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Disciplina	519.5354
Soggetti	System theory Optical data processing Signal processing Image processing Speech processing systems Statistics Geometry, Algebraic Systems Theory, Control Image Processing and Computer Vision Signal, Image and Speech Processing Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences Algebraic Geometry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
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Nota di contenuto	Preface -- Acknowledgments -- Glossary of Notation -- Introduction -- I Modeling Data with Single Subspace -- Principal Component Analysis -- Robust Principal Component Analysis -- Nonlinear and Nonparametric Extensions -- II Modeling Data with Multiple Subspaces -- Algebraic-Geometric Methods -- Statistical Methods -- Spectral Methods -- Sparse and Low-Rank Methods -- III Applications -- Image Representation -- Image Segmentation -- Motion Segmentation -- Hybrid System Identification -- Final Words -- Appendices -- References -- Index.
Sommario/riassunto	This book provides a comprehensive introduction to the latest advances

in the mathematical theory and computational tools for modeling high-dimensional data drawn from one or multiple low-dimensional subspaces (or manifolds) and potentially corrupted by noise, gross errors, or outliers. This challenging task requires the development of new algebraic, geometric, statistical, and computational methods for efficient and robust estimation and segmentation of one or multiple subspaces. The book also presents interesting real-world applications of these new methods in image processing, image and video segmentation, face recognition and clustering, and hybrid system identification etc. This book is intended to serve as a textbook for graduate students and beginning researchers in data science, machine learning, computer vision, image and signal processing, and systems theory. It contains ample illustrations, examples, and exercises and is made largely self-contained with three Appendices which survey basic concepts and principles from statistics, optimization, and algebraic-geometry used in this book. René Vidal is a Professor of Biomedical Engineering and Director of the Vision Dynamics and Learning Lab at The Johns Hopkins University. Yi Ma is Executive Dean and Professor at the School of Information Science and Technology at ShanghaiTech University. S. Shankar Sastry is Dean of the College of Engineering, Professor of Electrical Engineering and Computer Science and Professor of Bioengineering at the University of California, Berkeley.

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