

"The second edition of *Matrix Analysis*, as curated by Roger Horn and Charlie Johnson, is the definitive source and indispensable reference for the foundations of matrix analysis. The material is comprehensive yet thoughtfully collected and presented with insightful exposition and crystal-clear organization. This book is for anyone who comes in contact with matrices, be it applied scientist, casual user, or experienced researcher."

– Ilse Ipsen, North Carolina State University

"The second edition of *Matrix Analysis* by Horn and Johnson is a significant enhancement (featuring a large number of recent research results, new and illuminating approaches, a comprehensive summary of basic linear algebra and matrix theory, hints on some problems, and a highly detailed index) of the hugely successful and widely used first edition. It is a monumental contribution on the theory and applications of matrices. I had the honor of using some chapters of the draft of the second edition in my Advanced Matrix Analysis class at Georgia State University. I am certain that the second edition of *Matrix Analysis* will be the standard graduate textbook and an indispensable reference book on matrix theory for many years to come."

– Zhongshan Li, Georgia State University

Linear algebra and matrix theory are fundamental tools in mathematical and physical science, as well as fertile fields for research. This new edition of the acclaimed text presents results of both classic and recent matrix analysis using canonical forms as a unifying theme, and demonstrates their importance in a variety of applications.

The authors have thoroughly revised, updated, and expanded on the first edition. The book opens with an extended summary of useful concepts and facts and includes numerous new topics and features, such as:

- New sections on the singular value and CS decompositions
- New applications of the Jordan canonical form
- A new section on the Weyr canonical form
- Expanded treatments of inverse problems and of block matrices
- A central role for the von Neumann trace theorem
- A new appendix with a modern list of canonical forms for a pair of Hermitian matrices and for a symmetric–skew symmetric pair
- Expanded index with more than 3,500 entries for easy reference
- More than 1,100 problems and exercises, many with hints, to reinforce understanding and develop auxiliary themes such as finite-dimensional quantum systems, the compound and adjugate matrices, and the Loewner ellipsoid
- A new appendix provides a collection of problem-solving hints.

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