algorithm; and
? applications of the discussed algorithms.

Audience
This book is intended for students who are interested in quickly learning the fundamentals of numerical linear algebra. It is also appropriate for mathematically competent engineers and scientists engaged in computation who wish to delve more deeply into how and why their algorithms work or do not work.